Vermont Department of Environmental Conservation

EXECUTIVE SUMMARY

Per- and Polyfluoroalkyl Substances (PFAS) Pollution Prevention for Vermont Metal Finishers

In 2020, Vermont was awarded a two-year (FY 21-22) Pollution Prevention (P2) Grant from the US Environmental Protection Agency (EPA) to address source reduction of per- and polyfluoroalkyl substances (PFAS) in wastewater generated by aerospace product and part manufacturing and maintenance and metal manufacturing and fabrication industries in Vermont.

The goal of this project was to characterize and reduce, if possible, the environmental impact and human exposure of these persistent, bioaccumulative, toxic substances by improving the quality of wastewater effluent and biosolids produced at publicly owned treatment works (POTWs), or wastewater treatment facilities.

The Vermont Department of Environmental Conservation (DEC) Wastewater Pretreatment Program and Residuals & Emerging Contaminants Program collaborated with two consulting firms to conduct onsite site assessments, testing and technical assistance, resulting in two reports that have been separated for easier access due to their length:

- "Poly- and Perfluoroalkyl Substances at Select Industrial Facilities", Weston & Sampson Engineers, Inc, March 19, 2023 **(attached)**
- "Per- and Polyfluoroalkyl Substances (PFAS) Pollution Prevention at Vermont Metal Finishing Businesses", Sanborn Head & Associates, Inc., April 2023

The project outcomes include:

- Characterization of PFAS contribution to POTWs from all of Vermont's active businesses engaged in metal finishing.
- Establishing a working cohort of five metal finishing businesses. The cohort researched, identified, developed, and promoted P2 practices and tools to reduce discharges of PFAS from metal finishing businesses.
- Estimating the impact of the P2 practices on POTW wastewater effluent and biosolids quality.
- Providing businesses and stakeholders training on source reduction techniques that can be replicated at businesses state and region wide.
- Ongoing technical assistance and P2 to reduce or eliminate PFAS use at the facility.

Weston & Sampson

westonandsampson.com

98 South Main Street, Suite 2
Waterbury, VT 05676
tel: 802.244.5051

REPORT

March 19, 2023

Poly- and Perfluoroalkyl Substances at Select Industrial Facilities

2022 Summary Report

Revision 3

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Weston & Sampson Engineers, Inc. (Weston & Sampson), on behalf of the Vermont Department of Environmental Conservation (VTDEC) through contract #38584, performed sampling and analysis of wastewater and sludge from aerospace manufacturing and metal finishing facilities for the presence of per and polyfluoroalkyl substances (PFAS). These types of facilities have historically been found to contribute significant loads of PFAS to publicly owned treatment works (POTWs). The sampling results presented here will be used by the VTDEC and their process engineering contractor to evaluate pollution prevention (P2) strategies which may be utilized to reduce PFAS discharges.

Nine (9) facilities were sampled, with a total number of 33 liquid and 11 sludge samples collected. The facilities sampled included five aerospace manufacturing facilities and four metal finishing facilities. The sampling efforts for this phase of study were initiated in mid-October 2021 and continued until late September 2022. This allowed for collection of up to three samples from individual locations within the sampling timeframe specified in the contract.

Our conclusions are as follows:

1. The data collected to date indicate that the use of PFAS containing materials in aerospace and metal finishing facilities is generally minimized to preclude quantifiable levels of PFAS in their wastewater and associated sludges. Although two facilities utilized PFAS as a mist suppressant for chrome plating, their process wastewater is either contained sufficiently, or evaporated, and thus not discharged to the municipal sewer.

2. The laboratory methods utilized for this study are unique to Alpha Analytical. Comparison of these data to data analyzed by other methods may not be appropriate. Detailed assessment of the extraction, preparation, and analytical methods must be performed to determine if other datasets are comparable.

3. The complex matrices sampled for this study resulted in numerous quality assurance and quality control related qualifiers (“flags”) in the data reports. The presence of metals ions, metals salts, low pH and potentially other compounds adversely impacted sample processing and analyses. This resulted in elevated reporting limits and isotope/spiked compound recovery efficiencies (both reducing and increasing recovery percentages). Therefore, the reported PFAS data should be viewed as a relative indicator of PFAS presence and concentration. Direct comparison of PFAS concentrations in differing process locations within a single facility and between facilities may not be appropriate.

1.0 PROJECT BACKGROUND

Weston & Sampson Engineers, Inc. (Weston & Sampson), on behalf of the Vermont Department of Environmental Conservation (VTDEC) through contract #38584, performed sampling and analysis of wastewater and sludge from aerospace manufacturing and metal finishing facilities for the presence of per and polyfluoroalkyl substances (PFAS). These types of facilities have historically been found to contribute significant loads of PFAS to publicly owned treatment works (POTWs). The Michigan Department of Environment, Great Lakes, and Energy, Michigan Industrial Pretreatment Program, PFAS Initiative, Identified Industrial Sources of PFAS to Municipal Wastewater Treatment Plants, August 2020 reported metal finishing discharges are significant sources for POTWs with elevated PFAS in their effluent. The sampling results presented here will be used by the VTDEC and their process engineering contractor to evaluate pollution prevention (P2) strategies which may be utilized to reduce PFAS discharges.

Nine (9) facilities were sampled, with a total number of 33 liquid and 11 sludge samples collected. The facilities sampled all perform metal finishing.

The liquid and sludge samples were analyzed by Alpha Analytical using their proprietary modified EPA 537.1 method, incorporating isotope dilution. This method follows DOD Quality Systems Manual 5.3 and quantifies 24 individual PFAS.

Liquid samples were also analyzed via the Total Oxidation Procedure (TOP) Assay. This method exposes the sample to a strong oxidant at high temperatures in an effort to fully oxidize polyfluorinated alkyl substances into their respective perfluorinated end products. These data give an indication of the potential "precursor" PFAS presence in the sampled materials.

Prior to initiating the sampling efforts, Weston & Sampson developed amended the Site-Specific Quality Assurance Project Plan (SSQAPP) utilized for the previous study phase (POTW related sampling) detailing sampling and analytical methods, data quality objectives, and quality assurance/quality control evaluation methods. The SSQAPP Rev. 1 was approved by the VTDEC on June 21, 2021.

The sampling efforts for this phase of study were initiated in mid-October 2021 and continued until late September 2022. This allowed for collection of up to three samples from individual locations within the sampling timeframe specified in the contract.

2.0 FIELD ACTIVITIES

2.1 Sampling Locations and Frequency

The locations, frequency, and types of samples collected during this phase of work are summarized in the table below.

Sample Type	*Facility and Total Number of Samples*	*Receiving POTW*
Wastewater	Vergennes Facility 1 (4)	Vergennes
	Brattleboro Facility 1(4)	Brattleboro
	Swanton Facility 1 (6)	Swanton
	Rutland Facility 1 (4)	Rutland
	Rutland Facility 2 (4)	Rutland
	Rutland Facility 3 (3)	Rutland
	Springfield Facility 1 (3)	Springfield
	Bennington Facility 1 (3)	Bennington
	Burlington Facility 1 (3)	Burlington
Sludge	Vergennes Facility 1 (5)	Vergennes
	Brattleboro Facility 1(2)	Brattleboro
	Swanton Facility 1 (0)	Swanton
	Rutland Facility 1 (2)	Rutland
	Rutland Facility 2 (2)	Rutland

2.2 Sampling Methods

Weston & Sampson and the VTDEC coordinated with the facility operators to select sample locations based upon function and accessibility. Once a location was selected, all subsequent samples were collected from the same location and using the same methods. The wastewater and sludge samples were collected as grab samples from single tanks. Locations and sample methods at each facility were as follows:

- *Vergennes Facility 1*
    - Wastewater Effluent- Wastewater was sampled directly from the effluent tank (Tank 033) using a grab method, where the sampling container was placed directly into the wastewater to fill.
    - Wire Stripping- The wire stripping sample was taken from the manufacturing facility in the container the wire was dipped into and sent to the lab for analysis. Wastewater from this process is batch discharged to an on Site pretreatment facility.
    - Sludge- Sludge from the effluent pretreatment system was sampled directly from the storage drum using a grab method, where the material was scooped by gloved hand and placed directly into the sample container.
- *Brattleboro Facility 1*
    - Seal Tank – The “Seal Tank” utilized for PTFE coating was sampled using a grab where the sampling container was placed directly into the wastewater to fill. “Dragout” from this

process may enter the on Site pretreatment facility via rinse tanks or drippage into the processing deck drainage.

  - Wastewater Effluent - Wastewater was sampled directly from the effluent tank using a grab method, where the sampling container was placed directly into the wastewater to fill.
  - Sludge- Sludge generated by the wastewater pretreatment system was sampled directly from the storage drum using a grab method, where the material was scooped by gloved hand and placed directly into the sample container.

- *Swanton Facility 1*
  - Wastewater Effluent- Wastewater was sampled from the "Black Oxide" line directly from the effluent tank using a grab method, where the sampling container was placed directly into the wastewater to fill.
  - Storm Water- Stormwater was sampled from the catch basins receiving runoff from the roof directly west of the building with a disposable bailer.
  - Mist Suppressant- 5 mL of mist suppressant was diluted with 245 mls of deionized water directly in the sampling container (50x dilution). Wastewaters generated by this process are drummed for off Site disposal as hazardous waste.
- *Rutland Facility 1*
  - Wastewater Effluent- Wastewater was sampled directly from the effluent weir using a grab method, where the sampling container was placed directly into the wastewater to fill.
  - Sludge- Sludge was sampled directly from the storage container beneath the wastewater drying press using a grab method, where the material was scooped with a shovel and placed directly into the sample container.
- *Rutland Facility 2*
  - Wastewater Effluent- Wastewater was sampled directly from the effluent weir using a grab method, where the sampling container was placed directly into the wastewater to fill.
  - Sludge- Sludge was sampled directly from the storage bin beneath the sludge press using a grab method, where the material was scooped out and placed directly into the sample container.
- *Burlington Facility 1*- Wastewater was sampled through spigot on the effluent tank used by the company to test the wastewater.
- *Rutland Facility 3*- Wastewater was sampled through spigot on the effluent tank, used by the company to test the wastewater.
- *Springfield Facility 1*- Wastewater was sampled directly from the effluent tank using a grab method, where the sampling container was placed directly into the wastewater to fill.
- *Bennington Facility 1*- Wastewater was sampled by lowering a bottle into the effluent tank where the wastewater is pH adjusted and filling each sample bottle.

2.3 Analytical Methods

Sample analyses were provided by Alpha Analytical Laboratory (Alpha) of Mansfield Massachusetts. There are currently no EPA-certified methods for analysis of PFAS in wastewater and sludge. Therefore, the analytical methods utilized were developed by, and are specific to, Alpha. The methods used by Alpha were presented in the SSQAPP and approved by the VTDEC. The analytical method for wastewater are based upon the EPA 537 Version 1.1 solid phase extraction and liquid chromatograph/tandem mass spectrographs including use of internal isotope dilution. The Alpha methods were designed in compliance with the Department of Defense (DoD) Quality Systems Manual (QSM) 5.3. Liquid analytes reported are included in the table below.

Compound Name	*Compound Acronym*
Perfluorobutanoic acid	PFBA
Perfluoropentanoic acid	PFPeA
Perfluorohexanoic acid	PFHxA
Perfluoroheptanoic acid	PFHpA
Perfluorooctanoic acid	PFOA
Perfluorononanoic acid	PFNA
Perfluorodecanoic acid	PFDA
Perfluoroundecanoic acid	PFUnA
Perfluorododecanoic acid	PFDoA
Perfluorotridecanoic acid	PFTrDA
Perfluorotetradecanoic acid	PFTA
Perfluorobutanesulfonic acid	PFBS
Perfluoropentanesulfonic acid	PFPeS
Perfluorohexanesulfonic acid	PFHxS
Perfluoroheptanesulfonic acid	PFHpS
Perfluorooctanesulfonic acid	PFOS
Perfluorononanesulfonic acid	PFNS
Perfluorodecanesulfonic acid	PFDS
Perfluorooctanesulfonamide	FOSA
1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	4:2FTS
1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	6:2FTS
1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	8:2FTS
N-methyl perfluorooctane- sulfonamidoacetic acid	NMeFOSAA
N-ethyl perfluorooctane- sulfonamidoacetic acid	NEtFOSAA

Analysis of complex mixtures such as the low pH (acids used in etching) and high ionic strength (dissolved metals) wastewater and sludge can result in elevated detection limits and surrogate recoveries outside the limits of the lab SOPs. These issues are caused by interferences from the sample matrix. The SOPs utilized by Alpha are designed to reduce the impacts of matrix interference, but often quality assurance/quality control (QA/QC) limits could not be met. Detailed review of the reported QA/QC related issues has been performed and is discussed in Section 4.

2.4 Standard Operating Procedures

The following Weston & Sampson SOPs were used during the described field activities. Copies of the SOPs were submitted to the VTDEC.

SOP-10	Soil Sampling Scoop or Hand Auger
SOP-25	Leachate, Influent, Effluent Sampling
SOP-26	General PFAS Sampling Considerations

\\wse03.local\WSE\Projects\VT\VTDEC Statewide PFAS WWTF LF\2022 P2 Phase II\report\Report Text Rev 3.docx

3.0 RESULTS

A compilation of the liquid and solid analyses results are provided on Table 1 and Table 2 respectively. The complete laboratory packages for all sampling events are included in Appendix B. The data packages are organized by date. The laboratory indicated that interferences with the analytical methods were common in the liquid and solid samples due to high dissolved metals and associated salts concentrations and low pH. These interferences often resulted in elevated Method Reporting Limits (MRLs). Quality Assurance and Quality Control related findings are presented in Section 4.0 Data Usability. Overall, Weston & Sampson believes data quality is suitable for the intent of this study, identification of significant sources of PFAs in the manufacturing process discharges.

3.1 Liquid Sample Results

Isotope dilution analyses of the liquid samples (pre-TOP assay oxidation) associated with the aerospace manufacturers effluent did not consistently report PFAS concentrations above MRLs. However, nearly every aerospace manufacturer effluent sample did show "estimated" PFAS concentrations above detection limits (MDLs). The majority of the PFAS identified are alkyl acids ranging in carbon chain length from 4 to 9 carbons (PFBA, PFPeA, PFHxA, PFHpA and PFOA). Total concentrations of the VT5 PFAS were below 20 nanograms per liter (ng/l/parts per trillion [ppt]) with the exception of one GSP effluent sample which had an estimated maximum concentration of 23.22 ppt.

TOP assay analyses consistently reported increases in alkyl acid PFAS. PFBA, PFPeA and PFHxA were the most frequently reported post TOP analytes with concentrations above the pre-TOP results. It should be noted that precursor PFAS (4:2 FTS, 6:2 FTS, 8:2 FTS; NEtFOSAA and NMeFOSAA) were not observed in the initial, pre-TOP oxidation samples. This appears to indicate that unidentified PFAS are being transformed into reportable concentrations of PFBA, PFPeA, and PFHxA.

Individual facility results are summarized below:

- Vergennes Facility 1: Tank 033 effluent samples reported estimated PFAS concentrations slightly above the MRL on one occasion. Notable increases, though estimated, in PFBA and PFPeA concentrations were seen in 2 of the 3 sampling events. The wire stripping sample had no detectable PFAS reported.

- Brattleboro Facility 1: PFOS and PFHxS were reported in the effluent at 2.22 ppt and 21 ppt on one occasion (11/10/21). PFBA concentration increases are observed (estimated) in post TOP analyses on two occasions. PTFE Seal Tank liquids report no PFAS concentrations above the MDL.

- Swanton Facility 1: The mist suppressant utilized in the benchtop plating operation appears to be primarily comprised of 6:2 FTS with 4:2 and 8:2 FTS as either additional components or impurities. It appears that the presence of such a highly concentrated sample in a common shipping container resulted in cross contamination of the black oxide effluent and storm water samples collected on December 10, 2021. The remaining two sampling events report estimated, to just above MRL, levels of PFAS in the black oxide effluent. The second storm water sample reports PFBA, PFOS and 6:2 FTS concentrations at or slightly below MRL.

- Rutland Facilities #1 and #2: Effluent concentrations are primarily below MDLs. 6:2 FTS was reported in one sampling event at 2.62 and 2.45 ppt in Plant #1 and #2 respectively. TOP results consistently report increased PFBA and PFPeA concentrations. This could be resultant of the presence of 6:2 FTS and/or other precursors.

- Burlington Facility 1: PFBA is present in all three samples. Concentrations in two of the samples are well above the MRL at 13.4 and 35.1 ng/l. PFPeA, PFHxA, PFOA, PFNA and 6:2FTS are also intermittently reported at or slightly above the MDLs. TOP assay results indicate only slight increases in PFAS concentrations. This appears to indicate limited precursor presence in the wastewater.

- Bennington Facility 1: PFBA is consistently observed between 17 and 44 ng/l in the wastewater. Other PFAS are intermittently present in "estimated" concentrations. TOP results show a quantifiable increase in PFBA concentrations with limited changes to other PFAS concentrations. This appears to indicate limited precursor presence in the wastewater.

- Rutland Facility 3: Up to 6 PFAS are reported in "estimated" concentrations to just above the MRL in each sample. These PFAs are generally reported at less than 1 ng/l. TOP results consistently report PFBA, PFPeA and PFHxA increases of 6, 0.7 and 1 ng/l respectively. However, most of these increases remain "estimated" below MRL.

- 6:2 FTS was observed in the method blank for several samples from Burlington Facility 1, Bennington Facility 1 and Rutland Facility 3. The concentration of 6:2 FTS reported at these locations is less than 10 times the blank concentration. Therefore, the reported 6:2 FTS concentrations may be biased high. For Springfield Facility 1 6:2 FTS concentrations are several orders of magnitude greater than the blank concentration and are not impacted by the blank detections.

- Springfield Facility 1: A number of PFAS are reported in the wastewater samples ranging from 21 to 14,500 ng/l. 6:2 FTS, PFHxA, PFHpA and PFOS concentrations are consistently above the MRLs. Average concentrations are:

    - 6:2 FTS 13,367 ng/l
    - PFHxA 272 ng/l
    - PFHpA 157 ng/l
    - PFOS 1,596 ng/l

  In addition, PFBS, PFPeA, PFOA, N-EtFOSAA and N-MeFOSAA are also consistently present at concentrations above the elevated MDLs ranging from between 45 and 82 ng/l. TOP results show concentration increases of 115 to 2,274 ng/l in PFBA, PFPeA, PFHxA and PFHpA. This is indicative of the oxidation of the 6:2 FTS and potentially other unidentified precursors present in the wastewater. The PFAS concentrations reported indicate that PFAS containing process materials are utilized at this facility.

3.2 Solid Sample Results

Review of the solids data presented on Table 2 shows few PFAS present above the MDL and only three PFAS present above the MRL. Vergennes Facility 1 sludge contained several "long chain" PFAS including PFOA, PFOS, PFNA, PFTA, PFUnA, and precursors 6:2 FTS, and N-EtFOSSA in 2 sample events. However, no PFAS were reported above 1 ppb in concentration. Brattleboro Facility 1 Combined Filter Cake reported PFOS at 8.95 ppb in one sample only. However, matrix interferences significantly impacted the labs ability to provide results to this low a reporting limit in subsequent samples. The presence of PFOS at low levels in the solid filter cake is consistent with the presence of PFOS concentrations reported in the pretreatment system effluent at this facility.

Overall, the sludges sampled do not appear to consistently contain PFAS at concentrations above current method reporting limits.

\\wse03.local\WSE\Projects\VT\VTDEC Statewide PFAS WWTF LF\2022 P2 Phase II\report\Report Text Rev 3.docx

4.0 DATA USABILITY

4.1 Laboratory Data Evaluation

Weston & Sampson performed a Tier I evaluation of the data to identify bias or other interference that could affect the quality of sample results. Quality control components that were evaluated include the following:

- Data completeness
- Holding times
- Sample preservation
- Blank results
- Surrogate recoveries
- Laboratory control sample results
- Field duplicates

Laboratory result packages are included in Appendix A. A comprehensive QA/QC data review summary table is included in Appendix B.

PARCCS Evaluation

Weston & Sampson evaluated the data in general accordance with the PARCCS (precision, accuracy, representativeness, completeness, comparability, and sensitivity) parameters outlined in the *U.S. Environmental Protection Agency Guidance on Quality Assurance Project Plans (December 2002).*

Precision

Precision is a measure of agreement among individual measurements of the same property and is generally expressed as the reproducibility of the analytical result between initial sample and field duplicate as expressed by the relative percent difference (RPD). Precision is a measure of the reproducibility of sampling technique, matrix homogeneity, and analytical method. An RPD value of $<$50% is considered acceptable for sludge and $<$30% is considered acceptable for surface and drinking water. RPD values cannot be assessed because field duplicates were not collected.

Accuracy

Accuracy is the degree of measurement with an accepted reference or true value. Weston & Sampson evaluated accuracy by reviewing surrogate results, laboratory control sample results, and calibration QC results. A detailed summary of our review of sample surrogate recoveries is included in Appendix B. Surrogate recoveries within the analytic method limits for PFAS are notoriously difficult to meet, particularly with complex media such as wastewaters and sludges. The acceptable range of recovery for surrogates is very wide due to interferences from the media and the complexity of the method. Surrogate recovery exceedances for the perfluorinated compounds quantified tend to be both lower and higher than the acceptable range by less than 50%. However, polyfluorinated/precursor compounds, such as 6:2FTS, 4:2FTS, 8:2FTS, NEtFOSAA and NMeFOSAA and large perfluorinated compounds PFUDA and PFDoA have recovery exceedances that are consistently more than 75% high. This results in high biased results which must be considered when reviewing the data.

The surrogate recovery results for most perfluorinated PFAS and the laboratory control sample results and calibration QC results indicate that the data are suitably accurate to support the conclusions of this

report related to perfluorinated compounds. The polyfluorinated/precursor compounds, such as 6:2FTS, 4:2FTS, 8:2FTS, NEtFOSAA, and NMeFOSAA and large perfluorinated compounds PFUDA and PFDoA results should take into consideration the frequently high biased surrogate recoveries. These compounds are infrequently detected; therefore, we believe the results are suitably accurate to be included in the data analyses and support the conclusions of this report.

Representativeness

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of the population, parameter variation, or environmental condition. The VTDEC and Weston & Sampson designed the sampling protocol to ensure representativeness by incorporating factors such as frequency of sampling, sample locations, proper sample collection and preservation procedures, appropriate testing methodology, and field observations. The samples collected at the Site are considered representative based on the known facility operations and potential contaminant presence and transport mechanisms.

Completeness

Completeness is a measure of whether enough data have been collected to support a professional opinion and is expressed as a percentage representing the ratio of valid data to expected data. Data may be considered invalid for reasons such as exceeding the holding time, poor calibration of analytical instruments, and poor surrogate or matrix spike recoveries. Based on a review of the case narratives and lab QA/QC samples, the data collected for this phase of the project are considered complete.

Comparability

Comparability refers to the level of confidence with the correlation of data collected during separate events or by different persons or analyzed by different methods. This may be measured qualitatively based on a review of sampling and testing procedures or quantitatively by comparison of sample data collected at the same location using the same sampling and testing procedures. All sampling and testing procedures were followed utilizing accepted standards for quality assurance and quality control and are expected to be comparable to future data assuming the same laboratory methods are utilized. Sample analyses by a lab different than Alpha, or by a different methodology may result in a lack of direct comparability. This is inherent in the use of a proprietary method.

Sensitivity

Sensitivity is a measure of whether the laboratory method was sufficient to report detected contaminants at concentrations at, or below, the applicable regulatory criteria. In some cases, a contaminant was reported as “not detected” but the laboratory method detection limit was above a regulatory screening level.

The complex makeup of the wastewaters and sludges sampled at these facilities often results in elevated detection limits due to interferences within these matrices. As such, the reporting limits in several samples were adjusted to values that, in some instances, were above the anticipated reporting levels. However, this typically occurred in only one of the multiple samples collected at a facility allowing for review of remaining data associated with a different sampling date. Weston & Sampson is of the opinion that the sample results are adequately sensitive to support the conclusions of this report.

4.2 QA/QC Discussion

Analysis of the media sampled for this study has proven to be complex, with many interferences present. The interferences have resulted in elevated method detection limits in both liquid and solid samples, surrogate recovery issues and modification of sample preparation. Weston & Sampson discussed these issues with the laboratory and the VTDEC during the study. Much of the interference was caused by the high concentrations of dissolved metals and metals salts present along with very low pH. Attempts to buffer the pH and limit metals impacts did not significantly change the accuracy, sensitivity or precision of the analyses.

However, the intent of this study was to identify use of PFAS containing products resulting in impacts to facility wastewaters. This anticipates PFAS concentrations well above those "typically" reported in wastewater not associated with metal finishing/plating, such as those reported at Springfield Facility 1. The quality of the data generated by this study is similar to that of wastewater studies previously completed by Weston & Sampson and Alpha. We believe that the data presented is suitable for use for the intended study purpose.

\\wse03.local\WSE\Projects\VT\VTDEC Statewide PFAS WWTF LF\2022 P2 Phase II\report\Report Text Rev 3.docx

5.0 DISCUSSION AND CONCLUSIONS

The PFAS data collected to date have been evaluated to identify the presence of PFAS in the industrial wastewaters associated with aerospace and metal finishing facilities in Vermont. Our conclusions are as follows:

5.1 Analytical Considerations

1. The laboratory methods utilized for this study are unique to Alpha Analytical. Comparison of these data to data analyzed by other methods may not be appropriate. Detailed assessment of the extraction, preparation, and analytical methods must be performed to determine if other datasets are comparable.

2. The complex matrices sampled for this study resulted in numerous quality assurance and quality control related qualifiers ("flags") in the data reports. The presence of metals ions, metals salts, low pH and potentially other compounds adversely impacted sample processing and analyses. This resulted in elevated reporting limits and isotope/spiked compound recovery efficiencies (both reducing and increasing recovery percentages). Therefore, the reported PFAS data should be viewed as a relative indicator of PFAS presence and concentration. Direct comparison of PFAS concentrations in differing process locations within a single facility and between facilities may not be appropriate.

3. TOP assay analyses consistently reported increases in alkyl acid PFAS. PFBA, PFPeA and PFHxA were the most frequently reported post TOP analytes with concentrations above the pre-TOP results. It should be noted that precursor PFAS (4:2 FTS, 6:2 FTS, 8:2 FTS; NEtFOSAA and NMeFOSAA) were not observed in the initial, pre-TOP oxidation samples. This appears to indicate that unidentified PFAS are being transformed into reportable concentrations of PFBA, PFPeA, and PFHxA.

4. There are currently no regulatory standards for any of the media sampled as part of this study (wastewater, sludge). The use of the sum of 5 Regulated PFAS is used as a point of reference and should not be construed as a standard or guidance value pertaining to risk associated with the materials sampled.

5.2 Metal Plating Facilities

1. Isotope dilution analyses of the effluent samples (pre-TOP assay oxidation) did not consistently report PFAS concentrations above MRLs. However, nearly every effluent sample did show "estimated" PFAS concentrations above the MDLs.

2. The majority of the PFAS identified are alkyl acids ranging in carbon chain length from 4 to 9 carbons (PFBA, PFPeA, PFHxA, PFHpA and PFOA).

3. Total concentrations of the VT5 PFAS in effluents were below 20 ppt, with the exception of one Brattleboro Facility 1 effluent sample which had an estimated maximum concentration of 23.22 ppt.

4. Mist suppressant utilized by Swanton Facility 1 in a single small tub enclosed in a ventilated hood appears to be comprised primarily of 6:2 FTS.

5. Sludges developed during the industrial wastewater pretreatment processes generally do not appear to accumulate PFAS above 1 ng/g. However, matrix interferences associated with the Brattleboro Facility 1 process resulted in significantly elevated detection limits.

6. Rutland Facility 3's wastewater consistently reported very low PFAS concentrations <1 ng/l. TOP assay results report PFBA at 6.5 to 7.5 ng/l, indicating a low level presence of a precursor not consistently observed in the primary analysis.

7. Bennington Facility 1 and Burlington Facility 1 wastewaters contain PFBA between 13 and 44 ng/l with other PFAS intermittently present in "estimated" or slightly above the MDLs concentration. TOP results show quantifiable increases in PFBA and some additional PFAS concentrations. This appears to indicate limited precursor presence in the wastewater.

8. Springfield Facility 1 is the only metal plater reporting consistent presence of multiple PFAS well above detection limits. 6:2 FTS, PFHxA, PFHpA and PFOS reported in the wastewater samples ranging from 21 to 14,500 ng/l. In addition, PFBS, PFPeA, PFOA, N-EtFOSAA and N-MeFOSAA are also consistently present at concentrations ranging from between 45 and 82 ng/l. TOP results show concentration increases of 115 to 2,274 ng/l in PFBA, PFPeA, PFHxA and PFHpA. This is indicative of the oxidation of the 6:2 FTS and potentially other unidentified precursors present in the wastewater. The PFAS concentrations reported indicate that PFAS containing process materials are utilized at this facility.

5.3 Conclusion

The data collected to date indicate that, with the exception of Springfield Facility 1, use of PFAS containing materials in aerospace and metal finishing facilities is minimized and/or contained sufficiently to preclude quantifiable levels of PFAS in their wastewater and associated sludges.

\\wse03.local\WSE\Projects\VT\VTDEC Statewide PFAS WWTF LF\2022 P2 Phase II\report\Report Text Rev 3.docx

6.0 RECOMMENDATIONS

Weston & Sampson offers the following recommendations:

- Review revised and new analytical methods as they become commercially available to determine if reductions in the matrix interferences observed in this study are resolved. Perform additional sampling and analysis using the revised/new method to determine if significant improvement in data quality is observed.

\\wse03.local\WSE\Projects\VT\VTDEC Statewide PFAS WWTF LF\2022 P2 Phase II\report\Report Text Rev 3.docx

7.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

I certify under penalty of perjury that I am an environmental professional and that all content contained within this deliverable is to the best of my knowledge true and correct.

Steven LaRosa
Senior Project Manager

\\wse03.local\WSE\Projects\VT\VTDEC Statewide PFAS WWTF LF\2022 P2 Phase II\report\Report Text Rev 3.docx

TABLES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Vergennes Facility 1								Brattleboro Facility 1							
				TANK033						Wire Stripping		Seal Tank		EFFLUENT					
				10/15/2021		1/15/2022		3/8/2022		1/15/2022		10/25/2021		11/10/2021		1/21/2022		2/25/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)																			
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.595	U	2.38	U	1.94	U	0.236	U	5.95	U	0.212	U	1.81	U	1.76	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**1.67**	J	4.08	U	**2.75**		0.406	U	10.2	U	**0.672**	J	1.81	U	**0.994**	J
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.613	U	2.45	U	1.94	U	0.244	U	6.13	U	0.218	U	1.81	U	1.76	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.81**	J	**6.76**	J	1.94	U	0.394	U	9.9	U	**0.552**	J	1.81	U	1.76	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.94	U	3.67	U	1.94	U	0.374	U	9.4	U	0.334	U	**2.22**	F	1.76	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**2.16**	J	3.28	U	1.94	U	0.326	U	8.2	U	**0.352**	J	1.81	U	1.76	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		1.72	U	6.88	U	1.94	U	0.684	U	17.2	U	0.612	U	1.81	U	1.76	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.65**	J	2.25	U	**2.45**		0.224	U	5.63	U	**0.388**	JF	1.81	U	**0.222**	J
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		1.45	U	5.8	U	1.94	U	0.576	U	14.5	U	0.516	U	1.81	U	1.76	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	1.26	U	5.04	U	1.94	U	0.501	U	12.6	U	**2.62**		**21**	GF	17.6	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.78**	J	2.36	U	1.94	U	0.234	U	5.9	U	**0.694**	JF	1.81	U	**0.402**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		2.8	U	11.2	U	1.94	U	1.11	U	28	U	0.996	U	1.81	U	1.76	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	**3.1**	J	3.12	U	1.94	U	0.31	U	7.8	U	0.278	U	1.81	U	1.76	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		2.45	U	9.8	U	1.94	U	0.974	U	24.5	U	0.872	U	1.81	U	1.76	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.76	U	3.04	U	1.94	U	0.302	U	7.6	U	0.270	U	1.81	U	1.76	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.93	U	3.72	U	1.94	U	0.37	U	9.3	U	0.331	U	1.81	U	1.76	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.818	U	3.27	U	1.94	U	0.325	U	8.18	U	0.291	U	1.81	U	1.76	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.62	U	**8.36**	J	1.94	U	0.246	U	6.2	U	0.221	U	1.81	U	**0.874**	J
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		**2.15**	J	**3.56**	J	1.94	U	0.258	U	6.5	U	0.231	U	1.81	U	1.76	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		1.13	U	4.52	U	1.94	U	0.449	U	11.3	U	0.402	U	1.81	U	1.76	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		3.33	U	13.3	U	**3.64**		1.32	U	33.3	U	1.18	U	1.81	U	1.76	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		3.03	U	12.1	U	1.94	U	120	U	30.3	U	1.08	U	1.81	U	1.76	U
N-EtFOSAA	2991-50-6	ng/l		2.01	U	8.04	U	1.94	U	0.799	U	20.1	U	0.715	U	1.81	U	1.76	U
N-MeFOSAA	2355-31-9	ng/l		1.62	U	6.48	U	1.94	U	0.644	U	16.2	U	0.576	U	1.81	U	1.76	U
PFAS VT 5 (total)		ng/l	20	**4.53**	JY	5.04	U	**2.45**	Y	0.501	U	12.6	UY	**3.702**	JY	**23.22**	JY	**0.624**	JY
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)																			
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.595	U	2.38	U	2.02	U	0.251	U			0.212	U	4	U	4.0	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**18.4**	J	**62.2**	J	10.1	U	**6.24**	J			**7.13**	J	20	U	**13.8**	J
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.613	U	2.45	U	2.02	U	0.259	U			0.218	U	4	U	4.0	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**2.73**	J	**18.2**	J	**6.51**		**1.45**	J			**1.45**	J	4	U	**3.15**	J
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.94	U	**4.52**	J	2.02	U	0.397	U			0.334	U	4	U	4.0	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**3.71**	J	**17.3**	J	**5.95**		**0.782**	J			**0.922**	J	4	U	**1.72**	J
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		1.72	U	6.88	U	2.02	U	0.727	U			0.612	U	4	U	4.0	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.91**	J	**4.32**	JF	2.02	U	0.238	U			**0.541**	JF	4	U	4.0	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	1.26	U	**9.6**	J	2.02	U	0.532	U			**2.43**		4	U	**1.02**	J
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**1.42**	J	**2.48**	J	2.02	U	0.249	U			**1.22**	J	4	U	**0.592**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		2.8	U	11.2	U	2.02	U	1.18	U			0.997	U	4	U	4.0	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	**3.48**	J	3.12	U	2.02	U	0.33	U			0.278	U	4	U	4.0	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		2.45	U	9.8	U	2.02	U	1.04	U			0.872	U	4	U	4.0	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.76	U	3.04	U	2.02	U	0.321	U			0.27	U	4	U	4.0	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.93	U	3.72	U	2.02	U	0.393	U			0.331	U	4	U	4.0	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.818	U	3.27	U	2.02	U	0.346	U			0.291	U	4	U	4.0	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.62	U	2.48	U	2.02	U	0.262	U			0.221	U	4	U	4.0	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		**2.11**	J	**3.24**	JF	2.02	U	0.275	U			0.231	U	4	U	4.0	U
PFAS VT 5 (total)		ng/l	20	**5.81**	JY	**20.92**	JY	2.02	U	0.532	U			**4.191**		4	U	**5.612**	JY

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
PFAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^ 1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Swanton Facility 1												Rutland Facility 1					
				BLACK OXIDE EFFLUENT						STORM WATER				MIST SUPPRESSENT Diluted 5g/250ml		WASTEWATER EFFLUENT					
				11/2/2021		12/10/2021		3/1/2022		12/10/2021		6/13/2022		12/10/2021		10/6/2021		12/22/2021		2/25/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.217	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.215	U	1.97	U	1.81	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		0.372	U	50	U	**3.62**		50	U	**1.80**		50000	U	0.368	U	1.97	U	1.81	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.224	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.221	U	1.97	U	1.81	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.56**	J	50	U	**2.26**		50	U	1.78	U	50000	U	**0.718**	J	1.97	U	1.81	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.343	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.339	U	1.97	U	**1.79**	JF
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**0.591**	J	50	U	**0.531**	J	50	U	1.78	U	50000	U	**0.357**	JF	1.97	U	1.81	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.627	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.621	U	1.97	U	1.81	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.73**	J	50	U	**0.762**	J	50	U	1.78	U	50000	U	0.203	U	1.97	U	1.81	U
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		0.529	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.524	U	1.97	U	1.81	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	**1.06**	J	50	U	**0.72**	J	50	U	**2.42**		50000	U	**1.39**	JF	1.97	U	1.81	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.941**	J	50	U	**0.951**	JF	50	U	1.78	U	50000	U	**0.307**	J	1.97	U	**0.225**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		1.02	U	50	U	1.92	U	50	U	1.78	U	50000	U	1.01	U	1.97	U	1.81	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	**0.299**	J	50	U	1.92	U	50	U	1.78	U	50000	U	0.282	U	1.97	U	1.81	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.894	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.885	U	1.97	U	1.81	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.277	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.274	U	1.97	U	1.81	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.399	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.336	U	1.97	U	1.81	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.298	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.295	U	1.97	U	1.81	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		**0.292**	J	50	U	1.92	U	50	U	1.78	U	50000	U	0.224	U	1.97	U	**0.739**	J
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.237	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.235	U	1.97	U	1.81	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		0.412	U	50	U	1.92	U	50	U	1.78	U	**539,000**		0.408	U	1.97	U	1.81	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		1.21	U	**295**	^1	1.92	U	**130**	^1	**7.84**	U	**22,800,000**	E	**2.62**		1.97	U	1.81	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		1.1	U	50	U	1.92	U	50	U	1.78	U	**1,050,000**		1.09	U	1.97	U	1.81	U
N-EtFOSAA	2991-50-6	ng/l		0.733	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.726	U	1.97	U	1.81	U
N-MeFOSAA	2355-31-9	ng/l		0.591	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.585	U	1.97	U	1.81	U
PFAS VT 5 (total)		ng/l	20	**3.03**	JY	50	U	**2.433**	JY	50	U	**2.42**	Y	50000	U	**1.697**	JY	1.97	U	**2.015**	JY
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.231	U	50	U	10	U	50	U	1.80	U			0.208	U	1.88	U	1.82	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**2.33**	J	250	U	**31.7**	J	250	U	1.80	U			**6.61**	J	1.88	U	**6.67**	J
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.238	U	50	U	10	U	50	U	1.80	U			0.214	U	1.88	U	1.82	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.06**	J	**165**		**5.7**	J	50	U	**3.40**				**1.67**	J	**4.18**		**4.87**	
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.364	U	50	U	10	U	50	U	1.80	U			0.328	U	1.88	U	1.82	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**0.744**	J	**55.7**		**1.8**	J	50	U	**3.20**				**0.838**	J	1.88	U	**2.74**	
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.667	U	50	U	10	U	50	U	1.80	U			0.6	U	1.88	U	1.82	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.574**	JF	50	U	**1.24**	J	50	U	1.80	U			**0.3**	J	1.88	U	**0.423**	J
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	**0.523**	J	50	U	10	U	50	U	1.80	U			0.44	U	1.88	U	1.82	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.969**	J	50	U	10	U	50	U	1.80	U			**0.538**	J	1.88	U	**0.306**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		1.08	U	50	U	10	U	50	U	1.80	U			0.977	U	1.88	U	1.82	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	0.302	U	50	U	10	U	50	U	1.80	U			0.272	U	1.88	U	1.82	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.95	U	50	U	10	U	50	U	1.80	U			0.855	U	1.88	U	1.82	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.294	U	50	U	10	U	50	U	1.80	U			0.265	U	1.88	U	1.82	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.36	U	50	U	10	U	50	U	1.80	U			0.325	U	1.88	U	1.82	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.317	U	50	U	10	U	50	U	1.80	U			0.286	U	1.88	U	1.82	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.24	U	50	U	10	U	50	U	1.80	U			0.216	U	1.88	U	1.82	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.252	U	50	U	10	U	50	U	1.80	U			0.227	U	1.88	U	1.82	U
PFAS VT 5 (total)		ng/l	20	**2.066**	JY	50	U	**1.24**	JY	50	U	1.80	U			**0.838**	JY	1.88	U	**0.729**	JY

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
PFAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Rutland Facility 2						Burlington Facility 1						Bennington Facility 1					
				WASTEWATER EFFLUENT						Wastewater Tank						Wastewater Tank					
				10/6/2021		12/22/2021		2/25/2022		8/3/2022		8/17/2022		9/27/2023		8/4/2022		8/10/2022		8/17/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		**0.864**	JF	1.99	U	**0.516**	JF	2.13	U	1.19	U	1.19	U	1.83	U	1.78	U	0.229	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**0.394**	J	1.99	U	1.78	U	**13.4**		**2.9**	J	**35.1**		**44.1**		**17.4**		**19.9**	
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.214	U	1.99	U	1.78	U	2.13	U	1.23	U	1.23	U	1.83	U	1.78	U	0.236	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**0.69**	J	1.99	U	**0.964**	J	**6.98**		1.98	U	1.98	U	**1.19**	J	**0.679**	J	0.381	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.327	U	1.99	U	1.78	U	2.13	U	1.88	U	1.88	U	1.83	U	1.78	U	0.362	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**0.881**	J	1.99	U	**0.388**	J	**2.41**		1.64	U	**2.28**	J	**0.845**	J	**0.754**	J	0.318	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.599	U	1.99	U	1.78	U	2.13	U	3.44	U	3.44	U	1.83	U	1.78	U	0.662	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.206**	J	1.99	U	1.78	U	**1.38**	J	1.13	U	**1.8**	J	1.83	U	1.78	U	0.217	U
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		0.505	U	1.99	U	1.78	U	2.13	U	2.9	U	2.9	U	1.83	U	1.78	U	0.558	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	0.439	U	1.99	U	1.78	U	**5.16**		2.52	U	2.52	U	1.83	U	1.78	U	0.485	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.369**	J	1.99	U	**0.32**	J	2.13	U	**1.18**	J	**2.88**	JF	**1.25**		**1.34**	J	**1.03**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		0.975	U	1.99	U	1.78	U	2.13	U	5.6	U	5.6	U	1.83	U	1.78	U	1.08	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	0.272	U	1.99	U	**0.288**	J	**0.4**		1.56	U	1.56	U	1.83	U	1.78	U	0.3	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.854	U	1.99	U	1.78	U	2.13	U	4.9	U	4.9	U	1.83	U	**1.12**	J	0.943	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.265	U	1.99	U	1.78	U	2.13	U	1.52	U	1.52	U	1.83	U	1.78	U	0.292	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.324	U	1.99	U	1.78	U	2.13	U	1.86	U	1.86	U	1.83	U	1.78	U	0.358	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.285	U	1.99	U	1.78	U	2.13	U	1.64	U	1.64	U	1.83	U	1.78	U	0.315	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.216	U	1.99	U	1.78	U	2.13	U	1.24	U	1.24	U	1.83	U	1.78	U	0.238	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.226	U	1.99	U	1.78	U	2.13	U	1.3	U	1.3	U	1.83	U	1.78	U	0.25	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		0.394	U	1.99	U	1.78	U	2.13	U	2.26	U	2.28	U	1.83	U	1.78	U	0.435	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		**2.45**		1.99	U	**1.2**	J	**8.06**	B	6.66	U	**25.5**	B	**5.8**	B	**5.33**	B	1.28	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		1.06	U	1.99	U	1.78	U	2.13	U	6.06	U	6.06	U	1.83	U	1.78	U	1.17	U
N-EtFOSAA	2991-50-6	ng/l		0.7	U	1.99	U	1.78	U	**4.24**		4.02	U	4.02	U	1.83	U	1.78	U	0.774	U
N-MeFOSAA	2355-31-9	ng/l		0.564	U	1.99	U	1.78	U	2.13	U	3.24	U	3.24	U	1.83	U	1.78	U	0.623	U
PFAS VT 5 (total)		ng/l	20	**0.575**	JY	1.99	U	**0.608**	JY	**6.94**	Y	**1.18**	Y	**4.68**	Y	**1.25**	Y	**1.34**	Y	**1.03**	Y
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		**0.449**	J	1.93	U	1.81	U	**1.02**	J	1.19	U	1.19	U	1.82	U	1.82	U	0.21	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**4.57**	J	9.67	U	**6.7**	J	**7.05**	J	**27.5**	J	**24.6**	J	**59.6**		**20.2**		**24.0**	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.217	U	1.93	U	1.81	U	1.93	U	1.23	U	1.23	U	1.82	U	1.82	U	0.126	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.8**	U	1.93	U	**3.02**		**2.54**		1.98	U	**3.26**	J	**2.05**		**1.51**	J	**0.769**	J
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.332	U	1.93	U	1.81	U	**0.386**	J	1.88	U	1.88	U	1.82	U	1.82	U	0.331	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**1.63**	J	1.93	U	**2.15**		**3.63**		**2.30**	J	**3.52**	J	**1.04**	J	**0.979**	J	**0.631**	J
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.608	U	1.93	U	1.81	U	1.93	U	3.44	U	3.44	U	1.82	U	1.82	U	0.606	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**2.8**	J	1.93	U	**0.552**	J	**1.31**	J	1.13	U	**1.52**	J	**0.561**	J	**0.452**	J	**0.300**	J
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	0.446	U	1.93	U	1.81	U	**1.5**	J	2.52	U	2.52	U	1.82	U	**0.513**	J	0.444	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.541**	J	1.93	U	**0.457**	J	**3.16**		1.18	U	**3.88**	J	**1.08**	J	**1.3**	J	**0.550**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		0.991	U	1.93	U	1.81	U	1.93	U	5.60	U	5.6	U	1.82	U	1.82	U	0.987	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	0.276	U	1.93	U	**0.37**	J	**0.452**	J	1.56	U	1.56	U	1.82	U	1.82	U	0.275	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.867	U	1.93	U	1.81	U	1.93	U	4.90	U	4.9	U	1.82	U	**0.99**	J	0.864	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.269	U	1.93	U	1.81	U	**0.313**	J	1.52	U	1.52	U	1.82	U	1.82	U	0.268	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.329	U	1.93	U	1.81	U	1.93	U	1.86	U	1.86	U	1.82	U	1.82	U	0.328	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.289	U	1.93	U	1.81	U	1.93	U	1.64	U	1.64	U	1.82	U	1.82	U	0.288	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.219	U	1.93	U	1.81	U	1.93	U	1.24	U	1.24	U	1.82	U	1.82	U	0.218	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.23	U	1.93	U	1.81	U	1.93	U	1.30	U	1.3	U	1.82	U	1.82	U	0.229	U
PFAS VT 5 (total)		ng/l	20	**3.341**	JY	1.93	U	**1.379**	JY	**6.81**	Y	8.27	UY	**5.4**	Y	**1.64**	Y	**2.26**	Y	**0.850**	JY

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
[3]FAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^ 1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Rutland Facility 3						Springfield Facility 1					
				Wastewater Tank						Wastewater Tank					
				8/4/2022		8/10/2022		8/17/2022		8/3/2022		8/10/2022		8/17/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)															
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		1.98	U	0.265	J	0.208	U	61.6	J	54.3	J	45.3	J
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		0.439	J	1.23	J	0.378	J	88.5	U	87.9	U	77	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		1.98	U	1.84	U	0.215	U	88.5	U	87.9	U	46.2	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		0.87	J	1.38	J	0.438	J	63.4	J	81.2	J	76.2	J
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	1.98	U	1.84	U	0.329	U	88.5	U	87.9	U	70.9	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		0.945	J	1.15	J	0.627	J	248		309		259	J
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		1.98	U	1.84	U	0.602	U	88.5	U	87.9	U	130	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	0.308	J	0.49		0.312	J	162		164		144	J
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		1.98	U	1.84	U	0.609	JF	88.5	U	87.9	U	109	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	1.98	U	1.84	U	0.441	U	1,900		1,900		987	F
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	0.546	J	0.682		0.469	J	63.7	J	82.3		77.7	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		1.98	U	1.84	U	0.98	U	88.5	U	87.9	U	211	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	1.98	U	1.84	U	0.273	U	88.5	U	87.9	U	58.8	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		1.98	U	1.84	U	0.858	U	88.5	U	87.9	U	185	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		1.98	U	1.84	U	0.266	U	88.5	U	22	J	57.3	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		1.98	U	1.84	U	0.326	U	88.5	U	87.9	U	70.2	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		1.98	U	1.84	U	0.286	U	88.5	U	87.9	U	61.7	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		1.98	U	1.84	U	0.217	U	17.3	J	87.9	U	46.8	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		1.98	U	1.84	U	0.228	U	88.5	U	87.9	U	49	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		1.98	U	1.84	U	0.396	U	88.5	U	21.4	J	85.2	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		5.86	B	1.8	U	1.17	U	14,500		14,400		11,200	
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		1.98	U	1.84	U	1.06	U	88.5	U	87.9	U	228	U
N-EtFOSAA	2991-50-6	ng/l		1.98	U	1.84	U	0.704	U	122		81.6	J	152	U
N-MeFOSAA	2355-31-9	ng/l		1.98	U	1.84	U	0.567	U	118		64	J	122	U
PFAS VT 5 (total)		ng/l	20	0.854	Y	1.172	Y	0.781	Y	2,126	Y	2,146	Y	1,209	FJY
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)															
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		2	U	1.98	U	0.21	U	37.5		41.8		48.7	
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		6.58	J	7.52	J	6.73	J	391		365		1,140	
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		2	U	1.98	U	0.217	U	8.86	U	9.77	U	1.23	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		1.6	J	1.91	J	1.25	J	778		870		2,350	
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	2	U	1.98	U	0.332	U	8.86	U	9.77	U	1.88	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		3.39		1.33	J	1.22	J	1,170		1,570		2,870	
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		2	U	1.98	U	0.608	U	8.86	U	9.77	U	3.44	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	0.628	J	0.632	J	0.453	J	277		299		392	
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	2	U	1.98	U	0.446	U	290		328		708	
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	0.692	J	0.711	J	0.41	J	51.2		78.7		132	
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		2	U	1.98	U	0.991	U	8.86	U	9.77	U	5.6	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	2	U	1.98	U	0.276	U	2.13		3.38		8.76	J
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		2	U	1.98	U	0.867	U	8.86	U	9.77	U	4.9	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.312	J	1.98	U	0.269	U	4.41		6.43	J	20.3	
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		2	U	1.98	U	0.329	U	8.86	U	9.77	U	4.26	J
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		2	U	1.98	U	0.289	U	8.86	U	9.77	U	1.64	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		2	U	1.98	U	0.219	U	8.86	U	9.77	U	1.24	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		2	U	1.98	U	0.23	U	8.86	U	9.77	U	1.46	J
PFAS VT 5 (total)		ng/l	20	1.32	Y	1.343	Y	0.863	Y	620.3	Y	709.1	Y	1,241	Y

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
PFAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^ 1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 2
AEROSPACE AND METAL FINISHING FACILITY STUDY
SLUDGE PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	Vergennes Facility 1						Brattleboro Facility 1								Rutland Facility 1				Rutland Facility 2			
			PRETREATMENT SLUDGE						NA CAKE		COMBINED FILTER CAKE						Sludge				Sludge			
			10/15/2021		1/15/2022		3/8/2022		10/25/2021		11/5/2021		1/26/2022		2/25/2022		12/22/2021		2/25/2022		12/22/2021		2/25/2022	
			Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS) - LCMSMS-ID																								
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/g	0.125	U	0.098	U	0.379	U	11.9	U	0.485	U	--		7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/g	0.073	U	0.057	U	0.758	U	6.94	U	0.282	U	12.3	U	14.8	U	0.342	U	**0.064**	J	0.589	U	0.904	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	0.268	U	**0.245**	J	1.52	U	25.5	U	1.04	U	--		29.5	U	0.684	U	0.804	U	1.18	U	1.81	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/g	0.148	U	**0.229**	J	0.758	U	14.1	U	0.572	U	12.3	U	14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/g	0.194	U	0.152	U	0.379	U	18.5	U	0.753	U	--		7.38	U	0.171	U	0.804	U	0.589	U	0.904	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/g	0.168	U	0.132	U	0.758	U	16.1	U	0.653	U	12.3	U	14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/g	0.438	U	0.343	U	0.758	U	41.8	U	1.7	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/g	0.145	U	0.133	U	0.379	U	13.8	U	0.561	U	6.13	U	7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/g	--		0.246	U	0.758	U	39.8	U	1.22	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/g	**0.552**	J	**0.764**		0.379	U	39.8	U	**8.95**	F	--		73.8	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/g	**0.499**	J	**0.318**	J	0.379	U	12.8	U	0.521	U	6.13	U	7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/g	0.959	U	0.752	U	1.52	U	91.5	U	3.72	U	--		29.5	U	0.684	U	0.804	U	1.18	U	1.81	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/g	**0.786**	J	**0.553**	J	0.379	U	22.9	U	0.933	U	--		7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/g	0.491	U	0.385	U	0.758	U	46.8	U	1.9	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/g	0.215	U	0.168	U	0.379	U	20.5	U	0.834	U	--		7.38	U	0.171	U	0.201	U	0.294	U	0.904	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/g	0.224	U	0.176	U	0.758	U	21.4	U	0.871	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/g	0.656	U	0.514	U	0.758	U	62.6	U	2.54	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/g	0.173	U	**0.293**	J	0.758	U	16.5	U	0.672	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/g	**0.279**	J	**0.277**	J	0.758	U	14.3	U	0.582	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/g	0.207	U	0.162	U	1.52	U	19.7	U	0.803	U	--		29.5	U	0.684	U	0.804	U	1.18	U	1.81	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/g	**0.714**	J	**0.737**	J	**0.881**		54.9	U	2.23	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/g	0.92	U	0.722	U	0.758	U	87.8	U	3.57	U	--		14.8	U	0.342	U	0.403	U	0.589	U	0.904	U
N-EtFOSAA	2991-50-6	ng/g	**0.308**	J	**0.314**	J	0.758	U	25.8	U	1.05	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
N-MeFOSAA	2355-31-9	ng/g	0.646	U	0.507	U	0.758	U	61.6	U	2.51	U	6.13	U	14.8	U	0.342	U	0.402	U	0.589	U	0.904	U

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/Lg	nanograms per gram (ppb)
U	not detected above laboratory reporting limit
Y	calculated value
E	result exceeded calibration range
J	estimated; less than reporting limit, but greater than the method detection limit
F	ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Result is estimated maximum.
Blank Cell	Not Analyzed
Bold	Concentration above laboratory detection limit

APPENDIX A

ANALYTICAL REPORT

Lab Number:	L2155560
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDEC P2
Project Number:	Not Specified
Report Date:	10/29/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2155560-01	GE-3-0306 EFFLUENT	WATER	RUTLAND, VT	10/06/21 11:50	10/12/21
L2155560-02	GE-3-1270-EFFLUENT	WATER	RUTLAND, VT	10/06/21 10:48	10/12/21
L2155560-03	FIELD BLANK	WATER	RUTLAND, VT	10/06/21 10:48	10/12/21

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VTDEC P2 **Lab Number:** L2155560
Project Number: Not Specified **Report Date:** 10/29/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2155560-01 and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2155560-01 and -02: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1559893-4: This blank represents the TOP oxidation blank associated with L2155560-01 and -02. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 10/29/21

ORGANICS

SEMIVOLATILES

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 11:50
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 11:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	0.718	J	ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	0.408	1
Perfluorohexanoic Acid (PFHxA)	0.357	JF	ng/l	1.80	0.296	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	0.221	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	0.307	J	ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.62		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	1.39	JF	ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.80	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.885	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.524	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01 Date Collected: 10/06/21 11:50

Client ID: GE-3-0306 EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	62		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**324**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**186**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**45**	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**65**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**61**	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**258**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	75		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		22-136

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 11:50
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 23:11
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.61	J	ng/l	6.96	0.356	1
Perfluoropentanoic Acid (PFPeA)	1.67	J	ng/l	1.74	0.346	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.208	1
Perfluorohexanoic Acid (PFHxA)	0.838	J	ng/l	1.74	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.214	1
Perfluoroheptanoic Acid (PFHpA)	0.300	J	ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.328	1
Perfluorooctanoic Acid (PFOA)	0.538	J	ng/l	1.74	0.206	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.600	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.74	0.440	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.977	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.855	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.325	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01 Date Collected: 10/06/21 11:50

Client ID: GE-3-0306 EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	62		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	63		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	75		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	67		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	60		50-150

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02
Client ID: GE-3-1270-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 12:13
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.394	J	ng/l	1.74	0.355	1
Perfluoropentanoic Acid (PFPeA)	0.690	J	ng/l	1.74	0.345	1
Perfluorobutanesulfonic Acid (PFBS)	0.864	JF	ng/l	1.74	0.207	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.394	1
Perfluorohexanoic Acid (PFHxA)	0.881	J	ng/l	1.74	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.214	1
Perfluoroheptanoic Acid (PFHpA)	0.206	J	ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.327	1
Perfluorooctanoic Acid (PFOA)	0.369	J	ng/l	1.74	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.45		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.599	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.74	0.439	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.975	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.564	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.854	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.505	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.700	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.285	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02 Date Collected: 10/06/21 10:48

Client ID: GE-3-1270-EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**48**	Q	58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**50**	Q	62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**281**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**52**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**55**	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**59**	Q	62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**191**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	71		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**244**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		22-136

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02
Client ID: GE-3-1270-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 23:27
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.57	J	ng/l	7.08	0.361	1
Perfluoropentanoic Acid (PFPeA)	1.80		ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	0.449	J	ng/l	1.77	0.210	1
Perfluorohexanoic Acid (PFHxA)	1.63	J	ng/l	1.77	0.290	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	0.217	1
Perfluoroheptanoic Acid (PFHpA)	0.280	J	ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	0.541	J	ng/l	1.77	0.209	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.446	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.269	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.77	0.991	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.867	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.329	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02 Date Collected: 10/06/21 10:48

Client ID: GE-3-1270-EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	76		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	68		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	60		50-150

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-03
Client ID: FIELD BLANK
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 12:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.214	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	0.407	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	0.296	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	0.221	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.62	J	ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.620	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.281	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.454	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.80	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.584	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.234	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.883	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.724	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.335	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.223	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-03 Date Collected: 10/06/21 10:48

Client ID: FIELD BLANK Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	64		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	73		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Lab ID: L2155560-01
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 11:50
Date Received: 10/12/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.61	J	ng/l	6.61	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.718	J	ng/l	1.67	J	ng/l	0.952	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.357	JF	ng/l	0.838	J	ng/l	0.481	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.300	J	ng/l	0.300	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.307	J	ng/l	0.538	J	ng/l	0.231	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	1.39	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							8.57	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Lab ID: L2155560-02
Client ID: GE-3-1270-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Units	Post-Treatment Results	Post-Treatment Qualifier	Units	Difference Results	Difference Qualifier	Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.394	J	ng/l	4.57	J	ng/l	4.18	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.690	J	ng/l	1.80		ng/l	1.11		ng/l
Perfluorobutanesulfonic Acid (PFBS)	0.864	JF	ng/l	0.449	J	ng/l	0	J	ng/l
Perfluorohexanoic Acid (PFHxA)	0.881	J	ng/l	1.63	J	ng/l	0.749	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.206	J	ng/l	0.280	J	ng/l	0.074	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.369	J	ng/l	0.541	J	ng/l	0.172	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6.28	J	ng/l

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 05:28
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1559407-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.49	J	ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 05:28
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1559407-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	101		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	124		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	8.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.548	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:54
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	8.00	0.408
Perfluoropentanoic Acid (PFPeA)	1.01	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:54
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	59		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**59**	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**59**	Q	62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**57**	Q	62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	66		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	62		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	53		50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1559407-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	100		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	108		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	102		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	99		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	97		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	98		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	99		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	94		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	103		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	86		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	102		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	113		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	104		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	105		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1559407-2								
Perfluorotridecanoic Acid (PFTrDA)	113		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	102		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	98				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	85				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-02 Batch: WG1559893-2 WG1559893-3								
Perfluorobutanoic Acid (PFBA)	111		109		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	110		108		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	106		103		65-157	3		30
Perfluorohexanoic Acid (PFHxA)	114		114		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	96		100		52-156	4		30
Perfluoroheptanoic Acid (PFHpA)	111		109		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	104		108		69-177	4		30
Perfluorooctanoic Acid (PFOA)	113		109		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	112		113		61-179	1		30
Perfluorononanoic Acid (PFNA)	104		102		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	96		94		52-151	2		30
Perfluorodecanoic Acid (PFDA)	108		103		63-171	5		30
Perfluorononanesulfonic Acid (PFNS)	100		100		48-150	0		30
Perfluoroundecanoic Acid (PFUnA)	102		104		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	124		122		38-156	2		30
Perfluorododecanoic Acid (PFDoA)	124		121		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	102		107		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	104		111		59-182	7		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-02 Batch: WG1559893-2 WG1559893-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		93		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		74		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		76		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		83		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		90		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		71		22-136

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-3 QC Sample: L2154676-01 Client ID: MS Sample												
Perfluorobutanesulfonic Acid (PFBS)	ND	34.4	31.8	92		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.2	35.6	98		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	38.7	36.6	95		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36.4	31.8	87		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	38.7	35.5	92		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	35.4	32.9	93		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.241J	38.7	37.2	96		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.58J	36.8	37.3	97		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.8	36.5	99		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.7	35.1	91		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.9	32.5	90		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.7	34.4	89		-	-		63-171	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.7	42.7	110		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.7	35.1	91		-	-		60-153	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	38.7	36.9	95		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.7	39.6	102		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	38.7	41.8	108		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.7	37.6	97		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	377	327	87		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36.5	30.2	83		-	-		69-143	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	36.1	34.3	95		-	-		55-158	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDEC P2 ***Lab Number:*** L2155560

Project Number: Not Specified ***Report Date:*** 10/29/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-3 QC Sample: L2154676-01 Client ID: MS Sample												
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	36.5	33.2	91		-	-		52-156	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	80				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67				22-136
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-4 QC Sample: L2154676-03 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.52JF	1.63J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-4 QC Sample: L2154676-03 Client ID: DUP Sample						
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		77		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		83		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		86		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		90		62-124
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		88		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		94		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		105		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	116		115		10-165

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2155560-01A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-01B	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-01C	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-01D	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-02A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-02B	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-02C	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-02D	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-03A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

Data Qualifiers

NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
P	- The RPD between the results for the two columns exceeds the method-specified criteria.
Q	- The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
R	- Analytical results are from sample re-analysis.
RE	- Analytical results are from sample re-extraction.
S	- Analytical results are from modified screening analysis.
V	- The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
Z	- The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 10/13/21

ALPHA Job #: L2155560

Client Information

Client: Weston & Sampson
Address: 9 Saint Waterbury VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information

Project Name: VT DEC PFAS Inputs
Project Location: Rutland, VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steve LaRosa
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Report to MDE
send results in enviodata8 format

Please specify Metals or TAL.

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information

☒ Same as Client Info
PO #

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility:
☐ NJ ☐ NY
☐ Other:

Sample Filtration

☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: A7_537isotope	ANALYSIS: TOP-PFAS	Total Bottle
55560-01	GE-3-0306Effluent	10/6/21	1150	WW	MLR	X	X	
-02	GE-3-1270-Effluent	10/6/21	1648	WW	MLR	X	X	
-03	Field Blank	—	—	—	—	X		

Container Type: P P
Preservative: / /

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	10/6/21 1500	Fridge	10/6/21 1500
			10/12/21 1850
	10/12/21 18:30		10/13/21 01:30
Wendy Manning	10/13/21 4:00		10/13/21 4:20
	10/13/21 6:00		10/13/21 0600

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2156904
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS/COLBAS AERO
Project Number:	Not Specified
Report Date:	11/05/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2156904-01	PRETREATMENT SLUDGE	SLUDGE	VERGENNES, VT	10/15/21 11:30	10/18/21
L2156904-02	TANK033	WATER	VERGENNES, VT	10/15/21 11:25	10/18/21

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2156904-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2156904-01: The MeOH fraction of the extraction is reported for Perfluorooctanesulfonamide (FOSA) due to better extraction efficiency of the M8FOSA Surrogate (Extracted Internal Standard).

L2156904-02RE: The sample was re-extracted within holding time due to QC failures in the original extraction. The results of the re-extraction are reported. The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

WG1564148-3 and WG1564148-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2156904-02: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2156904-02: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2156904-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1563880-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1563880-4: This blank represents the TOP oxidation blank associated with L2156904-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 11/05/21

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01
Client ID: PRETREATMENT SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:30
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 07:32
Analyst: HT
Percent Solids: 15%

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.60	0.073	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.60	0.148	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.802	0.125	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.21	0.207	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.60	0.168	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	3.21	0.268	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.802	0.145	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.802	0.194	1
Perfluorooctanoic Acid (PFOA)	0.499	J	ng/g	0.802	0.134	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.714	J	ng/g	1.60	0.576	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.60	0.438	1
Perfluorononanoic Acid (PFNA)	0.786	J	ng/g	0.802	0.240	1
Perfluorooctanesulfonic Acid (PFOS)	0.552	J	ng/g	0.802	0.417	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.802	0.215	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.60	0.920	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	3.21	0.959	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.60	0.646	1
Perfluoroundecanoic Acid (PFUnA)	0.279	J	ng/g	1.60	0.150	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.60	0.491	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.308	J	ng/g	1.60	0.271	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.60	0.224	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.60	0.656	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.60	0.173	1

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01 Date Collected: 10/15/21 11:30

Client ID: PRETREATMENT SLUDGE Date Received: 10/18/21

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	110		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	74		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**327**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**244**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		24-159

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01
Client ID: PRETREATMENT SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:30
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/03/21 12:42
Analyst: MP
Percent Solids: 15%

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.60	0.314	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-117

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02
Client ID: TANK033
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:25
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 19:08
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	18.4	J	ng/l	20.0	1.02	1
Perfluoropentanoic Acid (PFPeA)	2.73	J	ng/l	5.00	0.990	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	5.00	0.595	1
Perfluorohexanoic Acid (PFHxA)	3.71	J	ng/l	5.00	0.820	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	5.00	0.613	1
Perfluoroheptanoic Acid (PFHpA)	0.910	J	ng/l	5.00	0.563	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	5.00	0.940	1
Perfluorooctanoic Acid (PFOA)	1.42	J	ng/l	5.00	0.590	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	5.00	1.72	1
Perfluorononanoic Acid (PFNA)	3.48	J	ng/l	5.00	0.780	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	5.00	1.26	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	5.00	0.760	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	5.00	2.80	1
Perfluoroundecanoic Acid (PFUnA)	2.11	J	ng/l	5.00	0.650	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	5.00	2.45	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	5.00	0.930	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	5.00	0.818	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	5.00	0.620	1

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02 Date Collected: 10/15/21 11:25

Client ID: TANK033 Date Received: 10/18/21

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	75		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	72		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	59		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**46**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	76		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	102		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	90		50-150

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02 RE
Client ID: TANK033
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:25
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/30/21 19:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/29/21 18:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.67	J	ng/l	5.00	1.02	1
Perfluoropentanoic Acid (PFPeA)	1.81	J	ng/l	5.00	0.990	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	5.00	0.595	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	5.00	1.13	1
Perfluorohexanoic Acid (PFHxA)	2.16	J	ng/l	5.00	0.820	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	5.00	0.613	1
Perfluoroheptanoic Acid (PFHpA)	0.650	J	ng/l	5.00	0.563	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	5.00	0.940	1
Perfluorooctanoic Acid (PFOA)	0.780	J	ng/l	5.00	0.590	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	5.00	3.33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	5.00	1.72	1
Perfluorononanoic Acid (PFNA)	3.10	J	ng/l	5.00	0.780	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	5.00	1.26	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	5.00	0.760	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	5.00	3.03	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	5.00	2.80	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	5.00	1.62	1
Perfluoroundecanoic Acid (PFUnA)	2.15	J	ng/l	5.00	0.650	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	5.00	2.45	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	5.00	1.45	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	5.00	2.01	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	5.00	0.930	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	5.00	0.818	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	5.00	0.620	1

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02 RE Date Collected: 10/15/21 11:25
Client ID: TANK033 Date Received: 10/18/21
Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY
RESULTS SUMMARY

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Lab ID: L2156904-02
Client ID: TANK033
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:25
Date Received: 10/18/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	1.67	J	ng/l	18.4	J	ng/l	16.7	J	ng/l
Perfluoropentanoic Acid (PFPeA)	1.81	J	ng/l	2.73	J	ng/l	0.920	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	2.16	J	ng/l	3.71	J	ng/l	1.55	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.650	J	ng/l	0.910	J	ng/l	0.260	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.780	J	ng/l	1.42	J	ng/l	0.640	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	3.10	J	ng/l	3.48	J	ng/l	0.380	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	2.15	J	ng/l	2.11	J	ng/l	0	J	ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							20.5	J	ng/l

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:02
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:02
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	0		0-25
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		22-136

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:51
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-4					
Perfluorobutanoic Acid (PFBA)	6.67	J	ng/l	8.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.448	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.328	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:51
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	81		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	109		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	98		50-150

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 06:59
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1564148-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 06:59
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1564148-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	116		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	62		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		24-159

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/03/21 12:27
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1564148-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74		10-117

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/30/21 18:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/29/21 18:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1565045-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.468	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/30/21 18:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/29/21 18:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1565045-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	68		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1563880-2 WG1563880-3								
Perfluorobutanoic Acid (PFBA)	102		100		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	102		99		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	101		97		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	100		98		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	105		105		52-156	0		30
Perfluoroheptanoic Acid (PFHpA)	102		100		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	99		96		69-177	3		30
Perfluorooctanoic Acid (PFOA)	102		102		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		98		61-179	1		30
Perfluorononanoic Acid (PFNA)	89		89		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	106		101		52-151	5		30
Perfluorodecanoic Acid (PFDA)	98		97		63-171	1		30
Perfluorononanesulfonic Acid (PFNS)	95		95		48-150	0		30
Perfluoroundecanoic Acid (PFUnA)	93		93		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	98		100		38-156	2		30
Perfluorododecanoic Acid (PFDoA)	103		110		67-153	7		30
Perfluorotridecanoic Acid (PFTrDA)	108		111		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	105		106		59-182	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1563880-2 WG1563880-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		102		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		92		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		110		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		91		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		73		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		70		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1564148-2								
Perfluorobutanoic Acid (PFBA)	93		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	94		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	90		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	90		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	94		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	88		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	96		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	87		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	82		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	91		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	84		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	88		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	89		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	87		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	89		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	96		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1564148-2								
Perfluorotridecanoic Acid (PFTrDA)	100		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	94		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	104				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	122				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	137				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1564148-2								
Perfluorooctanesulfonamide (FOSA)	111		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74				10-117

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1565045-2								
Perfluorobutanoic Acid (PFBA)	105		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	103		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	102		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	111		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	104		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	100		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	101		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	104		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	96		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	96		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	99		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	81		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	99		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	109		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	104		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1565045-2								
Perfluorotridecanoic Acid (PFTrDA)	105		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	106		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81				22-136

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1564148-3 WG1564148-4 QC Sample: L2156904-01 Client ID: PRETREATMENT SLUDGE												
Perfluorobutanoic Acid (PFBA)	ND	16.2	14.8	92		15.3	92		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	ND	16.2	14.9	92		15.2	92		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	14.4	14.0	98		13.9	95		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	15.1	15.1	100		15.2	98		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	ND	16.2	14.7	91		15.0	91		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	15.2	15.3	101		15.1	97		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	ND	16.2	14.6	90		14.9	90		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	14.8	14.0	95		14.4	95		67-130	3		30
Perfluorooctanoic Acid (PFOA)	0.499J	16.2	14.9	89		14.8	86		69-133	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.714J	15.4	16.0	99		15.7	95		64-140	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	15.4	14.5	94		14.3	91		70-132	1		30
Perfluorononanoic Acid (PFNA)	0.786J	16.2	14.7	86		14.8	85		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	0.552J	15	15.7	101		15.0	94		68-136	5		30
Perfluorodecanoic Acid (PFDA)	ND	16.2	14.1	87		14.2	86		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	15.5	14.0	90		13.3	84		65-137	5		30
Perfluorononanesulfonic Acid (PFNS)	ND	15.6	13.8	89		14.1	88		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	16.2	16.2	100		15.7	95		63-144	3		30
Perfluoroundecanoic Acid (PFUnA)	0.279J	16.2	14.1	86		14.3	85		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	ND	15.6	13.8	89		14.4	90		59-134	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.308J	16.2	17.3	105		17.2	102		61-139	1		30
Perfluorododecanoic Acid (PFDoA)	ND	16.2	15.7	97		15.8	95		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	16.2	17.7	109		18.3	110		66-139	3		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1564148-3 WG1564148-4 QC Sample: L2156904-01 Client ID: PRETREATMENT SLUDGE												
Perfluorotetradecanoic Acid (PFTA)	ND	16.2	14.2	88		14.9	90		69-133	5		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**225**	Q	**239**	Q	19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	131		136		14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**310**	Q	**323**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		56		34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		54		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		76		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**69**	Q	**74**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**57**	Q	**57**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**62**	Q	**63**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		95		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		72		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		75		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	**58**	Q	**58**	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**57**	Q	**57**	Q	58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		97		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**71**	Q	**73**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**71**	Q	75		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		101		74-139

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO

Project Number: Not Specified

Lab Number: L2156904

Report Date: 11/05/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-3 QC Sample: L2158657-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	39.7	41.6	105		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.399J	39.7	40.8	102		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	35.3	35.3	100		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	37.2	40.7	109		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	39.7	41.2	104		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	37.3	36.3	97		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	39.7	39.7	100		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	36.3	36.2	100		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	39.7	40.4	102		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	37.8	39.7	105		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	37.8	40.8	108		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	39.7	38.4	97		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	36.8	35.4	96		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	39.7	38.1	96		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	38.1	37.4	98		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	38.2	38.5	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.7	35.8	90		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.7	38.8	98		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38.3	40.6	106		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.7	36.8	93		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	39.7	36.2	91		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.7	40.7	102		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO

Project Number: Not Specified

Lab Number: L2156904

Report Date: 11/05/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-3 QC Sample: L2158657-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	39.7	42.6	107		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.7	42.2	106		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	92				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-4 QC Sample: L2158657-05 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	17.4	17.2	ng/l	1		30
Perfluoropentanoic Acid (PFPeA)	31.6	31.2	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	2.78	2.69	ng/l	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	40.7	40.9	ng/l	0		30
Perfluoropentanesulfonic Acid (PFPeS)	0.659J	0.593J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	21.0	20.4	ng/l	3		30
Perfluorohexanesulfonic Acid (PFHxS)	4.18	4.36	ng/l	4		30
Perfluorooctanoic Acid (PFOA)	43.0	43.4	ng/l	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.714J	0.668J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	5.26	4.85	ng/l	8		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-4 QC Sample: L2158657-05 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		89		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**207**	Q	**207**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		86		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**172**	Q	**167**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		117		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		82		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		27		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		84		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-4 QC Sample: L2158657-05 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		75		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01
Client ID: PRETREATMENT SLUDGE
Sample Location: VERGENNES, VT

Sample Depth:
Matrix: Sludge

Date Collected: 10/15/21 11:30
Date Received: 10/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	14.9		%	0.100	0.100	1	-	10/29/21 10:04	121,2540G	NG

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1564746-1 QC Sample: L2158246-01 Client ID: DUP Sample						
Solids, Total	45.4	46.3	%	2		10

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2156904-01A	Plastic 8oz unpreserved	A	NA		4.7	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2156904-01B	Plastic 8oz unpreserved	A	NA		4.7	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2156904-02A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2156904-02B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2156904-02C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2156904-02D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC PFAS/COLBAS AERO
Project Number:

Lab Number: L2156904
Report Date: 11/05/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581, 8 Walkup Dr., TEL: 508-898-9220, FAX: 508-898-9193
Mansfield, MA 02048, 320 Forbes Blvd, TEL: 508-822-9300, FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 10/19/21

ALPHA Job #: L2156904

Client Information
Client: Weston & Sampson
Address: 98 S Main, Waterbury VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information
Project Name: VTDEC PFAS P2/Collins Aero
Project Location: Vergennes, VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steve LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☒ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
PH on Sample Pretreatment Sludge: ~10
Please report in envirodata 8 format

Please specify Metals or TAL.

ANALYSIS: TOC; PFAS 537 Isotope

Sample Filtration: ☐ Done ☐ Lab to do
Preservation: ☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TOC	PFAS 537 Isotope	Sample Specific Comments	Total Bottles
56904-01	Pretreatment Sludge	10/15/21	1030	Sludge	MLR	X	X		
-02	Tank 033	10/15/21	1125	WW	MLR	X	X		

Preservative Code	Container Code
A = None	P = Plastic
B = HCl	A = Amber Glass
C = HNO_3	V = Vial
D = H_2SO_4	G = Glass
E = NaOH	B = Bacteria Cup
F = MeOH	C = Cube
G = $NaHSO_4$	O = Other
H = $Na_2S_2O_3$	E = Encore
K/E = Zn Ac/NaOH	D = BOD Bottle
O = Other	

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

	TOC	PFAS 537 Isotope
Container Type	P	P
Preservative	/	/

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Kelly	10/15/21 1730	Fridge	10/15/21 1730
[illegible]	10/18/2021 1250	[illegible]	10/18/21 1250
R. Konaher	10/18/21 2030	[illegible]	10/19/21 00:50
Wendy Moreno	10/19/21 4:00	[illegible]	10/19/21 4:30

[illegible] 10/19/21 5:20 [illegible] 10/19/21 0530

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2158553
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	GSP COATING
Project Number:	Not Specified
Report Date:	11/16/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2158553-01	NA CAKE	SOLID	BRATTLEBORO VT	10/25/21 12:05	10/26/21
L2158553-02	SEAL TANK	WATER	BRATTLEBORO VT	10/25/21 12:15	10/26/21

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2158553-01RE\D: The sample was re-extracted at lesser volume due to matrix interference in the original extraction. The results of the re-extraction are reported. The sample has elevated detection limits due to the analytical dilution required by the sample matrix.

L2158553-01RE\D, WG1568346-3D and WG1568346-4D: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2158553-02: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

The Extracted Internal Standard recovery for the WG1568346-1 Method Blank, associated with L2158553-01RE\D, is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (less than 5%); however, the method blank is non-detect for all associated target analytes; therefore, no further action was taken.

WG1568346-2: The Extracted Internal Standard recovery is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (less than 5%); however, all associated target analytes are within criteria; therefore, no further action was taken.

The WG1568346-3D MS recoveries, performed on L2158553-01, are outside the acceptance criteria for perfluorobutanoic acid (pfba) (69%), perfluorobutanesulfonic acid (pfbs) (70%), 1h,1h,2h,2h-perfluorohexanesulfonic acid (4:2fts) (61%), perfluoropentanesulfonic acid (pfpes) (70%), perfluoroheptanoic acid (pfhpa) (70%), perfluorohexanesulfonic acid (pfhxs) (67%, perfluorooctanoic acid (pfoa) (67%), 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (0%), perfluoroheptanesulfonic acid (pfhps) (66%), perfluorononanoic acid (pfna) (62%), perfluorodecanoic acid (pfda) (64%), 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (0%), perfluorononanesulfonic acid (pfns) (0%), n-methyl

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Case Narrative (continued)

perfluorooctanesulfonamidoacetic acid (nmefosaa) (0%), perfluoroundecanoic acid (pfuna) (62%), perfluorodecanesulfonic acid (pfds) (0%), perfluorooctanesulfonamide (fosa) (48%), n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (51%) and perfluorotridecanoic acid (pftrda) (0%) due to the dilution required by the sample matrix.

WG1568346-4D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 11/16/21

ORGANICS

SEMIVOLATILES

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-01 RE\D
Client ID: NA CAKE
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:05
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/13/21 06:06
Analyst: MP
Percent Solids: 25%

Extraction Method: ALPHA 23528
Extraction Date: 11/08/21 09:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	153	6.94	20
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	153	14.1	20
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	76.5	11.9	20
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	306	19.7	20
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	153	16.1	20
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	306	25.5	20
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	76.5	13.8	20
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	76.5	18.5	20
Perfluorooctanoic Acid (PFOA)	ND		ng/g	76.5	12.8	20
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	153	54.9	20
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	153	41.8	20
Perfluorononanoic Acid (PFNA)	ND		ng/g	76.5	22.9	20
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	76.5	39.8	20
Perfluorodecanoic Acid (PFDA)	ND		ng/g	76.5	20.5	20
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	153	87.8	20
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	306	91.5	20
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	153	61.6	20
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	153	14.3	20
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	153	46.8	20
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	153	30.0	20
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	153	25.8	20
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	153	21.4	20
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	153	62.6	20
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	153	16.5	20

Project Name: GSP COATING **Lab Number:** L2158553

Project Number: Not Specified **Report Date:** 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-01 RE\D
Client ID: NA CAKE
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:05
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	136		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**30**	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**49**	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**22**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		24-159

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-02
Client ID: SEAL TANK
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:15
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/06/21 20:39
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 11/05/21 03:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50.0	10.2	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	9.90	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	5.95	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	50.0	11.3	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	8.20	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	6.13	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	5.63	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	9.40	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	5.90	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	34.5	J	ng/l	50.0	33.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	17.2	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	7.80	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	12.6	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	7.60	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	50.0	30.3	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	28.0	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	16.2	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	6.50	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	24.5	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	14.5	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	20.1	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	9.30	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	8.18	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	6.20	1

Project Name: GSP COATING **Lab Number:** L2158553

Project Number: Not Specified **Report Date:** 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-02 Date Collected: 10/25/21 12:15

Client ID: SEAL TANK Date Received: 10/26/21

Sample Location: BRATTLEBORO VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	124		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		22-136

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/06/21 19:49
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 11/05/21 03:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1567435-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/06/21 19:49
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 11/05/21 03:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1567435-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		22-136

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/11/21 01:58
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/08/21 09:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1568346-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.250	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.250	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/11/21 01:58
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/08/21 09:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1568346-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	92		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**4**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1567435-2								
Perfluorobutanoic Acid (PFBA)	100		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	101		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	96		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	111		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	95		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	95		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	91		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	87		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	84		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	85		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	90		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	89		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	88		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	102		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1567435-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	97		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	68				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	73				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	42				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	43				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1568346-2								
Perfluorobutanoic Acid (PFBA)	94		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	91		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	100		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	86		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	94		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	89		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	97		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	89		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	91		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	86		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	94		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	89		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	89		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	94		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	94		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	93		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1568346-2								
Perfluorotridecanoic Acid (PFTrDA)	113		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	102		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	120				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	111				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**3**	Q			10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89				24-159

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-3 QC Sample: L2159211-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.86	37.3	41.5	98		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	3.70	37.3	40.2	98		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	4.23	33.2	37.4	100		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35	37.5	107		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	3.26	37.3	39.2	96		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.460J	35.1	39.6	112		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	3.31	37.3	38.4	94		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	2.84	34.1	36.6	99		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	12.4	37.3	47.7	94		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.57	35.6	40.4	98		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.6	38.4	108		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.782J	37.3	34.4	90		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	11.2	34.6	45.0	98		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.3	34.2	92		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.8	33.3	93		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.9	29.0	81		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.3	41.5	111		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.3	34.5	92		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36	30.0	83		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.3	35.2	94		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.3	41.6	111		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.3	37.8	101		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-3 QC Sample: L2159211-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.3	39.2	105		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.3	37.4	100		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	35				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	27				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	39				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	72				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94				70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-3 QC Sample: L2158553-01 Client ID: NA CAKE												
Perfluorobutanoic Acid (PFBA)	ND	75.8	52.0J	**69**	Q	-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	75.8	55.5J	73		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	67.3	46.8J	**70**	Q	-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	70.9	42.9J	**61**	Q	-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	75.8	53.6J	71		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	71.2	49.8J	**70**	Q	-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	75.8	52.9J	**70**	Q	-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	69.2	46.2J	**67**	Q	-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	75.8	50.5J	**67**	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	72.1	ND	**0**	Q	-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	72.1	47.9J	**66**	Q	-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	75.8	46.8J	**62**	Q	-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	70.3	71.7JF	102		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	75.8	48.5J	**64**	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	72.7	ND	**0**	Q	-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	72.9	ND	**0**	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	75.8	ND	**0**	Q	-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	75.8	46.7J	**62**	Q	-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	73	ND	**0**	Q	-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	75.8	36.5JF	**48**	Q	-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	75.8	38.3J	**51**	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	75.8	59.6J	79		-	-		69-135	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-3 QC Sample: L2158553-01 Client ID: NA CAKE												
Perfluorotridecanoic Acid (PFTrDA)	ND	75.8	ND	**0**	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	75.8	56.8J	75		-	-		69-133	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	137				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**20**	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**57**	Q			61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84				24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113				74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-4 QC Sample: L2159211-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	5.59	5.59	ng/l	0		30
Perfluoropentanoic Acid (PFPeA)	4.76	4.77	ng/l	0		30
Perfluorobutanesulfonic Acid (PFBS)	4.94	4.94	ng/l	0		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	3.82	3.75	ng/l	2		30
Perfluoropentanesulfonic Acid (PFPeS)	0.521J	0.571J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	4.26	4.35	ng/l	2		30
Perfluorohexanesulfonic Acid (PFHxS)	2.83	2.72	ng/l	4		30
Perfluorooctanoic Acid (PFOA)	15.5	16.2	ng/l	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	3.41	4.13	ng/l	19		30
Perfluorooctanesulfonic Acid (PFOS)	11.8	13.5F	ng/l	13		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-4 QC Sample: L2159211-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		63		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		88		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		81		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		71		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		70		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		80		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		71		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		54		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		71		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		74		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		**61**	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		52		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	24		24		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		65		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		**9**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**22**	Q	**22**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51		51		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-4 QC Sample: L2159211-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		43		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-4 QC Sample: L2158553-01 Client ID: NA CAKE						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-4 QC Sample: L2158553-01 Client ID: NA CAKE						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		111		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		113		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		91		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		114		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		108		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		105		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		94		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		119		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		104		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		103		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	136		129		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**30**	Q	48		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**49**	Q	**59**	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		26		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**22**	Q	**19**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		97		54-150

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-4 QC Sample: L2158553-01 Client ID: NA CAKE

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		89		24-159

INORGANICS
&
MISCELLANEOUS

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-01
Client ID: NA CAKE
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:05
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	24.9		%	0.100	0.100	1	-	11/05/21 08:03	121,2540G	NG

Lab Duplicate Analysis

Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1567549-1 QC Sample: L2159902-01 Client ID: DUP Sample						
Solids, Total	63.3	61.9	%	2		10

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2158553-01A	Plastic 8oz unpreserved	A	NA		3.5	Y	Absent		A2-537-ISOTOPE(14)
L2158553-01B	Plastic 8oz unpreserved	A	NA		3.5	Y	Absent		A2-TS(7)
L2158553-02A	Plastic 250ml unpreserved	A	NA		3.5	Y	Absent		A2-537-ISOTOPE(14)
L2158553-02B	Plastic 250ml unpreserved	A	NA		3.5	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: GSP COATING
Project Number:

Lab Number: L2158553
Report Date: 11/16/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 10/27/21

ALPHA Job #: L2158553

Client Information
Client: Weston + Sampson
Address: 98 Main St. Suite 2 Waterbury, VT
Phone: 802-505-8909
Fax:
Email: larosas@wseinc.com

Project Information
Project Name: OSP Coating
Project Location: Brattleboro VT
Project #
(Use Project name as Project #) ✓
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ✓ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO # invoice@wseinc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DFAS-Isotope Dilution	Total Bottle	Sample Specific Comments
58553-01	NA Cake	10/25/21	12:05	Solid		X		
02	Seal Tank	10/25/21	12:15	Liquid		X		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	250mL							
Preservative	—							

Relinquished By:	Date/Time	Received By:	Date/Time
	10/25/21 15:30		10/25/21 15:30
	10/26/21 14:33		10/26/21 14:33
	10/26/21 18:40		10/26/21 18:40
	10/27/21 4:00		10/27/21 04:00
	10/27/21 0520		10/27/21 0520

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2161202
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS P2
Project Number:	Not Specified
Report Date:	11/29/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2161202-01	BLACK OXIDE EFFLUENT	WATER	SWANTON, VT	11/02/21 10:50	11/05/21

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2161202-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2161202-01RE: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%). Please note the sample did not exhibit full oxidation due to matrix interferences.

L2161202-01RE: The sample was re-extracted within holding time due to QC failures in the original extraction. The results of the re-extraction are reported.

L2161202-01RE: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1571085-4: This blank represents the TOP oxidation blank associated with L2161202-01RE.

WG1571085-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1571085-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 11/29/21

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01
Client ID: BLACK OXIDE EFFLUENT
Sample Location: SWANTON, VT

Date Collected: 11/02/21 10:50
Date Received: 11/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/24/21 15:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/12/21 08:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	1.56	J	ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	0.412	1
Perfluorohexanoic Acid (PFHxA)	0.591	J	ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.224	1
Perfluoroheptanoic Acid (PFHpA)	0.730	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	0.941	J	ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.627	1
Perfluorononanoic Acid (PFNA)	0.299	J	ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	1.06	J	ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.733	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	0.292	J	ng/l	1.82	0.226	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01 Date Collected: 11/02/21 10:50

Client ID: BLACK OXIDE EFFLUENT Date Received: 11/05/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**290**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**276**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**223**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	30		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	32		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	52		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01 RE
Client ID: BLACK OXIDE EFFLUENT
Sample Location: SWANTON, VT

Date Collected: 11/02/21 10:50
Date Received: 11/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 16:39
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.33	J	ng/l	9.70	0.395	1
Perfluoropentanoic Acid (PFPeA)	1.06	J	ng/l	1.94	0.384	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.231	1
Perfluorohexanoic Acid (PFHxA)	0.744	J	ng/l	1.94	0.318	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.94	0.238	1
Perfluoroheptanoic Acid (PFHpA)	0.574	JF	ng/l	1.94	0.218	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.364	1
Perfluorooctanoic Acid (PFOA)	0.969	J	ng/l	1.94	0.229	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.667	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	0.302	1
Perfluorooctanesulfonic Acid (PFOS)	0.523	J	ng/l	1.94	0.488	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.294	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.94	1.08	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.252	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.950	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.360	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.317	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	0.240	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01 RE Date Collected: 11/02/21 10:50
Client ID: BLACK OXIDE EFFLUENT Date Received: 11/05/21
Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**33**	Q	0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**269**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**199**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**207**	Q	50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY
RESULTS SUMMARY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Lab ID: L2161202-01
Client ID: BLACK OXIDE EFFLUENT
Sample Location: SWANTON, VT

Date Collected: 11/02/21 10:50
Date Received: 11/05/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.33	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	1.56	J	ng/l	1.06	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.591	J	ng/l	0.744	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.730	J	ng/l	0.574	JF	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.941	J	ng/l	0.969	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	0.299	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	1.06	J	ng/l	0.523	J	ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	0.292	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total								J	ng/l

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/23/21 02:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/12/21 08:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1570529-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	0.456	J	ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.272	J	ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/23/21 02:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/12/21 08:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1570529-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 15:16
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 15:16
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	131		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 16:06
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-4					
Perfluorobutanoic Acid (PFBA)	5.29	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.400	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 16:06
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**255**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**223**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**209**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1570529-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	93		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	102		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	96		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	95		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	107		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	121		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	97		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	88		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	106		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	94		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	99		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	94		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	98		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	96		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	100		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified
Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1570529-2								
Perfluorotridecanoic Acid (PFTrDA)	124		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1571085-2 WG1571085-3								
Perfluorobutanoic Acid (PFBA)	97		102		67-148	5		30
Perfluoropentanoic Acid (PFPeA)	99		103		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	93		98		65-157	5		30
Perfluorohexanoic Acid (PFHxA)	101		103		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	92		96		52-156	4		30
Perfluoroheptanoic Acid (PFHpA)	103		105		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	105		110		69-177	5		30
Perfluorooctanoic Acid (PFOA)	104		105		63-159	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	108		106		61-179	2		30
Perfluorononanoic Acid (PFNA)	96		102		68-171	6		30
Perfluorooctanesulfonic Acid (PFOS)	125		124		52-151	1		30
Perfluorodecanoic Acid (PFDA)	106		109		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	111		105		48-150	6		30
Perfluoroundecanoic Acid (PFUnA)	98		98		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	108		113		38-156	5		30
Perfluorododecanoic Acid (PFDoA)	93		103		67-153	10		30
Perfluorotridecanoic Acid (PFTrDA)	109		114		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	95		102		59-182	7		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1571085-2 WG1571085-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	132		127		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		115		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		116		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		92		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		111		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		103		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	119		128		22-136

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2161202

Report Date: 11/29/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1570529-3 QC Sample: L2160858-01 Client ID: MS Sample												
Perfluorooctanoic Acid (PFOA)	0.411J	35.9	36.2	100		-	-		63-159	-		30
Perfluorononanoic Acid (PFNA)	ND	35.9	31.8	89		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	33.3	36.9	111		-	-		52-151	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96				59-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1570529-4 QC Sample: L2160858-03 Client ID: DUP Sample						
Perfluorooctanoic Acid (PFOA)	23.1	22.3	ng/l	4		30
Perfluorononanoic Acid (PFNA)	0.841J	0.807J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	27.0	26.3	ng/l	3		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		81		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		93		69-131

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2161202-01A	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-537-ISOTOPE(14)
L2161202-01B	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-537-ISOTOPE(14)
L2161202-01C	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2161202-01D	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 11/6/21

ALPHA Job #: L2161202

Client Information

Client: Weston & Sampson
Address: 98 S Main St.
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information

Project Name: VT DEC PFAS P2
Project Location: Swanton, VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please report enviradata format
send results to LaRosaS@wseinc.com AND reilly.margaret@wseinc.com

Please specify Metals or TAL.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS	PFAS-TOP	Total Bottle
L2161202-01	Black Oxide Effluent	11/2/21	1050	WW	MLR	X	X	

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	P	P										
Preservative	A	A										

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	11/2/21 1400	Endge	11/2/21 1400
		B Lyons	11-5-21 15:00 AT
B. Lyon	11-5-21 19:20		11/6/21 01:05
Wendy Mooney	11/6/21 3:30		11/6/21 0330
DSC 11/6/21 0540		ARC 11/6/21 0540	

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2161537
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	GSP COATING
Project Number:	Not Specified
Report Date:	12/06/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2161537-01	GS PRECISION FILTER CAKE	SOLID	BRATTLEBORO, VT	11/05/21 05:30	11/09/21

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: GSP COATING **Lab Number:** L2161537
Project Number: Not Specified **Report Date:** 12/06/21

Case Narrative (continued)

Report Submission

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

Sample Receipt

The sample was received at the laboratory above the required temperature range. The sample was transported via Express Ship in a cooler with ice. All requested analyses were performed.

Perfluorinated Alkyl Acids by Isotope Dilution

L2161537-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2161537-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The Extracted Internal Standard recovery for the WG1572518-1 Method Blank, associated with L2161537-01, is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (3%); however, the method blank is non-detect for all associated target analytes; therefore, no further action was taken.

WG1572518-1, WG1572518-2, and WG1572518-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1572518-2: The Extracted Internal Standard recovery is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (4%); however, all associated target analytes are within criteria; therefore, no further action was taken.

The WG1572518-3 MS recoveries, performed on L2161537-01, are outside the acceptance criteria for perfluorononanesulfonic acid (pfns) (63%), n-methyl perfluorooctanesulfonamidoacetic acid (nmefosaa) (155%), and perfluorodecanesulfonic acid (pfds) (39%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 12/06/21

ORGANICS

SEMIVOLATILES

Project Name: GSP COATING
Project Number: Not Specified
Lab Number: L2161537
Report Date: 12/06/21

SAMPLE RESULTS

Lab ID: L2161537-01
Client ID: GS PRECISION FILTER CAKE
Sample Location: BRATTLEBORO, VT

Date Collected: 11/05/21 05:30
Date Received: 11/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/30/21 01:03
Analyst: SG
Percent Solids: 29%

Extraction Method: ALPHA 23528
Extraction Date: 11/17/21 14:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	6.22	0.282	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	6.22	0.572	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	3.11	0.485	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	12.4	0.803	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	6.22	0.653	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	12.4	1.04	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	3.11	0.561	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	3.11	0.753	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	3.11	0.521	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	6.22	2.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	6.22	1.70	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	3.11	0.933	1
Perfluorooctanesulfonic Acid (PFOS)	8.95	F	ng/g	3.11	1.62	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	3.11	0.834	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	6.22	3.57	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	12.4	3.72	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	6.22	2.51	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	6.22	0.582	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	6.22	1.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	6.22	1.22	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	6.22	1.05	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	6.22	0.871	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	6.22	2.54	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	6.22	0.672	1

Project Name: GSP COATING **Lab Number:** L2161537

Project Number: Not Specified **Report Date:** 12/06/21

SAMPLE RESULTS

Lab ID: L2161537-01 Date Collected: 11/05/21 05:30

Client ID: GS PRECISION FILTER CAKE Date Received: 11/09/21

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**254**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**423**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**242**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	104		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**598**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**469**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**349**	Q	24-159

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/29/21 23:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 11/17/21 14:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1572518-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.250	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.250	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/29/21 23:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 11/17/21 14:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1572518-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**27**	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**47**	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**169**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**42**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**54**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**63**	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**178**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**293**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**3**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1572518-2								
Perfluorobutanoic Acid (PFBA)	96		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	93		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	99		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	94		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	91		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	101		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	100		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	102		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	88		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	99		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	99		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	65		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	102		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	139		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	100		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	114		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	77		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	116		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1572518-2								
Perfluorotridecanoic Acid (PFTrDA)	121		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**31**	Q			61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**50**	Q			58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	152				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**45**	Q			66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**57**	Q			71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**68**	Q			75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**163**	Q			20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**259**	Q			19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**4**	Q			10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74				24-159

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2161537

Report Date: 12/06/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-3 QC Sample: L2161537-01 Client ID: GS PRECISION FILTER CAKE												
Perfluorobutanoic Acid (PFBA)	ND	65.1	64.7	99		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	65.1	63.1	97		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	57.8	56.5	98		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	61	60.1	99		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	65.1	61.0	94		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	61.2	52.9	86		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	65.1	66.3	102		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	59.5	59.4	100		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	65.1	70.6	108		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	62	69.3	112		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	62	51.2	83		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	65.1	70.0	107		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	8.95F	60.4	64.8F	92		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	65.1	71.6	110		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	62.5	46.9	75		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	62.6	39.2	**63**	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	65.1	101	**155**	Q	-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	65.1	64.2	99		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	62.8	24.4	**39**	Q	-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	65.1	57.5F	88		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	65.1	73.0F	112		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	65.1	65.6	101		-	-		69-135	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2161537

Report Date: 12/06/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-3 QC Sample: L2161537-01 Client ID: GS PRECISION FILTER CAKE												
Perfluorotridecanoic Acid (PFTrDA)	ND	65.1	66.8	103		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	65.1	59.5	91		-	-		69-133	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**402**	Q			19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**327**	Q			14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**429**	Q			20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**287**	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**26**	Q			31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**311**	Q			54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**284**	Q			24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	97				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	59				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-4 QC Sample: L2161407-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-4 QC Sample: L2161407-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		**60**	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		88		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		94		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	144		140		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		**63**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		71		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		98		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**152**		**155**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		91		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		101		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		91		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**224**	Q	**236**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		88		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		106		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		79		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		92		54-150

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-4 QC Sample: L2161407-01 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		73		24-159

INORGANICS
&
MISCELLANEOUS

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

SAMPLE RESULTS

Lab ID: L2161537-01
Client ID: GS PRECISION FILTER CAKE
Sample Location: BRATTLEBORO, VT

Date Collected: 11/05/21 05:30
Date Received: 11/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	28.7		%	0.100	0.100	1	-	12/02/21 12:37	121,2540G	AV

Lab Duplicate Analysis

Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1578280-1 QC Sample: L2159990-15 Client ID: DUP Sample						
Solids, Total	31.2	29.9	%	4		10

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2161537-01A	Plastic 8oz unpreserved	A	NA		11.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2161537-01B	Plastic 8oz unpreserved	A	NA		11.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: GSP COATING
Project Number:

Lab Number: L2161537
Report Date: 12/06/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA ANALYTICAL

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 11/9/21

ALPHA Job #: L2161537

Client Information
Client: Weston + Sampson
Address: 48 S Main St, Suite 2, Waterbury, VT
Phone: 802-505-8909
Fax:
Email: lacasas@wseinc.com

Project Information
Project Name: GSP Coating
Project Location: Brattleboro, VT
Project #
(Use Project name as Project #) ☑
Project Manager: Steven La Rosa
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO # invoice@wseinc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS Targeted Analysis	Total Bottle	Sample Specific Comments
61537-01	GSPrecision filter cake, combined rinse waters	11/5/21	05:30	Solid	REM	X		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	8oz HDPE							
Preservative	none							

Relinquished By:	Date/Time	Received By:	Date/Time
	20211105 15:00	Maggie Reilly	20211105 15:00
Maggie Reilly	20211105 17:30	Single Fridge	20211105 17:30
	20211108	UPS	
UPS	11/9/21 11:18		11/9/21 11:18

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

WESTON & SAMPSON
80224450511
98 SOUTH MAIN STREET SUITE 2
WATERBURY VT 05676-1588

15 LBS
1 OF 1
RS
DWT: 24,14,14

SHIP TO:
LOGIN DEPT MANSFIELD
508-898-9220
ALPHA ANALYTICAL INC
320 FORBES BLVD
MANSFIELD MA 02048

MA 024 9-02

UPS NEXT DAY AIR
TRACKING #: 1Z 19E 18E 84 9754 7451
1

BILLING: P/P
DESC: Laboratory Samples
RETURN SERVICE

CS 22.0.18. WNTNV50 46.0A 11/2021*

ANALYTICAL REPORT

Lab Number:	L2162582
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	12/17/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2162582-01	GSP DISCHARGE	WATER	BRATTLEBORO, VT	11/10/21 14:10	11/12/21

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2162582
Project Number: Not Specified **Report Date:** 12/17/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2162582-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1573357-1 and WG1573357-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2162582-01: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2162582-01 and WG1573037-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2162582-01 and WG1573037-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1573037-4: This blank represents the TOP oxidation blank associated with L2162582-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Alycia Mogayzel

Title: Technical Director/Representative Date: 12/17/21

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01
Client ID: GSP DISCHARGE
Sample Location: BRATTLEBORO, VT

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

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 15:00
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.13	J	ng/l	8.90	0.363	1
Perfluoropentanoic Acid (PFPeA)	1.45	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
Perfluorohexanoic Acid (PFHxA)	0.922	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	0.541	JF	ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	1.22	J	ng/l	1.78	0.210	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	2.43		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.997	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01 Date Collected: 11/10/21 14:10

Client ID: GSP DISCHARGE Date Received: 11/12/21

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**266**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**204**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**172**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01
Client ID: GSP DISCHARGE
Sample Location: BRATTLEBORO, VT

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

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/03/21 07:39
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 03:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.672	J	ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	0.552	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	0.352	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	0.388	JF	ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	0.694	JF	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	2.62		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01 Date Collected: 11/10/21 14:10

Client ID: GSP DISCHARGE Date Received: 11/12/21

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**573**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**324**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**303**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	106		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	121		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Lab ID: L2162582-01
Client ID: GSP DISCHARGE
Sample Location: BRATTLEBORO, VT

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

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.672	J	ng/l	7.13	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.552	J	ng/l	1.45	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.352	J	ng/l	0.922	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.388	JF	ng/l	0.541	JF	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.694	JF	ng/l	1.22	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	2.62		ng/l	2.43		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 13:54
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 13:54
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	135		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		22-136

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 14:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-4					
Perfluorobutanoic Acid (PFBA)	5.94	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.660	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 14:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**279**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**198**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**181**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/03/21 01:01
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 03:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1573357-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	0.328	JF	ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/03/21 01:01
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 03:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1573357-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	138		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	139		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**166**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**259**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	104		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**129**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1573037-2 WG1573037-3								
Perfluorobutanoic Acid (PFBA)	97		97		67-148	0		30
Perfluoropentanoic Acid (PFPeA)	99		98		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	91		93		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	97		98		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	88		90		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	99		98		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	101		102		69-177	1		30
Perfluorooctanoic Acid (PFOA)	108		104		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		99		61-179	0		30
Perfluorononanoic Acid (PFNA)	98		101		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	114		112		52-151	2		30
Perfluorodecanoic Acid (PFDA)	102		101		63-171	1		30
Perfluorononanesulfonic Acid (PFNS)	96		103		48-150	7		30
Perfluoroundecanoic Acid (PFUnA)	95		96		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	111		111		38-156	0		30
Perfluorododecanoic Acid (PFDoA)	97		104		67-153	7		30
Perfluorotridecanoic Acid (PFTrDA)	104		114		48-158	9		30
Perfluorotetradecanoic Acid (PFTA)	95		100		59-182	5		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1573037-2 WG1573037-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	131		142		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	6		5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		89		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		88		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		87		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1573357-2								
Perfluorobutanoic Acid (PFBA)	107		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	107		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	103		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	116		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	104		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	107		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	112		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	105		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	113		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	110		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	132		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	112		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	101		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	113		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	110		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	109		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	128		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	109		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	109		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	112		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2162582

Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1573357-2								
Perfluorotridecanoic Acid (PFTrDA)	133		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	109		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	140				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**168**	Q			14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**191**	Q			10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**119**	Q			24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	118				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76				22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-3 QC Sample: L2162171-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	13.6	38.8	52.2	100		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	38.9	38.8	76.7	98		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.44	34.4	40.1	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.3	37.2	102		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	31.1	38.8	68.7	97		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	9.62	36.4	42.4	90		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	42.7	38.8	80.9	98		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	49.1	35.4	86.6	106		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	260	38.8	294	88		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8.57	36.9	45.4	100		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	24.6	36.9	80.6	152		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	32.8	38.8	71.2	99		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	1580E	36	1680E	**278**	Q	-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	25.9	38.8	69.6	113		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.2	29.4	79		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.3	50.5	135		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.24	38.8	38.8	94		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	1.95JF	38.8	42.2	104		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.4	54.9	147		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	1.74JF	38.8	42.4F	105		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	5.43	38.8	50.8	117		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.8	42.4	109		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2162582

Report Date: 12/17/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-3 QC Sample: L2162171-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	38.8	51.7	133		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.8	44.5	115		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**538**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**562**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**582**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	110				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**125**	Q			24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	134				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	89				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	129				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-4 QC Sample: L2162171-04 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	13.1	12.6	ng/l	4		30
Perfluoropentanoic Acid (PFPeA)	17.2	16.2	ng/l	6		30
Perfluorobutanesulfonic Acid (PFBS)	6.62	6.57	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	13.0	12.5	ng/l	4		30
Perfluoropentanesulfonic Acid (PFPeS)	0.519J	0.481J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	6.87	6.16	ng/l	11		30
Perfluorohexanesulfonic Acid (PFHxS)	3.56	3.59	ng/l	1		30
Perfluorooctanoic Acid (PFOA)	18.5	17.9	ng/l	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	3.36	2.58	ng/l	26		30
Perfluorooctanesulfonic Acid (PFOS)	41.1	41.7	ng/l	1		30
Perfluorodecanoic Acid (PFDA)	2.62	1.60J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.03	2.69	ng/l	12		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	1.82JF	1.51JF	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-4 QC Sample: L2162171-04 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.40J	1.25J	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	141		153		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**314**	Q	**326**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		102		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**319**	Q	**326**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		77		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**328**	Q	**298**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**119**	Q	**129**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		18		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**133**	Q	**152**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		83		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-4 QC Sample: L2162171-04 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		64		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2162582-01A	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(14)
L2162582-01B	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(14)
L2162582-01C	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2162582-01D	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2
Project Number:

Lab Number: L2162582
Report Date: 12/17/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/13/21 | ALPHA Job #: L2162582

Client Information

Client: Weston & Sampson
Address: 98 South Main Street Suite 2
Waterbury, VT
Phone: 802-244-5051
Fax:
Email: LaRosaS@wseinc.com
☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: ~~PFAS~~ VT DEC R2
Project Location: ~~NORTHWEST~~ Brattleboro, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ Rush (ONLY IF PRE-APPROVED)
Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
~~WEEK 9~~16
Report enviodata 8

ANALYSIS

537 ISOTOPE - PFAS
PFAS-TOP

SAMPLE HANDLING
Filtration
☐ Done ☐ Not Needed ☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments
	~~duplicate~~	~~11/10/21~~	~~1415~~	~~WW~~	~~MLF~~	
62582-01	~~GSP-Process~~	11/10/21	1410	WW	MLF	4 Bottles
	GSP-Discharge					"

Container Type: P P - - - - - - - - - -
Preservative: X X - - - - - - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Kelley	11/10/21 1720	Fedge	11/10/21 1720
James Jayne	11/12/2021 9:30	Jayne	
B Lyons	11-12-21 14:30	B Lyons	11-12-21 1426
Wendy Mann	11/13/21 3:30	[illegible]	11/13/21 00:45
[illegible] 11/13/21 0600		[illegible]	11/13/21 0500

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I-NJ) (rev. 5-JAN-12)

ANALYTICAL REPORT

Lab Number:	L2202626
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS P2
Project Number:	Not Specified
Report Date:	02/08/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2202626-01	WIRE STRIPPING	WATER	VERGENNES, VT	01/15/22 10:20	01/18/22
L2202626-02	SLUDGE	SLUDGE	VERGENNES, VT	01/15/22 10:40	01/18/22
L2202626-03	EFFLUENT	WATER	VERGENNES, VT	01/15/22 10:50	01/18/22

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626
Project Number: Not Specified **Report Date:** 02/08/22

Case Narrative (continued)

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

Perfluorinated Alkyl Acids by Isotope Dilution
L2202626-02 and -03RE: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2202626-03RE: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2202626-03RE: The sample was re-extracted within holding time due to QC failures in the original extraction. The results of the re-extraction are reported.
WG1596153-2, WG1596153-3, and WG1596153-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2202626-01 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2202626-01 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2202626-03: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
WG1597792-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
WG1597792-4: This blank represents the oxidation blank associated with L2202626-01 and -03.
WG1597792-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Case Narrative (continued)

analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 02/08/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01
Client ID: WIRE STRIPPING
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:20
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/24/22 20:02
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.99	0.406	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.99	0.394	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.99	0.236	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.99	0.449	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.99	0.326	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.99	0.244	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.99	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.99	0.374	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.99	0.234	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	0.684	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.99	0.310	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.99	0.501	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.99	0.302	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	1.20	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.99	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.99	0.644	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	0.258	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	0.974	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.99	0.576	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.99	0.799	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	0.370	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	0.325	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	0.246	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01 Date Collected: 01/15/22 10:20

Client ID: WIRE STRIPPING Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01
Client ID: WIRE STRIPPING
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:20
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:08
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.24	J	ng/l	10.6	0.431	1
Perfluoropentanoic Acid (PFPeA)	1.45	J	ng/l	2.11	0.418	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.11	0.251	1
Perfluorohexanoic Acid (PFHxA)	0.782	J	ng/l	2.11	0.346	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.11	0.259	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.11	0.238	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.11	0.397	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.11	0.249	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.11	0.727	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.11	0.330	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.11	0.532	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.11	0.321	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.11	1.18	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.11	0.275	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.11	1.04	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.11	0.393	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.11	0.346	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.11	0.262	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01 Date Collected: 01/15/22 10:20

Client ID: WIRE STRIPPING Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**204**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**169**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**171**	Q	50-150

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-02
Client ID: SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:40
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 08:15
Analyst: HT
Percent Solids: 19%

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.26	0.057	1
Perfluoropentanoic Acid (PFPeA)	0.229	J	ng/g	1.26	0.116	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.629	0.098	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.51	0.162	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.26	0.132	1
Perfluoropentanesulfonic Acid (PFPeS)	0.245	J	ng/g	2.51	0.210	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.629	0.113	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.629	0.152	1
Perfluorooctanoic Acid (PFOA)	0.318	J	ng/g	0.629	0.105	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.737	J	ng/g	1.26	0.451	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.26	0.343	1
Perfluorononanoic Acid (PFNA)	0.553	J	ng/g	0.629	0.189	1
Perfluorooctanesulfonic Acid (PFOS)	0.764		ng/g	0.629	0.327	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.629	0.168	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.26	0.722	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	2.51	0.752	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.26	0.507	1
Perfluoroundecanoic Acid (PFUnA)	0.277	J	ng/g	1.26	0.118	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.26	0.385	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.26	0.246	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.314	J	ng/g	1.26	0.212	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.26	0.176	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.26	0.514	1
Perfluorotetradecanoic Acid (PFTA)	0.293	J	ng/g	1.26	0.136	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-02 Date Collected: 01/15/22 10:40

Client ID: SLUDGE Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**308**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**65**	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	141		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		24-159

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:25
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	62.2	J	ng/l	100	4.08	1
Perfluoropentanoic Acid (PFPeA)	18.2	J	ng/l	20.0	3.96	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	20.0	2.38	1
Perfluorohexanoic Acid (PFHxA)	17.3	J	ng/l	20.0	3.28	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	20.0	2.45	1
Perfluoroheptanoic Acid (PFHpA)	4.32	JF	ng/l	20.0	2.25	1
Perfluorohexanesulfonic Acid (PFHxS)	4.52	J	ng/l	20.0	3.76	1
Perfluorooctanoic Acid (PFOA)	2.48	J	ng/l	20.0	2.36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	20.0	6.88	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	20.0	3.12	1
Perfluorooctanesulfonic Acid (PFOS)	9.60	J	ng/l	20.0	5.04	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	3.04	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	20.0	11.2	1
Perfluoroundecanoic Acid (PFUnA)	3.24	JF	ng/l	20.0	2.60	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	20.0	9.80	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	3.72	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	3.27	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	20.0	2.48	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03 Date Collected: 01/15/22 10:50

Client ID: EFFLUENT Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**205**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**180**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**172**	Q	50-150

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03 RE
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 01:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 08:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	20.0	4.08	1
Perfluoropentanoic Acid (PFPeA)	6.76	J	ng/l	20.0	3.96	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	20.0	2.38	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	20.0	4.52	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	20.0	3.28	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	20.0	2.45	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	20.0	2.25	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	20.0	3.76	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	20.0	2.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	20.0	13.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	20.0	6.88	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	20.0	3.12	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	20.0	5.04	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	3.04	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	20.0	12.1	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	20.0	11.2	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	20.0	6.48	1
Perfluoroundecanoic Acid (PFUnA)	3.56	J	ng/l	20.0	2.60	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	20.0	9.80	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	20.0	5.80	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	20.0	8.04	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	3.72	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	3.27	1
Perfluorotetradecanoic Acid (PFTA)	8.36	J	ng/l	20.0	2.48	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03 RE
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	37		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**26**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**148**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Lab ID: L2202626-01
Client ID: WIRE STRIPPING
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:20
Date Received: 01/18/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.24	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.45	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	0.782	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Lab ID: L2202626-03
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	62.2	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	6.76	J	ng/l	18.2	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	17.3	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	4.32	JF	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	4.52	J	ng/l	0	J	ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.48	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	9.60	J	ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	3.56	J	ng/l	3.24	JF	ng/l	0	J	ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	8.36	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 07:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1596153-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	0.058	J	ng/g	0.250	0.027

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 07:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1596153-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	154		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	132		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	131		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		24-159

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 14:16
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1596153-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	109		10-117

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/24/22 17:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1597243-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/24/22 17:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1597243-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	59		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/25/22 10:43
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1597243-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	100		10-112

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 00:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1597783-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.864	J	ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 00:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1597783-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	103		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 16:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 16:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:41
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-4					
Perfluorobutanoic Acid (PFBA)	6.56	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.93	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	1.94	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	0.332	J	ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:41
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	71		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**205**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**177**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**176**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1596153-2								
Perfluorobutanoic Acid (PFBA)	85		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	81		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	91		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	86		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	89		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	84		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	85		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	86		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	92		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	88		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	97		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	79		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	89		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	81		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	82		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	90		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1596153-2								
Perfluorotridecanoic Acid (PFTrDA)	88		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	87		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	163				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	138				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	125				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	55				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69				24-159

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1596153-2								
Perfluorooctanesulfonamide (FOSA)	110		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**126**	Q			10-117

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1597243-2								
Perfluorobutanoic Acid (PFBA)	114		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	114		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	113		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	132		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	114		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	121		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	115		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	132		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	107		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	131		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	112		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	117		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	128		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	114		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	130		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	119		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	130		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	115		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	127		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	108		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	116		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	113		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1597243-2								
Perfluorotridecanoic Acid (PFTrDA)	130		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	115		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	132				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1597243-2								
Perfluorooctanesulfonamide (FOSA)	136		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	103				10-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1597783-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	107		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	101		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	111		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	108		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	109		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	107		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	116		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	100		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	115		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	105		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	117		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	116		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	119		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	103		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	115		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	102		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	110		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	111		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1597783-2								
Perfluorotridecanoic Acid (PFTrDA)	106		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	108		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	139				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	70				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1597792-2 WG1597792-3								
Perfluorobutanoic Acid (PFBA)	92		91		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	96		96		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	87		88		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	95		94		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	95		98		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	96		95		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	109		109		69-177	0		30
Perfluorooctanoic Acid (PFOA)	97		98		63-159	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	100		90		61-179	11		30
Perfluorononanoic Acid (PFNA)	94		93		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	113		105		52-151	7		30
Perfluorodecanoic Acid (PFDA)	92		92		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	104		99		48-150	5		30
Perfluoroundecanoic Acid (PFUnA)	93		94		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	117		104		38-156	12		30
Perfluorododecanoic Acid (PFDoA)	97		95		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	102		94		48-158	8		30
Perfluorotetradecanoic Acid (PFTA)	98		98		59-182	0		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1597792-2 WG1597792-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		96		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		87		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		88		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		87		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		69		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1596153-3 WG1596153-4 QC Sample: L2202626-02 Client ID: SLUDGE												
Perfluorobutanoic Acid (PFBA)	ND	12.6	10.4	83		10.8	84		71-135	4		30
Perfluoropentanoic Acid (PFPeA)	0.229J	12.6	11.6	90		11.8	90		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	11.2	9.11	81		9.49	83		72-128	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	11.8	10.3	87		10.8	90		62-145	5		30
Perfluorohexanoic Acid (PFHxA)	ND	12.6	10.8	86		10.9	85		70-132	1		30
Perfluoropentanesulfonic Acid (PFPeS)	0.245J	11.8	10.8	89		10.9	88		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	ND	12.6	10.7	85		10.9	85		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	11.5	10.3	89		10.7	91		67-130	4		30
Perfluorooctanoic Acid (PFOA)	0.318J	12.6	11.3	87		11.3	86		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.737J	12	11.4	89		11.7	90		64-140	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	12	10.8	90		10.5	86		70-132	3		30
Perfluorononanoic Acid (PFNA)	0.553J	12.6	11.7	88		12.1	90		72-129	3		30
Perfluorooctanesulfonic Acid (PFOS)	0.764	11.7	11.8	94		11.6	91		68-136	2		30
Perfluorodecanoic Acid (PFDA)	ND	12.6	10.8	86		10.8	84		69-133	0		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	12.1	11.3	93		11.6	94		65-137	3		30
Perfluorononanesulfonic Acid (PFNS)	ND	12.1	11.4	94		11.2	91		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	12.6	13.5	107		12.7	99		63-144	6		30
Perfluoroundecanoic Acid (PFUnA)	0.277J	12.6	10.4	80		10.6	80		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	ND	12.2	11.3	93		10.7	87		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	ND	12.6	11.8F	94		10.9F	85		67-137	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.314J	12.6	10.9	84		11.4	86		61-139	4		30
Perfluorododecanoic Acid (PFDoA)	ND	12.6	10.8	86		11.4	89		69-135	5		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1596153-3 WG1596153-4 QC Sample: L2202626-02 Client ID: SLUDGE												
Perfluorotridecanoic Acid (PFTrDA)	ND	12.6	10.6	84		10.8	84		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	0.293J	12.6	10.7	83		10.5	80		69-133	2		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	138		138		19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		95		14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**266**	Q	**282**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		93		34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		74		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		85		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	76		75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		68		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		72		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		92		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		94		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		60		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		75		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		64		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**4**	Q	**5**	Q	10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		89		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		75		75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**63**	Q	**61**	Q	72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		105		74-139

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1597243-3 WG1597243-4 QC Sample: L2203390-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	14.4	37.6	56.3	112		56.1	111		67-148	0		30
Perfluoropentanoic Acid (PFPeA)	34.5	37.6	78.1	116		77.9	115		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	5.44	33.3	41.6	108		41.8	109		65-157	0		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.2	46.2	131		47.7	136		37-219	3		30
Perfluorohexanoic Acid (PFHxA)	40.0	37.6	82.8	114		83.1	115		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	0.946J	35.3	42.3	117		41.7	115		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	13.6	37.6	56.6	115		55.3	111		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	7.70	34.3	53.0	132		53.4	133		69-177	1		30
Perfluorooctanoic Acid (PFOA)	49.8	37.6	91.5	111		90.8	109		63-159	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.8	44.5	124		44.8	125		49-187	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.938J	35.8	42.5	116		42.8	117		61-179	1		30
Perfluorononanoic Acid (PFNA)	0.446JF	37.6	43.6	115		43.6	115		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	8.91F	34.8	54.6	131		56.4	136		52-151	3		30
Perfluorodecanoic Acid (PFDA)	ND	37.6	40.2	107		43.9	117		63-171	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36	49.2	136		46.5	129		56-173	6		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.1	42.0	116		43.5	120		48-150	4		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.6	47.2	126		44.9	119		60-166	5		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.6	40.9	109		42.5	113		60-153	4		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.2	42.6	118		43.9	121		38-156	3		30
Perfluorooctanesulfonamide (FOSA)	ND	37.6	41.6	111		41.1F	109		46-170	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.6	45.6	121		41.8	111		45-170	9		30
Perfluorododecanoic Acid (PFDoA)	ND	37.6	43.6	116		44.5	118		67-153	2		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified
Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1597243-3 WG1597243-4 QC Sample: L2203390-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.6	50.1	133		47.5	126		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.6	45.4	121		46.8	124		59-182	3		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		118		10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**201**	Q	**192**	Q	12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**190**	Q	**178**	Q	14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		66		27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		60		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		72		55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		70		62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		66		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		96		71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		67		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		60		22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		79		62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		21		10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		86		69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		74		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		73		59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		92		70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-3 QC Sample: L2202947-05 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.65	38.1	43.2	101		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	4.48	38.1	45.0	106		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	2.59	33.8	38.9	107		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.7	41.1	115		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	3.88	38.1	43.2	103		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35.8	20.3	57		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	1.79J	38.1	40.9	103		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.44JF	34.8	39.4	109		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	3.39	38.1	41.4	100		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.70	36.3	46.0	111		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.3	33.4	92		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.402JF	38.1	39.6	103		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	2.15F	35.4	44.4	119		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.1	40.3	106		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.76JF	36.6	47.2	124		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.6	30.1	82		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.1	38.6	101		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.1	39.2	103		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.7	28.8	78		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.1	39.4	103		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.42JF	38.1	35.9	90		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.1	37.7	99		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-3 QC Sample: L2202947-05 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	38.1	44.7	117		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	0.891J	38.1	37.5	96		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	132				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**556**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**341**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**141**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	129				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**148**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**255**	Q			22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	95				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	129				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**132**	Q			70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-4 QC Sample: L2203767-05 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	6.03	6.21	ng/l	3		30
Perfluoropentanoic Acid (PFPeA)	4.24	4.57	ng/l	7		30
Perfluorobutanesulfonic Acid (PFBS)	2.87	2.84	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	3.29	3.46	ng/l	5		30
Perfluoropentanesulfonic Acid (PFPeS)	0.755JF	0.938JF	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.701J	0.665J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.895J	0.886J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-4 QC Sample: L2203767-05 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.972J	0.801J	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**142**	Q	**144**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**471**	Q	**494**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**148**	Q	**142**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		126		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		104		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**280**	Q	**279**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		107		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		86		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**551**	Q	**554**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128	Q	106		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		63		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		66		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-4 QC Sample: L2203767-05 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		72		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-02
Client ID: SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:40
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	18.8		%	0.100	0.100	1	-	01/20/22 17:37	121,2540G	GF

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1596100-1 QC Sample: L2202703-01 Client ID: DUP Sample						
Solids, Total	11.2	11.1	%	1		10

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2202626-01A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-01B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-01C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2202626-01D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2202626-02A	Plastic 8oz unpreserved	A	NA		3.4	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2202626-02B	Plastic 8oz unpreserved	A	NA		3.4	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2202626-03A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-03B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-03C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2202626-03D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 1/19/22

ALPHA Job #: L2202626

Client Information

Client: Weston & Sampson
Address: 98 S Main St.
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information

Project Name: VTDEC PFAS P2
Project Location: Vergennes, VT
Project #
(Use Project name as Project #) ☒
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

6mL OF WIRE STRIPPING PRODUCT IN 246ML PFAS FREE DI WATER! PRODUCT EXPECTED TO CONTAIN PFAS.

~~Please specify Metals or TAL~~ ↑ Report to MDL.

Email results to Reilly.Margaret@wseinc.com AND larosas@wseinc.com

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537-Isotope	PFAS TOP							Sample Specific Comments	Total Bottle
02626 -01	Wire Stripping	1/15/22	1620	WW	MLR	X	X							*6mL product in 246mL DI water*	
-02	Sludge	1/15/22	1040	S	MLR	X	X								
-03	Effluent	1/15/22	1050	WW	MLR	X	X								

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Container Type	P	P							
Preservative		A							

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	1/15/22 1300	Fedex	1/15/22 1300
[signature] 1/18/22	1030	[signature]	1/18/22 1030
			1/19/22 0050
Wendy Mooney	1/19/22 2:30	[signature]	1/19/22 0345
[signature] 1/19/22	0430	[signature]	1/15/22 0430

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2169100
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	01/11/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2169100-01	STORM WATER	WATER	SWANTON, VT	12/10/21 09:50	12/15/21
L2169100-02	MIST SUPPRESSENT	WATER	SWANTON, VT	12/10/21 09:10	12/15/21
L2169100-03	EFFLUENT-12102021	WATER	SWANTON, VT	12/10/21 09:25	12/15/21

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2169100
Project Number: Not Specified **Report Date:** 01/11/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution
L2169100-01RE, -02RE, and -03RE: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2169100-01RE and -03RE: The sample was re-extracted with the method required holding time exceeded due to QC failures in the original extraction. The results of the re-extraction are reported.
L2169100-02RE: The sample was re-extracted with the method required holding time exceeded due to matrix interferences with internal standards in the original extraction. The results of the re-extraction are reported. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
WG1592636-1 and WG1592636-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
WG1592636-3: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range. The sample was extracted with the method required holding time exceeded.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2169100-01 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2169100-01 and -03: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2169100-01 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2169100-01 and -03: The sample was extracted with the method required holding time exceeded.
WG1590799-4: This blank represents the oxidation blank associated with L2169100-01 and -03. Extracted

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Case Narrative (continued)

Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 01/11/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01
Client ID: STORM WATER
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:50
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:43
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	250	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01 Date Collected: 12/10/21 09:50

Client ID: STORM WATER Date Received: 12/15/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**218**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**203**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**183**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01 RE
Client ID: STORM WATER
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:50
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 11:32
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50.0	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	130		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01 RE Date Collected: 12/10/21 09:50

Client ID: STORM WATER Date Received: 12/15/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-02 RE
Client ID: MIST SUPPRESSENT
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:10
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/11/22 09:03
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/11/22 07:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50000	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50000	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50000	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	539000		ng/l	50000	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50000	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50000	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50000	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50000	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50000	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	22800000	E	ng/l	50000	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50000	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50000	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50000	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50000	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1050000		ng/l	50000	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50000	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50000	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50000	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50000	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50000	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50000	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50000	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50000	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50000	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-02 RE
Client ID: MIST SUPPRESSENT
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:10
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**132**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**130**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	128		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**978**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	101		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:59
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	250	--	1
Perfluoropentanoic Acid (PFPeA)	165		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	55.7		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03 Date Collected: 12/10/21 09:25

Client ID: EFFLUENT-12102021 Date Received: 12/15/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**209**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**199**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**178**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03 RE
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 11:49
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50.0	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	295		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03 RE
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Lab ID: L2169100-01
Client ID: STORM WATER
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:50
Date Received: 12/15/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Lab ID: L2169100-03
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	165		ng/l	165		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	55.7		ng/l	55.7		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							221		ng/l

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 10:43
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590792-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 10:43
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590792-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**218**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**212**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**191**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/11/22 08:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/11/22 07:22

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1592636-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	500	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	500	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	500	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	500	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	500	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	500	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	500	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	500	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	500	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	500	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	500	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	500	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	500	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	500	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	500	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	500	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	500	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	500	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	500	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	500	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	500	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/11/22 08:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/11/22 07:22

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1592636-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**132**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	119		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	117		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	102		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590792-2								
Perfluorobutanoic Acid (PFBA)	91		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	87		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	97		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	87		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	82		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	94		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	94		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	94		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	80		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	92		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	93		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	80		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	81		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	86		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	95		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	89		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	90		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	97		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	88		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2169100

Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590792-2								
Perfluorotridecanoic Acid (PFTrDA)	100		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	88		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	58				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								
Perfluorobutanoic Acid (PFBA)	98		94		67-148	4		30
Perfluoropentanoic Acid (PFPeA)	101		96		63-161	5		30
Perfluorobutanesulfonic Acid (PFBS)	92		90		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	99		93		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	86		85		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	101		98		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	97		96		69-177	1		30
Perfluorooctanoic Acid (PFOA)	103		98		63-159	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	82		83		61-179	1		30
Perfluorononanoic Acid (PFNA)	95		102		68-171	7		30
Perfluorooctanesulfonic Acid (PFOS)	94		94		52-151	0		30
Perfluorodecanoic Acid (PFDA)	95		89		63-171	7		30
Perfluorononanesulfonic Acid (PFNS)	78		88		48-150	12		30
Perfluoroundecanoic Acid (PFUnA)	94		100		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	96		95		38-156	1		30
Perfluorododecanoic Acid (PFDoA)	105		96		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	113		106		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	102		89		59-182	14		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		93		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		82		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		87		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		102		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		83		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1592636-2								
Perfluorobutanoic Acid (PFBA)	88		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	91		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	88		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	97		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	86		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	88		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	92		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	89		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	112		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	92		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	90		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	98		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	90		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	97		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	111		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	86		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	93		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	86		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	79		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	88		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1592636-2								
Perfluorotridecanoic Acid (PFTrDA)	98		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	84		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	119				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	113				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	105				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87				22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-3 QC Sample: L2171282-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	2.09	40.8	40.2	94		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	2.39	40.8	39.6	91		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	36.2	35.4	93		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	38.1	36.9	97		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	1.99	40.8	39.4	92		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	38.3	33.0	86		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	40.8	39.3	93		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	37.2	38.6	101		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	4.06	40.8	43.8	98		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	35.2	38.8	138	**265**	Q	-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	38.8	33.5	86		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	40.8	39.6	96		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	3.91	37.8	39.6	94		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	40.8	34.8	85		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	39.1	34.5	88		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	39.2	30.5	78		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	40.8	37.7	92		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	40.8	38.1	94		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	39.3	34.1	87		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	40.8	39.8	98		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	40.8	36.6	90		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	40.8	39.6	97		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2169100

Report Date: 01/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-3 QC Sample: L2171282-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	40.8	40.1	98		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	40.8	35.3	87		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**171**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	135				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	81				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-4 QC Sample: L2171282-03 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	8.46	10.3	ng/l	20		30
Perfluoropentanoic Acid (PFPeA)	15.3	16.6	ng/l	8		30
Perfluorobutanesulfonic Acid (PFBS)	2.61	2.83	ng/l	8		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	10.1	11.2	ng/l	10		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	10.5	12.4	ng/l	17		30
Perfluorohexanesulfonic Acid (PFHxS)	7.20	7.09	ng/l	2		30
Perfluorooctanoic Acid (PFOA)	32.3	34.8	ng/l	7		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.22	11.0	ng/l	**89**	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	2.62	2.77	ng/l	6		30
Perfluorononanoic Acid (PFNA)	5.63	5.76	ng/l	2		30
Perfluorooctanesulfonic Acid (PFOS)	143	158	ng/l	10		30
Perfluorodecanoic Acid (PFDA)	3.11	3.59	ng/l	14		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-4 QC Sample: L2171282-03 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		98		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**163**	Q	**162**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		82		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		88		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	113		118		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		73		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		83		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		**9**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		73		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		74		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-4 QC Sample: L2171282-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		71		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1592636-3 QC Sample: L2169100-02 Client ID: MIST SUPPRESSENT						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	539000	549000	ng/l	2		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	22800000E	23100000E	ng/l	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1050000	1050000	ng/l	0		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1592636-3 QC Sample: L2169100-02 Client ID: MIST SUPPRESSENT						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132	Q	129		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		103		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	130	Q	128		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	128		126		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		122		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		106		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**978**	Q	**958**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		116		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		105		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		68		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		76		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	101		106		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		80		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		91		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1592636-3 QC Sample: L2169100-02 Client ID: MIST SUPPRESSENT

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		87		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2169100-01A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-01B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-01C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2169100-01D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2169100-02A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-02B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-02C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-02D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-03A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-03B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-03C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2169100-03D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2
Project Number:

Lab Number: L2169100
Report Date: 01/11/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA ANALYTICAL

CHAIN OF CUSTODY

PAGE 1 OF 1

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/16/21

ALPHA Job #: L2169166

Client Information

Client: Weston & Sampson
Address: 98 S Main St Waterbury, VT
Phone:
Fax:
Email: Larosas@wseinc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P2
Project Location: Swanton, VT
Project #:
Project Manager: Steve LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria
VT MDL	

Other Project Specific Requirements/Comments/Detection Limits:
Report to MDL ; Report enviodata@wseinc.com AND email Results to LaRosaS@wseinc.com Reilly-Margaret@wseinc.com

ANALYSIS: CL-PFAS | TOP

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	CL-PFAS	TOP	Sample Specific Comments	TOTAL # BOTTLES
69166-01	Stormwater	12/10/21	0950	WW	MLR	X	X		
-02	Mist Suppressant	12/10/21	0910	W	MLR	X	X		
-03	Effluent12102021	12/10/21	0925	WW	MLR	X	X		

Container Type	P	P
Preservative	X	X

Mist suppressant = 5 grams mist suppressant + PFAS Free water

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	12/10/21 1500	Fridge	12/10/21 1500
[signature]	12/17/21 1400	B. Lyons	12-15-21 1410
B. Lyons	12-15-21 1420	[signature]	12/16/21 0100
[signature] 12/16/21 0600		Wendy Moreno 12/16/21 3:15	12/16/21 0445

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

[signature] 12/16/21 0800

ANALYTICAL REPORT

Lab Number:	L2170827
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC WWTF P2
Project Number:	2190486-B-2
Report Date:	01/12/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2170827-01	GE-3-1270 EFF	WATER	RUTLAND, VT	12/22/21 08:25	12/23/21
L2170827-02	GE-3-1270 SLUDGE	SLUDGE	RUTLAND, VT	12/22/21 08:20	12/23/21
L2170827-03	GE-3-0306 EFFLUENT	WATER	RUTLAND, VT	12/22/21 09:48	12/23/21
L2170827-04	GE-3-0306 SLUDGE	SLUDGE	RUTLAND, VT	12/22/21 09:45	12/23/21

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2170827-01, -02, -03, and -04: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1588942-1: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2170827-01 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2170827-01 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2170827-01 and -03: The sample was extracted with the method required holding time exceeded.

WG1590799-4: This blank represents the oxidation blank associated with L2170827-01 and -03.

WG1590799-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1590799-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 01/12/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01
Client ID: GE-3-1270 EFF
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:25
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 19:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.99	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.99	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.99	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.99	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.99	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.99	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.99	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.99	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.99	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.99	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.99	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.99	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.99	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.99	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.99	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.99	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01 Date Collected: 12/22/21 08:25

Client ID: GE-3-1270 EFF Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**198**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	158		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**119**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01
Client ID: GE-3-1270 EFF
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:25
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 11:16
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	9.67	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.93	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.93	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.93	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.93	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.93	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.93	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.93	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.93	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.93	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.93	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01 Date Collected: 12/22/21 08:25

Client ID: GE-3-1270 EFF Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	71		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**193**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**173**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**160**	Q	50-150

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-02
Client ID: GE-3-1270 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:20
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 00:31
Analyst: HT
Percent Solids: 42%

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.589	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.589	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.294	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.589	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.294	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.294	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.294	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.589	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.589	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.294	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.294	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.294	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.589	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.18	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.589	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.589	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.589	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.589	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.589	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.589	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.589	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.589	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-02 Date Collected: 12/22/21 08:20

Client ID: GE-3-1270 SLUDGE Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**497**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**337**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**185**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		24-159

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:48
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 20:06
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.97	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.97	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.97	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.97	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.97	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.97	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.97	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.97	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.97	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.97	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.97	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.97	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03 Date Collected: 12/22/21 09:48

Client ID: GE-3-0306 EFFLUENT Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**236**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**159**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	147		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:48
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 11:32
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	9.42	--	1
Perfluoropentanoic Acid (PFPeA)	4.18		ng/l	1.88	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.88	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.88	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.88	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.88	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.88	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03 Date Collected: 12/22/21 09:48

Client ID: GE-3-0306 EFFLUENT Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	70		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**173**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**167**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	143		50-150

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-04
Client ID: GE-3-0306 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:45
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 00:47
Analyst: HT
Percent Solids: 70%

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.342	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.342	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.171	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.684	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.342	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.684	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.171	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.171	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.171	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.342	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.342	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.171	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.171	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.171	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.342	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.684	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.342	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.342	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.342	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.342	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.342	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.342	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.342	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.342	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-04 Date Collected: 12/22/21 09:45

Client ID: GE-3-0306 SLUDGE Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**173**	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**772**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**62**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**524**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**46**	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**537**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**205**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**165**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**163**	Q	24-159

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Lab ID: L2170827-01
Client ID: GE-3-1270 EFF
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:25
Date Received: 12/23/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Lab ID: L2170827-03
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:48
Date Received: 12/23/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	4.18		ng/l	4.18		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							4.18		ng/l

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 22:51
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04 Batch: WG1588942-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 22:51
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04 Batch: WG1588942-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**180**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	118		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		24-159

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/09/22 12:34
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04 Batch: WG1588942-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62		10-117

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**218**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**212**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**191**	Q	50-150

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 17:54
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590953-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 17:54
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590953-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/09/22 11:00
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590953-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74		10-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 Batch: WG1588942-2								
Perfluorobutanoic Acid (PFBA)	89		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	87		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	88		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	97		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	91		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	98		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	90		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	98		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	90		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	101		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	85		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	92		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 Batch: WG1588942-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	95		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	136				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93				24-159

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab	Associated sample(s): 02,04		Batch: WG1588942-2					
Perfluorooctanesulfonamide (FOSA)	119		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60				10-117

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								
Perfluorobutanoic Acid (PFBA)	98		94		67-148	4		30
Perfluoropentanoic Acid (PFPeA)	101		96		63-161	5		30
Perfluorobutanesulfonic Acid (PFBS)	92		90		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	99		93		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	86		85		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	101		98		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	97		96		69-177	1		30
Perfluorooctanoic Acid (PFOA)	103		98		63-159	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	82		83		61-179	1		30
Perfluorononanoic Acid (PFNA)	95		102		68-171	7		30
Perfluorooctanesulfonic Acid (PFOS)	94		94		52-151	0		30
Perfluorodecanoic Acid (PFDA)	95		89		63-171	7		30
Perfluorononanesulfonic Acid (PFNS)	78		88		48-150	12		30
Perfluoroundecanoic Acid (PFUnA)	94		100		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	96		95		38-156	1		30
Perfluorododecanoic Acid (PFDoA)	105		96		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	113		106		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	102		89		59-182	14		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		93		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		82		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		87		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		102		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		83		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590953-2								
Perfluorobutanoic Acid (PFBA)	98		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	105		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	94		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	99		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	106		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	98		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	83		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	98		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	90		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	87		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	109		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	101		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	93		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	99		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	98		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590953-2								
Perfluorotridecanoic Acid (PFTrDA)	110		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	90		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab	Associated sample(s): 01,03		Batch: WG1590953-2					
Perfluorooctanesulfonamide (FOSA)	121		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	75				10-112

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1588942-3 WG1588942-4 QC Sample: L2169871-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	18.9	16.8	89		16.4	87		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	ND	18.9	16.5	87		16.3	86		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	16.8	14.9	89		14.8	88		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	17.7	18.4	104		17.2	97		62-145	7		30
Perfluorohexanoic Acid (PFHxA)	ND	18.9	16.8	89		16.5	87		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	17.8	16.5	93		16.2	91		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	18.9	16.8	89		16.6	88		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	17.3	16.9	98		16.2	94		67-130	4		30
Perfluorooctanoic Acid (PFOA)	ND	18.9	17.2	91		17.8	94		69-133	3		30
Perfluorononanoic Acid (PFNA)	ND	18.9	17.7	94		17.6	93		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	ND	17.5	17.9	102		18.5	106		68-136	3		30
Perfluorodecanoic Acid (PFDA)	ND	18.9	17.0	90		17.5	93		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	18.1	18.8	104		18.3	101		65-137	3		30
Perfluorononanesulfonic Acid (PFNS)	ND	18.2	17.6	97		16.4	90		69-125	7		30
Perfluoroundecanoic Acid (PFUnA)	ND	18.9	17.7	94		16.8	89		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	ND	18.2	16.1	88		15.7	86		59-134	3		30
Perfluorododecanoic Acid (PFDoA)	ND	18.9	16.8	89		16.6	88		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	18.9	16.4	87		16.7	89		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	ND	18.9	17.0	88		17.2	89		69-133	1		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**214**	Q	**224**	Q	19-175

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2 ***Lab Number:*** L2170827

Project Number: 2190486-B-2 ***Report Date:*** 01/12/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1588942-3 WG1588942-4 QC Sample: L2169871-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**245**	Q	**249**	Q	14-167
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		77		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		80		75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		78		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		86		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		**52**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		60		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		82		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		64		58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		82		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		80		75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		83		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		86		74-139

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-3 QC Sample: L2171157-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.5	35.7	96		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	36.5	36.2	96		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.4	32.2	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.2	33.6	98		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	36.5	35.4	96		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.3	30.2	88		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.5	35.2	96		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33.4	33.8	101		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	36.5	35.0	96		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.8	36.7	106		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.8	28.0	81		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	36.5	39.2	107		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	33.9	29.6	87		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.5	29.4	80		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35	29.7	85		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.1	27.9	79		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.5	36.3	99		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.5	37.2	102		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.2	28.4	81		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.5	37.8F	104		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.5	41.5	114		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.5	36.8	101		-	-		67-153	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-3 QC Sample: L2171157-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.5	38.1	104		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.5	32.6	89		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	356	451F	127		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.5	30.8	89		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.5	34.8	95		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	36.5	25.0	68		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	60				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-3 QC Sample: L2171157-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	67				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	68				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-4 QC Sample: L2171158-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-4 QC Sample: L2171158-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		87		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99		94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		87		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		62		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		44		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-4 QC Sample: L2171158-01 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		60		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		80		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		19		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		72		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		72		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		104		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	67		59		10-206

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-02
Client ID: GE-3-1270 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:20
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	42.3		%	0.100	--	1	-	12/29/21 16:43	121,2540G	GF

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-04
Client ID: GE-3-0306 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:45
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	70.0		%	0.100	--	1	-	12/29/21 16:43	121,2540G	GF

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1588902-1 QC Sample: L2165574-01 Client ID: DUP Sample						
Solids, Total	84.4	84.6	%	0		10

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2170827-01A	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-01B	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-01C	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-01D	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-02A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2170827-02B	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2170827-03A	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-03B	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-03C	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-03D	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-04A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2170827-04B	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 12/27/21

ALPHA Job #: L2170827

Client Information

Client: Weston + Sampson

Address: 98 South Main St
Waterbury VT 05676

Phone: 802 505 8909

Fax:

Email: larosas@wseInc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC WWTF P2

Project Location: Rutland, VT

Project #: 2190486-B-2

Project Manager: S. LaRosa

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Invoices@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:

ANALYSIS: PFAS TOP; PFAS Isotope Dil

SAMPLE HANDLING

Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS TOP	PFAS Isotope Dil	Sample Specific Comments	TOTAL # BOTTLES
70827-01	GE-3-1270 Eff	12/22/21	0825	Water	SJL	X			
-02	GE-3-1270 Sludge	12/22/21	0820	Solid	SJL		X		
-03	GE-3-0306 Effluent	12/22/21	0948	Water	SJL	X			
-04	GE-3-0306 Sludge	12/22/21	0945	Solid	SJL		X		

Container Type	P	P
Preservative	—	—

AAC AA 12/27/21

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	12/23 1350	B. Lyons 12/23/21	13:50
B. Lyons 12/23/21	16:45		12/24/21 0030
W. Dandli AAC	12/27/21 11:27	AAC AA	12/27/21 11:27

12/27/21 9:55 W. Dandli AAC 12.27.21 9:15

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2204817
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	02/17/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2204817-01	EFFLUENT-01212022	WATER	BRATTLEBORO, VT	01/21/22 11:20	01/28/22

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2204817
Project Number: Not Specified **Report Date:** 02/17/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution
L2204817-01 and WG1600176-1: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2204817-01: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2204817-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2204817-01 and WG1601071-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
WG1601071-4: This blank represents the oxidation blank associated with L2204817-01.
WG1601071-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 02/17/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01
Client ID: EFFLUENT-01212022
Sample Location: BRATTLEBORO, VT

Date Collected: 01/21/22 11:20
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/02/22 06:30
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 02/01/22 13:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.81	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	2.22	F	ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	21.0	GF	ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	--	1

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01 Date Collected: 01/21/22 11:20

Client ID: EFFLUENT-01212022 Date Received: 01/28/22

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**476**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**377**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**8**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01
Client ID: EFFLUENT-01212022
Sample Location: BRATTLEBORO, VT

Date Collected: 01/21/22 11:20
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/05/22 00:17
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	20.0	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	4.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	4.00	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	4.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	4.00	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	4.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	4.00	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	4.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	4.00	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	4.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	4.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	4.00	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	4.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	4.00	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	4.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	4.00	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	4.00	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	4.00	--	1

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01 Date Collected: 01/21/22 11:20

Client ID: EFFLUENT-01212022 Date Received: 01/28/22

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	1		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	59		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**206**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**175**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**163**	Q	50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Lab ID: L2204817-01
Client ID: EFFLUENT-01212022
Sample Location: BRATTLEBORO, VT

Date Collected: 01/21/22 11:20
Date Received: 01/28/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	2.22	F	ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	21.0	GF	ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/02/22 00:26
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 02/01/22 13:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1600176-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/02/22 00:26
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 02/01/22 13:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1600176-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**148**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:11
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:11
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:27
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:27
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**223**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**200**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**174**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1600176-2								
Perfluorobutanoic Acid (PFBA)	90		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	92		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	91		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	95		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	89		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	97		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	89		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	96		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	92		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	90		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	100		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	94		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	110		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	97		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	88		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	100		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	87		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1600176-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	109				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1601071-2 WG1601071-3								
Perfluorobutanoic Acid (PFBA)	96		98		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	99		102		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	93		94		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	99		101		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	102		102		52-156	0		30
Perfluoroheptanoic Acid (PFHpA)	102		102		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	115		115		69-177	0		30
Perfluorooctanoic Acid (PFOA)	110		100		63-159	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		97		61-179	2		30
Perfluorononanoic Acid (PFNA)	104		106		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	114		109		52-151	4		30
Perfluorodecanoic Acid (PFDA)	94		100		63-171	6		30
Perfluorononanesulfonic Acid (PFNS)	102		105		48-150	3		30
Perfluoroundecanoic Acid (PFUnA)	99		104		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	105		106		38-156	1		30
Perfluorododecanoic Acid (PFDoA)	102		106		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	106		110		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	100		109		59-182	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1601071-2 WG1601071-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		87		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		98		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		86		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		73		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-3 QC Sample: L2204401-11 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	2.99	40	39.4	91		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	6.09	40	43.9	95		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	35.5	34.5	93		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	37.4	35.4	95		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	7.49	40	44.9	94		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	37.6	36.7	95		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	11.9	40	47.6	89		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	8.08	36.5	43.8	98		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	13.9	40	50.1	91		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	38	36.8	97		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	38	37.6	99		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	2.22	40	38.8	92		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	3.22	37.1	41.4	103		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	40	36.0	89		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	38.4	41.8	109		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	38.4	36.1	94		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	40	41.7	104		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	40	36.7	92		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38.5	38.5	100		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	40	38.4	96		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	40	36.6	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	40	37.2	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2204817

Report Date: 02/17/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-3 QC Sample: L2204401-11 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	40	38.6	97		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	40	39.1	96		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	121				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	77				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-4 QC Sample: L2204401-12 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	3.28	3.05	ng/l	7		30
Perfluoropentanoic Acid (PFPeA)	4.82	5.11	ng/l	6		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	4.18	4.18	ng/l	0		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.87	3.74	ng/l	3		30
Perfluorohexanesulfonic Acid (PFHxS)	3.25	3.34	ng/l	3		30
Perfluorooctanoic Acid (PFOA)	19.3	19.3	ng/l	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.93	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	2.13	2.03	ng/l	5		30
Perfluorooctanesulfonic Acid (PFOS)	16.3	15.3	ng/l	6		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-4 QC Sample: L2204401-12 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		77		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		89		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		107		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**130**		**144**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		76		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		85		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		77		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		68		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		78		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		18		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		62		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		69		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-4 QC Sample: L2204401-12 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		63		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2204817-01A	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(14)
L2204817-01B	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(14)
L2204817-01C	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2204817-01D	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 1/31/22

ALPHA Job #: L2204817

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Weston & Sampson
Address: 98 S Main St
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com
reilly.margaret@wseinc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC #2
Project Location: Brattleboro, VT
Project #:
Project Manager: Steve LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Email results to larosas@wseinc.com AND Reilly.Margaret@wseinc.com

ANALYSIS: 537 PFAS; TOP

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 PFAS	TOP	Sample Specific Comments	TOTAL # BOTTLES
04817-01	Effluent-01212022	1/21/22	1120	WW	MCR	2	2		

Container Type	P	P	
Preservative	X	X	

MCA - AAL 1/31/22 11:25

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilley	1/21/22 1330	Endge	1/21/22 1530
Fedex	1/28/2022 10:15	James Gasmire	1/28/22 10:15
James Gasmire	1/28/2022 12:00	[illegible] AAL	1/28/22 12:00
[illegible]	1/28/22 16:35	[illegible]	1/28 2215

[illegible] 1/31/22 0820

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Rel Sarah [illegible] 1/31/22 10:20
D. [illegible] AAL 1/31/22 11:20

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2214714
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDE WWTF P2
Project Number:	Not Specified
Report Date:	04/06/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2214714-01	FILTER CAKE (X2)	SLUDGE	BRATTLEBORO, VT	01/26/22 12:45	01/28/22

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2214714-01: The sample was extracted with the method required holding time exceeded with client authorization. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. Several Extracted Internal Surrogate were impacted by matrix interference and the associated target compounds are not reported.

WG1621837-1: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1621837-2 LCS recovery, associated with L2214714-01, is above the acceptance criteria for and perfluorotetradecanoic acid (pfta) (134%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 04/06/22

ORGANICS

SEMIVOLATILES

Project Name: VTDE WWTF P2 **Lab Number:** L2214714

Project Number: Not Specified **Report Date:** 04/06/22

SAMPLE RESULTS

Lab ID: L2214714-01
Client ID: FILTER CAKE (X2)
Sample Location: BRATTLEBORO, VT

Date Collected: 01/26/22 12:45
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 04/01/22 08:04
Analyst: HT
Percent Solids: 16%

Extraction Method: ALPHA 23528
Extraction Date: 03/31/22 06:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	12.3	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	12.3	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	12.3	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	6.13	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	6.13	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		58-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**436**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**281**	Q	71-129
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		75-130

Project Name: VTDE WWTF P2 **Lab Number:** L2214714

Project Number: Not Specified **Report Date:** 04/06/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 04/01/22 06:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/31/22 06:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1621837-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	--

Project Name: VTDE WWTF P2 **Lab Number:** L2214714

Project Number: Not Specified **Report Date:** 04/06/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 04/01/22 06:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/31/22 06:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1621837-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**141**	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	134		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	132		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1621837-2								
Perfluorobutanoic Acid (PFBA)	103		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	103		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	102		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	110		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	107		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	107		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	126		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	109		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	117		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	116		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	122		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	116		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	109		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	107		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	93		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	119		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	110		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	112		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	100		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDE WWTF P2

Project Number: Not Specified

Lab Number: L2214714

Report Date: 04/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1621837-2								
Perfluorotridecanoic Acid (PFTrDA)	139		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	**134**	Q	-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	110				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	115				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	127				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87				24-159

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1621837-3 WG1621837-4 QC Sample: L2214505-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	29.1	14.3	44.2	106		39.0	**67**	Q	71-135	13		30
Perfluoropentanoic Acid (PFPeA)	31.1	14.3	43.9	90		41.6	72		69-132	5		30
Perfluorobutanesulfonic Acid (PFBS)	ND	12.7	12.4	98		13.3	102		72-128	7		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	13.4	15.5	116		16.8	122		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	8.31	14.3	24.1	110		22.7	98		70-132	6		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	13.4	14.3	106		14.6	106		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	4.84	14.3	18.8	98		19.6	100		71-131	4		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	13.1	15.6	119		18.8	**140**	Q	67-130	19		30
Perfluorooctanoic Acid (PFOA)	3.45	14.3	18.1	102		19.3	108		69-133	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	13.6	15.8	116		18.0	129		64-140	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	13.6	15.2	111		15.0	107		70-132	1		30
Perfluorononanoic Acid (PFNA)	1.19	14.3	16.6	108		17.5	111		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	22.1F	13.3	41.1F	**143**	Q	34.4F	90		68-136	18		30
Perfluorodecanoic Acid (PFDA)	ND	14.3	16.0	108		18.0	119		69-133	12		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	7.76	13.7	21.0	97		20.5	90		65-137	2		30
Perfluorononanesulfonic Acid (PFNS)	ND	13.8	14.6	106		15.6	110		69-125	7		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	14.3	16.6F	116		16.4	112		63-144	1		30
Perfluoroundecanoic Acid (PFUnA)	ND	14.3	13.0	89		14.6	98		64-136	12		30
Perfluorodecanesulfonic Acid (PFDS)	ND	13.8	15.0	109		16.1	113		59-134	7		30
Perfluorooctanesulfonamide (FOSA)	ND	14.3	14.5F	101		14.9	101		67-137	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	14.3	21.9	**153**	Q	21.1	**144**	Q	61-139	4		30
Perfluorododecanoic Acid (PFDoA)	ND	14.3	13.8	97		15.4	105		69-135	11		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDE WWTF P2

Project Number: Not Specified

Lab Number: L2214714

Report Date: 04/06/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1621837-3 WG1621837-4 QC Sample: L2214505-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	14.3	19.1	134		19.6	133		66-139	3		30
Perfluorotetradecanoic Acid (PFTA)	ND	14.3	17.9	125		19.4	132		69-133	8		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	139	125F	90		161F	112		41-165	25		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	13.5	11.2	83		12.5	90		68-143	11		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	14.3	16.2	113		17.7	120		18-191	9		30
Perfluorooctadecanoic Acid (PFODA)	ND	14.3	10.1	71		11.6	79		10-123	14		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**536**	Q	**597**	Q	19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**358**	Q	**379**	Q	14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**466**	Q	**559**	Q	20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		103		10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		71		34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	113		129		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		96		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		84		75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**56**	Q	**65**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**70**	Q	75		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		94		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		110		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		79		24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69		83		10-145

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDE WWTF P2

Project Number: Not Specified

Lab Number: L2214714

Report Date: 04/06/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1621837-3 WG1621837-4 QC Sample: L2214505-02 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		89		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	60		66		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		49		10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		92		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		85		75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		82		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		87		74-139

INORGANICS
&
MISCELLANEOUS

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

SAMPLE RESULTS

Lab ID: L2214714-01
Client ID: FILTER CAKE (X2)
Sample Location: BRATTLEBORO, VT

Date Collected: 01/26/22 12:45
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	16.3		%	0.100	--	1	-	02/02/22 20:07	121,2540G	GF

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
A	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L2214714-01A	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2214714-01B	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VTDE WWTF P2
Project Number:

Lab Number: L2214714
Report Date: 04/06/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

1/31/22 L2204803 kb 3/22/22

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab:

ALPHA Job #: L2214714

ALPHA
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Weston & Sampson
Address: 98 S Main St
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC WWTF P2
Project Location: Brattleboro, VT
Project #:
Project Manager: S LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☒ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoices@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Send results to larosas@wseinc.com AND Reilly.Margaret@wseinc.com
SAMPLE CONTAINS PFAS.

ANALYSIS: PFAS Isotope Dil

SAMPLE HANDLING
Filtration ________
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS Isotope Dil	Sample Specific Comments
14714-01 ~~04803-01~~	Filter Cake (x2)	1/26/22	1245	S		X	CONTAINS PFAS
~~-2A~~	trip blank (x1)						

Container Type	P
Preservative	X

Relinquished By:	Date/Time	Received By:	Date/Time
[signature] MACKINTOSH	1/28/22 12:00	B. Lyons	1-28-22 12:00
B. Lyons	1-28-22 16:05	[signature]	1/28 [illegible]
See attached generic CoC [initials]	1-31-22 10:20	[signature] AAL	1/31/22 1020

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

J. Damaske AAL 1/31/22 11:25

GS Precision

Chain of Custody

GSP Coatings, Inc.
101 John Seitz Dr.
Brattleboro, VT 05301
802.246.5812 (lab)

Date Sent
Po# W25 372800
Report to Rachel Mackintosh
Email rachel.mackintosh@gsprecision.com

Sample Information	Date	Time	Type&Matrix	Preservative?	Analysis Required
Filter-Cake	1/26/22	1245	gels/solid	chilled	
Filter Cake Field Duplicate	"	"	"	"	
Trip Blank	"	"	"	"	

Custody Record

Sampled By: C. Jk	Date & Time Sampled: 1/26/22 12:45
Print Name: Rachel Mackintosh	Relinquished: n/a
Packed By: SAME	Date & Time Packed: 1/26/22 13:00
Print Name:	Relinquished:
Rec'd at Lab By:	Date & Time Received:
Print Name:	Date Analyzed:
Sampler Comments:	Analyst Comments:
Filter cake testing notes: >90% of this is from the Nickel Acetate Seal Destruct. There was residual loose sludge from the Lamella Settler demant still in the piping when the Destruct sludge started coming through. -RCM	

ANALYTICAL REPORT

Lab Number:	L2211036
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2 GE-1
Project Number:	Not Specified
Report Date:	03/18/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211036-01	FIELD BLANK-GE-1	WATER	RUTLAND, VT	02/25/22 10:15	03/02/22
L2211036-02	GE-1-EFFLUENT	WATER	RUTLAND, VT	02/25/22 10:15	03/02/22
L2211036-03	GE-1-SLUDGE	SLUDGE	RUTLAND, VT	02/25/22 10:10	03/02/22

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211036-02 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1612872-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211036-02: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2211036-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211036-02: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1613500-4: This blank represents the oxidation blank associated with L2211036-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 03/18/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-01
Client ID: FIELD BLANK-GE-1
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 13:34
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.86	0.380	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.86	0.369	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	0.222	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.86	0.421	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.86	0.306	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.86	0.228	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.210	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	0.350	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	0.220	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.641	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.291	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.86	0.470	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.283	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.86	1.04	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.604	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.913	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.540	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.749	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.347	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.305	1
Perfluorotetradecanoic Acid (PFTA)	0.775	JF	ng/l	1.86	0.231	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-01 Date Collected: 02/25/22 10:15

Client ID: FIELD BLANK-GE-1 Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	108		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	114		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	116		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		22-136

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02
Client ID: GE-1-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 13:51
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.370	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.409	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.81	0.297	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	1.79	JF	ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	0.225	J	ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	0.739	JF	ng/l	1.81	0.225	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02 Date Collected: 02/25/22 10:15

Client ID: GE-1-EFFLUENT Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**217**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		22-136

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02
Client ID: GE-1-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 23:56
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.67	J	ng/l	9.12	0.372	1
Perfluoropentanoic Acid (PFPeA)	4.87		ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	2.74		ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.224	1
Perfluoroheptanoic Acid (PFHpA)	0.423	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	0.306	J	ng/l	1.82	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.627	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02 Date Collected: 02/25/22 10:15

Client ID: GE-1-EFFLUENT Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**241**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**197**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**165**	Q	50-150

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-03
Client ID: GE-1-SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:10
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 05:13
Analyst: HT
Percent Solids: 61%

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.064	J	ng/g	0.402	0.018	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.402	0.037	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.201	0.031	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.804	0.052	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.402	0.042	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.804	0.067	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.201	0.036	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.201	0.049	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.201	0.034	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.402	0.144	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.402	0.110	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.201	0.060	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.201	0.104	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.201	0.054	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.402	0.231	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.804	0.240	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.402	0.162	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.402	0.038	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.402	0.123	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.402	0.079	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.402	0.068	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.402	0.056	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.402	0.164	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.402	0.043	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-03 Date Collected: 02/25/22 10:10

Client ID: GE-1-SLUDGE Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**149**	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**519**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**44**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	**141**	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**422**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**44**	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**584**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**231**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	130		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	129		24-159

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Lab ID: L2211036-02
Client ID: GE-1-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Units	Post-Treatment Results	Post-Treatment Qualifier	Units	Difference Results	Difference Qualifier	Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.67	J	ng/l	6.67	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	4.87		ng/l	4.87		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.74		ng/l	2.74		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.423	J	ng/l	0.423	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	1.79	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorooctanoic Acid (PFOA)	0.225	J	ng/l	0.306	J	ng/l	0.081	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	0.739	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							14.8	J	ng/l

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.936	J	ng/l	2.00	0.248

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	74		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		22-136

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1612992-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1612992-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100		24-159

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-4					
Perfluorobutanoic Acid (PFBA)	6.08	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.05	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.540	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**216**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**189**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	97		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	113		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	98		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	106		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	112		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	102		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	102		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	115		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	104		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	105		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	96		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	103		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	112		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	97		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	112		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	103		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorotridecanoic Acid (PFTrDA)	110		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1612992-2								
Perfluorobutanoic Acid (PFBA)	90		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	95		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	90		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	83		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	89		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	87		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	88		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	96		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	91		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	81		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	108		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1612992-2								
Perfluorotridecanoic Acid (PFTrDA)	108		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	109				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1613500-2 WG1613500-3								
Perfluorobutanoic Acid (PFBA)	90		88		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	91		88		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		88		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	89		90		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	90		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		98		69-177	0		30
Perfluorooctanoic Acid (PFOA)	87		87		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		96		61-179	5		30
Perfluorononanoic Acid (PFNA)	90		91		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	90		97		52-151	7		30
Perfluorodecanoic Acid (PFDA)	87		87		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	92		100		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	94		87		60-153	8		30
Perfluorodecanesulfonic Acid (PFDS)	90		97		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	97		89		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	108		101		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	94		92		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1613500-2 WG1613500-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		93		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		88		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	0.994J	37.2	37.9	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	37.2	38.4	103		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.1	31.9	96		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.8	38.3	110		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	37.2	36.4	98		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	44.3	127		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.222J	37.2	38.0	101		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34	53.8	158		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.402J	37.2	37.7	100		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.4	38.4	108		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.4	34.6	98		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	37.2	36.6	98		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.6	51.0F	146		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.2	37.8	102		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.7	36.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	35.3	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	37.6	101		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	39.7	107		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	24.4	68		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	36.9F	99		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.2	35.1	94		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	37.5	101		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	47.5	128		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	0.874J	37.2	44.3	117		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**276**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**204**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**395**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**16**	Q			27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	26				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**36**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	84				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q			10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	1.28J	15.3	14.1	84		14.3	84		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	0.171J	15.3	13.8	89		13.9	88		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	13.6	12.2	90		12.3	89		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	14.3	13.3	93		13.5	93		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	ND	15.3	13.5	88		13.9	89		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	14.4	12.8	89		13.0	89		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	15.3	14.2	93		14.1	91		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	0.251J	14	13.8	97		13.8	95		67-130	0		30
Perfluorooctanoic Acid (PFOA)	1.83F	15.3	13.6	77		14.7	83		69-133	8		30
Perfluorononanoic Acid (PFNA)	2.39	15.3	14.7	80		15.5	84		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	44.1	14.2	52.7	**61**	Q	52.6	**59**	Q	68-136	0		30
Perfluorodecanoic Acid (PFDA)	1.35	15.3	15.0	89		13.7	80		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	14.7	14.4	98		14.2	95		65-137	1		30
Perfluorononanesulfonic Acid (PFNS)	ND	14.7	15.2	103		14.4	96		69-125	5		30
Perfluoroundecanoic Acid (PFUnA)	0.584J	15.3	14.0	88		13.7	84		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	ND	14.8	14.9	101		14.0	93		59-134	6		30
Perfluorododecanoic Acid (PFDoA)	ND	15.3	14.3	93		14.4	93		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	15.3	16.9	110		17.8	115		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	15.3	14.1	92		14.1	91		69-133	0		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	139		145		19-175

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		131		14-167
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		76		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**62**	Q	**55**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**63**	Q	**53**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		98		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		82		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		90		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		71		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		69		58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		96		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**72**	Q	**57**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		**62**	Q	72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		94		74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: GE-1-EFFLUENT						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.79JF	1.88JF	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.225J	0.272J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: GE-1-EFFLUENT						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.739JF	0.863JF	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**217**	Q	**199**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	**150**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		76		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		97		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		90		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		94		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		27		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		108		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: GE-1-EFFLUENT

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		87		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-03
Client ID: GE-1-SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:10
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	61.0		%	0.100	0.100	1	-	03/03/22 17:56	121,2540G	AT

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1611426-1 QC Sample: L2210901-21 Client ID: DUP Sample						
Solids, Total	88.8	88.3	%	1		10

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211036-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211036-02A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211036-02B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211036-02C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211036-02D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211036-03A	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: **Report Date:** 03/18/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211036 ~~L2211030~~

Client Information

Client: Weston & Sampson
Address: 485 Main St Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com esnyder

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P2 GE-1
Project Location: Rutland, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Please report to MDL and send results to larosas@wseinc.com and Reilly.Margaret@wseinc.com

ANALYSIS: 537.1 Stripped TOP

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments	TOTAL # BOTTLES
~~H030~~ 01	Field Blank GE-1	2/25/2022	1015	WW	MLR	X	
11036-02	GE-1-Effluent	2/25/2022	1015	WW	MLR	X	X
03	GE-1-Sludge	2/25/2022	1010	S	MLR	X	

Container Type		
Preservative	/	/

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilly Fedex	2/25/22 1600	Fedex	3/2/22 1458

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2211030
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2 GE-2
Project Number:	Not Specified
Report Date:	03/28/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211030-01	GE-2-EFFLUENT	WATER	CLARENDON, VT	02/25/22 09:40	03/02/22
L2211030-02	GE-2-SLUDGE	SLUDGE	CLARENDON, VT	02/25/22 09:45	03/02/22
L2211030-03	FIELD BLANK-GE-2	WATER	CLARENDON, VT	02/25/22 09:40	03/02/22

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030
Project Number: Not Specified **Report Date:** 03/28/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211030-01: The sample has elevated detection limits for PFHxS and PFOS due to the dilution required by the sample matrix.

L2211030-01, -02, -03, WG1612075-1, WG1612075-2, and WG1612075-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211030-02: The Extracted Internal Surrogate recovery was less than 2% for perfluoro[13c8]octanesulfonamide (m8fosa) (1%). The associated target compounds are not reported due to the insufficient recovery of this surrogate.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211030-01: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2211030-01 and WG1613500-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211030-01 and WG1613500-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: This blank represents the oxidation blank associated with L2211030-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Alycia Mogayzel

Title: Technical Director/Representative Date: 03/28/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01
Client ID: GE-2-EFFLUENT
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 21:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	0.964	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	0.516	JF	ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	0.388	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	8.90	0.334	1
Perfluorooctanoic Acid (PFOA)	0.320	J	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.20	J	ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	0.288	J	ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	8.90	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01 Date Collected: 02/25/22 09:40

Client ID: GE-2-EFFLUENT Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**165**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**288**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**263**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**173**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**142**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	123		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	121		22-136

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01
Client ID: GE-2-EFFLUENT
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 23:23
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.70	J	ng/l	9.07	0.370	1
Perfluoropentanoic Acid (PFPeA)	3.02		ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216	1
Perfluorohexanoic Acid (PFHxA)	2.15		ng/l	1.81	0.298	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222	1
Perfluoroheptanoic Acid (PFHpA)	0.552	J	ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.341	1
Perfluorooctanoic Acid (PFOA)	0.457	J	ng/l	1.81	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.624	1
Perfluorononanoic Acid (PFNA)	0.370	J	ng/l	1.81	0.283	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.457	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.276	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.889	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.338	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.297	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.225	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01 Date Collected: 02/25/22 09:40

Client ID: GE-2-EFFLUENT Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**228**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**171**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**156**	Q	50-150

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-02
Client ID: GE-2-SLUDGE
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:45
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 04:40
Analyst: HT
Percent Solids: 26%

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.904	0.041	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.904	0.083	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.452	0.071	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.81	0.117	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.904	0.095	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.81	0.151	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.452	0.082	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.452	0.109	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.452	0.076	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.904	0.325	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.904	0.247	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.452	0.136	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.452	0.235	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.452	0.121	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.904	0.519	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.81	0.541	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.904	0.364	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.904	0.085	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.904	0.277	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.904	0.153	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.904	0.126	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.904	0.370	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.904	0.098	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-02 Date Collected: 02/25/22 09:45

Client ID: GE-2-SLUDGE Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**168**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**61**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**190**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	133		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**1**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		24-159

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-03
Client ID: FIELD BLANK-GE-2
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 21:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.96	0.401	1
Perfluoropentanoic Acid (PFPeA)	0.436	J	ng/l	1.96	0.389	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.96	0.234	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.96	0.444	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.96	0.322	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.96	0.241	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.96	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.369	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.96	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.676	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.96	0.306	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.96	0.495	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.19	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.96	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.636	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.255	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.963	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.570	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.790	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.365	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.321	1
Perfluorotetradecanoic Acid (PFTA)	0.346	J	ng/l	1.96	0.244	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-03 Date Collected: 02/25/22 09:40

Client ID: FIELD BLANK-GE-2 Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	54		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	121		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**134**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Lab ID: L2211030-01
Client ID: GE-2-EFFLUENT
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.70	J	ng/l	6.70	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.964	J	ng/l	3.02		ng/l	2.06		ng/l
Perfluorobutanesulfonic Acid (PFBS)	0.516	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorohexanoic Acid (PFHxA)	0.388	J	ng/l	2.15		ng/l	1.76		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.552	J	ng/l	0.552	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.320	J	ng/l	0.457	J	ng/l	0.137	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	0.288	J	ng/l	0.370	J	ng/l	0.082	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							11.3	J	ng/l

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 17:13
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 09:42

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1612075-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.368	J	ng/l	2.00	0.248

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 17:13
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 09:42

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1612075-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	109		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	123		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**134**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**141**	Q	22-136

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1612992-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1612992-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100		24-159

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					
Perfluorobutanoic Acid (PFBA)	6.08	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.05	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.540	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**216**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**189**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1612075-2								
Perfluorobutanoic Acid (PFBA)	95		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	99		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	110		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	96		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	99		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	111		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	100		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	94		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	106		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	105		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	95		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	93		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1612075-2								
Perfluorotridecanoic Acid (PFTrDA)	103		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	98		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	112				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	123				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**137**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	136				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1612992-2								
Perfluorobutanoic Acid (PFBA)	90		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	95		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	90		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	83		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	89		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	87		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	88		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	96		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	91		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	81		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	108		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1612992-2								
Perfluorotridecanoic Acid (PFTrDA)	108		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	109				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								
Perfluorobutanoic Acid (PFBA)	90		88		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	91		88		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		88		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	89		90		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	90		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		98		69-177	0		30
Perfluorooctanoic Acid (PFOA)	87		87		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		96		61-179	5		30
Perfluorononanoic Acid (PFNA)	90		91		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	90		97		52-151	7		30
Perfluorodecanoic Acid (PFDA)	87		87		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	92		100		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	94		87		60-153	8		30
Perfluorodecanesulfonic Acid (PFDS)	90		97		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	97		89		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	108		101		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	94		92		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		93		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		88		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-3 QC Sample: L2211030-01 Client ID: GE-2-EFFLUENT												
Perfluorobutanoic Acid (PFBA)	ND	36.8	37.3	101		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.964J	36.8	36.8	97		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.516JF	32.7	32.6	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.5	37.6	109		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	0.388J	36.8	35.9	96		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.6	36.9	107		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.8	37.8	103		-	-		58-159	-		30
Perfluorooctanoic Acid (PFOA)	0.320J	36.8	38.3	103		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.20J	35.1	38.4	106		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.1	37.3	106		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.288J	36.8	36.7	99		-	-		68-171	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.8	39.2	106		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.4	36.3	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.4	35.4	100		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.8	33.6	91		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.8	41.3	112		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.5	38.6	109		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.8	35.3	96		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.8	39.6F	107		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.8	36.9	100		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	36.8	38.3	104		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.8	36.8	100		-	-		59-182	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-3 QC Sample: L2211030-01 Client ID: GE-2-EFFLUENT												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**253**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**180**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**272**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**149**	Q			27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**168**	Q			24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	125				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	129				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	89				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	1.28J	15.3	14.1	84		14.3	84		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	0.171J	15.3	13.8	89		13.9	88		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	13.6	12.2	90		12.3	89		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	14.3	13.3	93		13.5	93		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	ND	15.3	13.5	88		13.9	89		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	14.4	12.8	89		13.0	89		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	15.3	14.2	93		14.1	91		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	0.251J	14	13.8	97		13.8	95		67-130	0		30
Perfluorooctanoic Acid (PFOA)	1.83F	15.3	13.6	77		14.7	83		69-133	8		30
Perfluorononanoic Acid (PFNA)	2.39	15.3	14.7	80		15.5	84		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	44.1	14.2	52.7	**61**	Q	52.6	**59**	Q	68-136	0		30
Perfluorodecanoic Acid (PFDA)	1.35	15.3	15.0	89		13.7	80		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	14.7	14.4	98		14.2	95		65-137	1		30
Perfluorononanesulfonic Acid (PFNS)	ND	14.7	15.2	103		14.4	96		69-125	5		30
Perfluoroundecanoic Acid (PFUnA)	0.584J	15.3	14.0	88		13.7	84		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	ND	14.8	14.9	101		14.0	93		59-134	6		30
Perfluorododecanoic Acid (PFDoA)	ND	15.3	14.3	93		14.4	93		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	15.3	16.9	110		17.8	115		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	15.3	14.1	92		14.1	91		69-133	0		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	139		145		19-175

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2 ***Lab Number:*** L2211030

Project Number: Not Specified ***Report Date:*** 03/28/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		131		14-167
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		76		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**62**	Q	**55**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**63**	Q	**53**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		98		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		82		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		90		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		71		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		69		58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		96		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**72**	Q	**57**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		**62**	Q	72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		94		74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-4 QC Sample: L2210142-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	5.21	5.08	ng/l	3		30
Perfluoropentanoic Acid (PFPeA)	3.26	3.07	ng/l	6		30
Perfluorobutanesulfonic Acid (PFBS)	4.94	4.63	ng/l	6		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.43	2.15	ng/l	12		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	2.80	2.81	ng/l	0		30
Perfluorohexanesulfonic Acid (PFHxS)	1.54J	1.63JF	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	11.1	10.6	ng/l	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.650J	0.655J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	4.02	4.01	ng/l	0		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-4 QC Sample: L2210142-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.546JF	0.410JF	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		81		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**159**	Q	**160**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		66		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		74		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**225**	Q	**220**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	140		125		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		29		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		98		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		105		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-4 QC Sample: L2210142-01 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95		104		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-02
Client ID: GE-2-SLUDGE
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:45
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	26.3		%	0.100	0.100	1	-	03/03/22 17:56	121,2540G	AT

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1611426-1 QC Sample: L2210901-21 Client ID: DUP Sample						
Solids, Total	88.8	88.3	%	1		10

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211030-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211030-01B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211030-01C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211030-01D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211030-02A	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2211030-03A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2 GE-2
Project Number:

Lab Number: L2211030
Report Date: 03/28/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211030

Client Information

Client: Weston + Sampson
Address: 98 S Main St, Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P26E-2
Project Location: Clarendon, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report to MDL
Please email results to larosas@wseinc.com AND Reilly-Margaret@wseinc.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: 537.1 Isotope EASTOP	TOTAL # BOTTLES	Sample Specific Comments
11030-01	GE-2-Effluent	2/25/2022	0940	WW	MLR	X	X	
02	GE-2-Sludge	2/25/2022	0945	S	MLR	X		
03	FieldBlank-GE-2	2/25/2022	0940	WW	MLR	X		

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Container Type	4	2
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilly Fedex	2/25/2022 1000	Fedex	3/2/22 1453

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2211032
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2 GSP
Project Number:	Not Specified
Report Date:	03/24/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211032-01	GSP-EFFLUENT	WATER	BRATTLEBORO, VT	02/25/22 13:30	03/02/22
L2211032-02	FIELD BLANK-GSP	WATER	BRATTLEBORO, VT	02/25/22 13:30	03/02/22
L2211032-03	GSP-SLUDGE	SLUDGE	BRATTLEBORO, VT	02/25/22 13:40	03/02/22

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211032-01: The sample has elevated detection limits for PFOS due to matrix interference. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211032-03RE\R: The sample was re-extracted with the method required holding time exceeded due to matrix interferences with internal standards in the original extraction. The results of the re-extraction are reported. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported. The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

WG1612872-3, WG1616123-3R, and WG1616123-4R: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1616123-1R, WG1616123-2R, WG1616123-3R, and WG1616123-4R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

The WG1616123-3R-4R MS/MSD recoveries, performed on L2211032-03, are outside the acceptance criteria for perfluorononanesulfonic acid (pfns) (25%/19%), perfluorodecanesulfonic acid (pfds) (34%/33%) and perfluorotridecanoic acid (pftrda) (168%/170%).

The WG1616123-3R/-4R MS/MSD RPDs, performed on L2211032-03, are outside the acceptance criteria for perfluorononanesulfonic acid (pfns) (35%) and n-methyl perfluorooctanesulfonamidoacetic acid (nmefosaa) (31%).

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211032-01: The sample was centrifuged and decanted prior to extraction due to sample matrix. The sample

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

Case Narrative (continued)

has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1613500-4: This blank represents the oxidation blank associated with L2211032-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 03/24/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 12:44
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.994	J	ng/l	1.76	0.360	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.76	0.349	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.76	0.398	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.76	0.289	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	0.222	J	ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	0.402	J	ng/l	1.76	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	17.6	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.07	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.987	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.571	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.864	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.511	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.709	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.328	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	0.874	J	ng/l	1.76	0.218	1

Project Name: VT DEC P2 GSP
Lab Number: L2211032
Project Number: Not Specified
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**226**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**358**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	132		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**302**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**19**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**30**	Q	55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**5**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**13**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 23:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	13.8	J	ng/l	20.0	0.816	1
Perfluoropentanoic Acid (PFPeA)	3.15	J	ng/l	4.00	0.792	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	4.00	0.476	1
Perfluorohexanoic Acid (PFHxA)	1.72	J	ng/l	4.00	0.656	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	4.00	0.490	1
Perfluoroheptanoic Acid (PFHpA)	0.464	J	ng/l	4.00	0.450	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	4.00	0.752	1
Perfluorooctanoic Acid (PFOA)	0.592	J	ng/l	4.00	0.472	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	4.00	1.38	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	4.00	0.624	1
Perfluorooctanesulfonic Acid (PFOS)	1.02	J	ng/l	4.00	1.01	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	4.00	0.608	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	4.00	2.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	4.00	0.520	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	4.00	1.96	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	4.00	0.744	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	4.00	0.654	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	4.00	0.496	1

Project Name: VT DEC P2 GSP
Lab Number: L2211032
Project Number: Not Specified
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT
Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	2		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**233**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**196**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-02
Client ID: FIELD BLANK-GSP
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 13:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.92	0.392	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.92	0.381	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.229	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.435	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.315	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.236	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.92	0.216	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.362	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.92	0.227	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.662	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.92	0.485	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.292	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.16	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.623	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.942	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.558	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.773	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.358	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.315	1
Perfluorotetradecanoic Acid (PFTA)	0.912	J	ng/l	1.92	0.238	1

Project Name: VT DEC P2 GSP
Lab Number: L2211032
Project Number: Not Specified
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-02
Client ID: FIELD BLANK-GSP
Sample Location: BRATTLEBORO, VT
Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-03 RE\R
Client ID: GSP-SLUDGE
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 12:29
Analyst: RS
Percent Solids: 13%

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	14.8	0.670	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	14.8	1.36	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	7.38	1.15	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	29.5	1.90	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	14.8	1.55	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	29.5	2.46	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	7.38	1.33	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	7.38	1.79	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	7.38	1.24	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	14.8	5.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	14.8	4.03	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	7.38	2.21	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	73.8	3.84	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	7.38	1.98	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	14.8	8.48	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	29.5	8.83	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	14.8	5.95	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	14.8	1.38	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	14.8	4.52	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	14.8	2.89	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	14.8	2.50	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	14.8	2.07	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	14.8	6.04	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	14.8	1.59	1

Project Name: VT DEC P2 GSP **Lab Number:** L2211032

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-03 RE\R Date Collected: 02/25/22 13:40

Client ID: GSP-SLUDGE Date Received: 03/02/22

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**224**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**324**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	32		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**207**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**162**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**877**	Q	24-159

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.994	J	ng/l	13.8	J	ng/l	12.8	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	3.15	J	ng/l	3.15	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.72	J	ng/l	1.72	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.222	J	ng/l	0.464	J	ng/l	0.242	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.402	J	ng/l	0.592	J	ng/l	0.190	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.02	J	ng/l	1.02	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	0.874	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							19.1	J	ng/l

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.936	J	ng/l	2.00	0.248

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	74		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					
Perfluorobutanoic Acid (PFBA)	6.08	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.05	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.540	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**216**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**189**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1616123-1 R					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1616123-1 R					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	111		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	97		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	113		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	98		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	106		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	112		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	102		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	102		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	115		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	104		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	105		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	96		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	103		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	112		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	97		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	112		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	103		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorotridecanoic Acid (PFTrDA)	110		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								
Perfluorobutanoic Acid (PFBA)	90		88		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	91		88		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		88		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	89		90		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	90		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		98		69-177	0		30
Perfluorooctanoic Acid (PFOA)	87		87		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		96		61-179	5		30
Perfluorononanoic Acid (PFNA)	90		91		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	90		97		52-151	7		30
Perfluorodecanoic Acid (PFDA)	87		87		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	92		100		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	94		87		60-153	8		30
Perfluorodecanesulfonic Acid (PFDS)	90		97		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	97		89		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	108		101		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	94		92		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		93		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		88		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1616123-2								
Perfluorobutanoic Acid (PFBA)	87		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	87		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	86		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	93		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	87		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	85		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	82		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	91		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	88		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	84		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	90		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	82		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	85		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	90		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1616123-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	89		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	65				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94				24-159

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: GSP-EFFLUENT												
Perfluorobutanoic Acid (PFBA)	0.994J	37.2	37.9	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	37.2	38.4	103		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.1	31.9	96		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.8	38.3	110		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	37.2	36.4	98		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	44.3	127		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.222J	37.2	38.0	101		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34	53.8	158		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.402J	37.2	37.7	100		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.4	38.4	108		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.4	34.6	98		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	37.2	36.6	98		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.6	51.0F	146		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.2	37.8	102		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.7	36.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	35.3	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	37.6	101		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	39.7	107		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	24.4	68		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	36.9F	99		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.2	35.1	94		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	37.5	101		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: GSP-EFFLUENT												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	47.5	128		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	0.874J	37.2	44.3	117		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**276**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**204**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**395**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**16**	Q			27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	26				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**36**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	84				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q			10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: GSP-SLUDGE												
Perfluorobutanoic Acid (PFBA)	ND	145	134	93		123	90		71-135	9		30
Perfluoropentanoic Acid (PFPeA)	ND	145	135	93		126	93		69-132	7		30
Perfluorobutanesulfonic Acid (PFBS)	ND	129	122	95		108	89		72-128	12		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	136	136	100		126	99		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	ND	145	136	94		124	91		70-132	9		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	136	134	98		121	95		73-123	10		30
Perfluoroheptanoic Acid (PFHpA)	ND	145	140	97		126	93		71-131	11		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	132	140	106		132	106		67-130	6		30
Perfluorooctanoic Acid (PFOA)	ND	145	130	90		126	93		69-133	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	138	146	106		133	103		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	138	140	101		126	97		70-132	11		30
Perfluorononanoic Acid (PFNA)	ND	145	137	95		125	92		72-129	9		30
Perfluorooctanesulfonic Acid (PFOS)	ND	134	148	110		132	105		68-136	11		30
Perfluorodecanoic Acid (PFDA)	ND	145	147	101		131	96		69-133	12		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	139	159	114		131	100		65-137	19		30
Perfluorononanesulfonic Acid (PFNS)	ND	139	35.0	**25**	Q	24.6J	**19**	Q	69-125	**35**	Q	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	145	155	107		113	83		63-144	**31**	Q	30
Perfluoroundecanoic Acid (PFUnA)	ND	145	135	93		127	93		64-136	6		30
Perfluorodecanesulfonic Acid (PFDS)	ND	140	47.4	**34**	Q	43.1	**33**	Q	59-134	10		30
Perfluorooctanesulfonamide (FOSA)	ND	145	126F	87		97.1	71		67-137	26		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	145	127	88		131	96		61-139	3		30
Perfluorododecanoic Acid (PFDoA)	ND	145	145	100		115	85		69-135	23		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: GSP-SLUDGE												
Perfluorotridecanoic Acid (PFTrDA)	ND	145	244	**168**	Q	231	**170**	Q	66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	145	140	97		131	96		69-133	7		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		30		19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**229**	Q	**230**	Q	14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**319**	Q	**282**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**211**	Q	**172**	Q	34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		107		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		**160**	Q	61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**73**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		72		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**66**	Q	**65**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		111		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**151**	Q	**194**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**866**	Q	**1087**	Q	24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		68		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		61		10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		103		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**74**	Q	**73**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		113		74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.79JF	1.88JF	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.225J	0.272J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.739JF	0.863JF	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**217**	Q	**199**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	**150**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		76		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		97		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		90		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		94		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		27		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		108		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		87		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-03
Client ID: GSP-SLUDGE
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	12.9		%	0.100	0.100	1	-	03/03/22 17:56	121,2540G	AT

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1611426-1 QC Sample: L2210901-21 Client ID: DUP Sample						
Solids, Total	88.8	88.3	%	1		10

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211032-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211032-01B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211032-01C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211032-01D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211032-02A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211032-03A	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211032

Client Information

Client: Weston + Sampson
Address: 65 Main St, Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P2 GSP
Project Location: Brattleboro, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report to MDL.
Send results to larosas@wseinc.com AND Reilly.Margaret@wseinc.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: 537.1 Isotope 537 PFAS TOP	SAMPLE HANDLING	TOTAL # BOTTLES
11032-01	GSP Effluent	2/25/2022	1330	WW	MLR	X	X	
02	Field Blank-GSP	2/25/2022	1330	WW	MLR	X		
03	GSP-Sludge	2/25/2022	1340	S	MLR	X		

Container Type: 4 2
Preservative: X X

SAMPLE HANDLING: Filtration ☐ Done ☐ Not needed ☐ Lab to do; Preservation ☐ Lab to do (Please specify below)

Sample Specific Comments

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly Fedex	2/25/2022 1600	Fedex	2/25/2022 1600
			3/4/22 1458

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2212981
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	COLLINS AERO
Project Number:	Not Specified
Report Date:	04/04/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2212981-01	SLUDGE-03082022	SLUDGE	VERGENNES, VT	03/08/22 09:35	03/11/22
L2212981-02	EFFLUENT-03082022	WATER	VERGENNES, VT	03/08/22 09:30	03/11/22
L2212981-03	DI RINSE 03082022	WATER	VERGENNES, VT	03/08/22 09:50	03/11/22

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2212981-01R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

L2212981-01R and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1616123-1R and WG1616123-2R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2212981-02 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2212981-02 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1618396-4: This blank represents the oxidation blank associated with L2212981-02 and -03.

WG1618396-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1618396-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 04/04/22

ORGANICS

SEMIVOLATILES

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-01 R
Client ID: SLUDGE-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:35
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 13:19
Analyst: RS
Percent Solids: 32%

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.758	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.758	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.379	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.52	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.758	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.52	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.379	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.379	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.379	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.881		ng/g	0.758	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.758	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.379	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.379	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.379	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.758	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.52	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.758	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.758	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.758	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.758	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.758	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.758	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.758	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.758	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-01 R
Client ID: SLUDGE-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:35
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	68		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**60**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**68**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**200**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**8**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	108		24-159

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02
Client ID: EFFLUENT-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:30
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 21:25
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.75		ng/l	1.94	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.94	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.94	--	1
Perfluorohexanoic Acid (PFHxA)	2.45		ng/l	1.94	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.94	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.94	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.94	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.64		ng/l	1.94	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.94	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.94	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02 Date Collected: 03/08/22 09:30

Client ID: EFFLUENT-03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	32		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**29**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**228**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**167**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	96		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**133**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02
Client ID: EFFLUENT-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:30
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 00:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.1	--	1
Perfluoropentanoic Acid (PFPeA)	6.51		ng/l	2.02	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.02	--	1
Perfluorohexanoic Acid (PFHxA)	5.95		ng/l	2.02	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.02	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.02	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.02	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.02	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.02	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.02	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.02	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.02	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.02	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.02	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.02	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.02	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.02	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.02	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02 Date Collected: 03/08/22 09:30

Client ID: EFFLUENT-03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**178**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**196**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**193**	Q	50-150

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03
Client ID: DI RINSE 03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:50
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 21:42
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.44	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.44	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.44	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.44	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.44	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.44	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.44	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.44	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.44	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.22		ng/l	2.44	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.44	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.44	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.44	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.44	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.44	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.44	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.44	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.44	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.44	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.44	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.44	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.44	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.44	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.44	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03 Date Collected: 03/08/22 09:50

Client ID: DI RINSE 03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	113		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		22-136

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03
Client ID: DI RINSE 03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:50
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 01:01
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	12.3	--	1
Perfluoropentanoic Acid (PFPeA)	2.50		ng/l	2.46	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.46	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.46	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.46	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.46	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.46	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.46	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.46	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.46	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.46	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.46	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.46	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.46	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.46	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.46	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.46	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.46	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03 Date Collected: 03/08/22 09:50

Client ID: DI RINSE 03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**191**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**210**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**210**	Q	50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Lab ID: L2212981-02
Client ID: EFFLUENT-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:30
Date Received: 03/11/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	2.75		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	6.51		ng/l	6.51		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	2.45		ng/l	5.95		ng/l	3.50		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							10		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Lab ID: L2212981-03
Client ID: DI RINSE 03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:50
Date Received: 03/11/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.50		ng/l	2.50		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							2.5		ng/l

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1616123-1 R					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	--

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1616123-1 R					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	111		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		24-159

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 20:52
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03 Batch: WG1618248-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 20:52
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03 Batch: WG1618248-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	114		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98		22-136

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/29/22 23:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/29/22 23:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	120		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		22-136

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 01:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 01:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**176**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**203**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**192**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1616123-2								
Perfluorobutanoic Acid (PFBA)	87		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	87		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	86		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	93		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	87		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	85		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	82		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	91		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	88		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	84		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	90		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	82		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	85		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	90		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: COLLINS AERO

Project Number: Not Specified

Lab Number: L2212981

Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1616123-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	89		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	65				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618248-2								
Perfluorobutanoic Acid (PFBA)	90		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	97		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	91		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	94		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	100		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	84		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	90		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	93		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	86		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	98		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	84		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	85		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	98		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	88		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: COLLINS AERO

Project Number: Not Specified

Lab Number: L2212981

Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618248-2								
Perfluorotridecanoic Acid (PFTrDA)	112		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	97		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	110				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	114				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	58				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618396-2 WG1618396-3								
Perfluorobutanoic Acid (PFBA)	99		100		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	102		102		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	93		94		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	108		108		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	112		114		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	102		106		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	117		119		69-177	2		30
Perfluorooctanoic Acid (PFOA)	104		108		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	90		91		61-179	1		30
Perfluorononanoic Acid (PFNA)	99		99		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	107		112		52-151	5		30
Perfluorodecanoic Acid (PFDA)	103		100		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	85		92		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	124		122		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	85		90		38-156	6		30
Perfluorododecanoic Acid (PFDoA)	107		100		67-153	7		30
Perfluorotridecanoic Acid (PFTrDA)	98		105		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	100		101		59-182	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618396-2 WG1618396-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	122		123		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		118		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		107		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		103		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	116		119		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		112		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		104		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		93		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	145	134	93		123	90		71-135	9		30
Perfluoropentanoic Acid (PFPeA)	ND	145	135	93		126	93		69-132	7		30
Perfluorobutanesulfonic Acid (PFBS)	ND	129	122	95		108	89		72-128	12		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	136	136	100		126	99		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	ND	145	136	94		124	91		70-132	9		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	136	134	98		121	95		73-123	10		30
Perfluoroheptanoic Acid (PFHpA)	ND	145	140	97		126	93		71-131	11		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	132	140	106		132	106		67-130	6		30
Perfluorooctanoic Acid (PFOA)	ND	145	130	90		126	93		69-133	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	138	146	106		133	103		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	138	140	101		126	97		70-132	11		30
Perfluorononanoic Acid (PFNA)	ND	145	137	95		125	92		72-129	9		30
Perfluorooctanesulfonic Acid (PFOS)	ND	134	148	110		132	105		68-136	11		30
Perfluorodecanoic Acid (PFDA)	ND	145	147	101		131	96		69-133	12		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	139	159	114		131	100		65-137	19		30
Perfluorononanesulfonic Acid (PFNS)	ND	139	35.0	**25**	Q	ND	**19**	Q	69-125	NC	Q	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	145	155	107		113	83		63-144	**31**	Q	30
Perfluoroundecanoic Acid (PFUnA)	ND	145	135	93		127	93		64-136	6		30
Perfluorodecanesulfonic Acid (PFDS)	ND	140	47.4	**34**	Q	43.1	**33**	Q	59-134	10		30
Perfluorooctanesulfonamide (FOSA)	ND	145	126F	87		97.1	71		67-137	26		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	145	127	88		131	96		61-139	3		30
Perfluorododecanoic Acid (PFDoA)	ND	145	145	100		115	85		69-135	23		30

Matrix Spike Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	145	244	**168**	Q	231	**170**	Q	66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	145	140	97		131	96		69-133	7		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		30		19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**229**	Q	**230**	Q	14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**319**	Q	**282**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**211**	Q	**172**	Q	34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		107		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		**160**	Q	61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**73**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		72		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**66**	Q	**65**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		111		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**151**	Q	**194**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**866**	Q	**1087**	Q	24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		68		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		61		10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		103		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**74**	Q	**73**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		113		74-139

Matrix Spike Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-3 QC Sample: L2213286-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	38.2	33.6	88		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	38.2	34.1	89		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.9	29.9	88		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.8	32.9	92		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	38.2	33.8	88		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36	32.1	89		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	38.2	34.7	91		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34.9	33.7	97		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	38.2	30.5	80		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	36.3	37.4	103		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.4	34.6	95		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.2	33.0	86		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.4	32.0	90		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.2	33.5	88		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.6	39.2	107		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.7	37.4	102		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.2	35.9	94		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.2	30.6	80		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.9	37.7	102		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.2	31.6	83		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	38.2	32.9	86		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.2	34.5	90		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-3 QC Sample: L2213286-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	38.2	39.3	103		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.2	34.9	91		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	372	378	102		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36.1	30.0	83		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	38.2	39.2	103		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	38.2	10.7	28		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	110				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	122				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	116				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	109				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: COLLINS AERO

Project Number: Not Specified

Lab Number: L2212981

Report Date: 04/04/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-3 QC Sample: L2213286-02 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	108				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	51				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	119				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-4 QC Sample: L2213286-03 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-4 QC Sample: L2213286-03 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		111		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		132		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**116**		**132**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82		91		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		101		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		110		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		132		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		122		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	97		106		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114		121		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		126		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		121		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		114		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-4 QC Sample: L2213286-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		99		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	116		124		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101		107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		111		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		108		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		94		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	76		88		10-206

INORGANICS
&
MISCELLANEOUS

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-01
Client ID: SLUDGE-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:35
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	31.8		%	0.100	--	1	-	03/13/22 13:11	121,2540G	AT

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1615024-1 QC Sample: L2212150-01 Client ID: DUP Sample						
Solids, Total	41.9	42.5	%	1		10

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2212981-01A	Plastic 8oz unpreserved	A	NA		4.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2212981-02A	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-02B	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-02C	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2212981-02D	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2212981-03A	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-03B	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-03C	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2212981-03D	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: COLLINS AERO
Project Number:

Lab Number: L2212981
Report Date: 04/04/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:04042217:30

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 3/12/22

ALPHA Job #: L2212981

ALPHA ANALYTICAL

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Client Information

Client: Weston+Sampson
Address: 98 S Main St
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Collins Aero
Project Location: Vergennes, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report to MDL
Send results to larosas@wseinc.com AND Reilly.Margaret@wseinc.com.

ANALYSIS: 537 Isotope; PFAS TOP

SAMPLE HANDLING
Filtration ______
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 Isotope	PFAS TOP	Sample Specific Comments	TOTAL # BOTTLES
12981-01	Sludge-03082022	3/8/22	0935	S	MLR	X			1
-02	Effluent-03082022	3/8/22	0930	WW	MLR	X	X		4
-03	DI Rinse-03082022	3/8/22	0950	WW	MLR	X	X		4

	537 Isotope	PFAS TOP
Container Type	P	P
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilly	3/11/22 1100	Lobby	3/11/22 1100
B. Lyons AAL	3/11/22 1451		3/12/22 0010
B. Lyons	3/11/22 19:17	AAL	3/12/22 0200
AAL 3/12/22 0500		Kelli Mean 3/12/22 2:00	

MCr AAL 3/12/22 0500

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2211028
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS P2
Project Number:	Not Specified
Report Date:	03/24/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211028-01	BLACK EFFLUENT-03012022	WATER	SWANTON, VT	03/01/22 10:25	03/02/22
L2211028-02	FIELD BLANK-03012022	WATER	SWANTON, VT	03/01/22 10:30	03/02/22

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028
Project Number: Not Specified **Report Date:** 03/24/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211028-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211028-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2211028-01: The sample was extracted with the method required holding time exceeded.

L2211028-01 and WG1615723-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211028-01 and WG1615723-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1615723-4: This blank represents the oxidation blank associated with L2211028-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 03/24/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01
Client ID: BLACK EFFLUENT-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:25
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 18:03
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 16:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.62		ng/l	1.92	0.393	1
Perfluoropentanoic Acid (PFPeA)	2.26		ng/l	1.92	0.381	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.229	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.435	1
Perfluorohexanoic Acid (PFHxA)	0.531	J	ng/l	1.92	0.316	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.236	1
Perfluoroheptanoic Acid (PFHpA)	0.762	J	ng/l	1.92	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.362	1
Perfluorooctanoic Acid (PFOA)	0.951	JF	ng/l	1.92	0.227	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.662	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	0.720	J	ng/l	1.92	0.485	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.293	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.17	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.624	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.943	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.558	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.774	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.358	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.315	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.239	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01 Date Collected: 03/01/22 10:25

Client ID: BLACK EFFLUENT-03012022 Date Received: 03/02/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**146**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**180**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	41		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	121		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**303**	Q	22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01
Client ID: BLACK EFFLUENT-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:25
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 06:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	31.7	J	ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	5.70	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	1.80	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	1.24	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01 Date Collected: 03/01/22 10:25

Client ID: BLACK EFFLUENT-03012022 Date Received: 03/02/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**221**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**176**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**154**	Q	50-150

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-02
Client ID: FIELD BLANK-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 18:20
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 16:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.369	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	0.358	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.215	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.409	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.81	0.297	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.586	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.887	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.224	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-02 Date Collected: 03/01/22 10:30

Client ID: FIELD BLANK-03012022 Date Received: 03/02/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Lab ID: L2211028-01
Client ID: BLACK EFFLUENT-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:25
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	3.62		ng/l	31.7	J	ng/l	28.1		ng/l
Perfluoropentanoic Acid (PFPeA)	2.26		ng/l	5.70	J	ng/l	3.44		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.531	J	ng/l	1.80	J	ng/l	1.27	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.762	J	ng/l	1.24	J	ng/l	0.478	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.951	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	0.720	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							33.3	J	ng/l

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 13:35
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1614271-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 13:35
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1614271-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/13/22 11:12
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1614271-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	98		10-112

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 05:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 05:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 06:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-4					
Perfluorobutanoic Acid (PFBA)	5.48	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.588	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 06:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**207**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**168**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	148		50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1614271-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	99		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	99		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	96		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	108		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	92		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	96		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	98		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	102		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	110		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	90		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	110		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	91		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	94		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2211028

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1614271-2								
Perfluorotridecanoic Acid (PFTrDA)	112		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	98		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	123				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	115				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2211028

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab	Associated sample(s): 01-02		Batch: WG1614271-2					
Perfluorooctanesulfonamide (FOSA)	122		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	100				10-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1615723-2 WG1615723-3								
Perfluorobutanoic Acid (PFBA)	88		86		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	89		87		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	84		84		65-157	0		30
Perfluorohexanoic Acid (PFHxA)	88		88		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	89		87		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	90		89		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		96		69-177	2		30
Perfluorooctanoic Acid (PFOA)	94		92		63-159	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	97		98		61-179	1		30
Perfluorononanoic Acid (PFNA)	91		89		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	98		99		52-151	1		30
Perfluorodecanoic Acid (PFDA)	90		93		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	104		101		48-150	3		30
Perfluoroundecanoic Acid (PFUnA)	92		91		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	91		91		38-156	0		30
Perfluorododecanoic Acid (PFDoA)	96		92		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	111		108		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	97		95		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1615723-2 WG1615723-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		90		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		89		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		93		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		89		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		79		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-3 QC Sample: L2211572-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	1.99	39.1	37.6	91		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	1.61J	39.1	36.9	90		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	34.7	32.8	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.6	36.0	98		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	1.85J	39.1	37.6	92		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36.8	35.2	96		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	1.28J	39.1	37.9	94		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	35.7	37.4	105		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	2.15	39.1	38.6	93		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.62J	37.2	40.9	106		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	37.3	37.6	101		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	39.1	36.3	93		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	36.2	34.2	94		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	39.1	36.3	93		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.5	43.7	117		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.6	37.3	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.1	36.2	93		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.1	33.2	85		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.7	37.1	98		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.1	34.6	89		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	39.1	35.6	91		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.1	36.4	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2211028

Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-3 QC Sample: L2211572-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	39.1	43.0	110		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.1	35.8	92		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	84				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-4 QC Sample: L2211572-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	0.433J	0.437J	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.637J	0.707J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	0.512JF	0.510J	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.592J	0.537J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.946J	0.916J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-4 QC Sample: L2211572-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		78		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		93		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62		59		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		69		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		76		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		70		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		72		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		71		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		107		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		19		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		96		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-4 QC Sample: L2211572-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		93		22-136

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211028-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211028-01B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211028-01C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211028-01D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211028-02A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF COUSTODY

ALPHA ANALYTICAL

PAGE 1 OF 2

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211028

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Client Information

Client: Weston & Sampson

Address: 185 Main St
Waterbury, VT

Phone:

Fax:

Email: larosas@wseinc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC PFAS P2 VTDEC-STL

Project Location: Swanton, VT

Project #:

Project Manager: Steve LaRosa

ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
email results to larosas@wseinc.com AND reilly.margaret@wseinc.com.
Report to MDL

ANALYSIS: 537.1 Isotope Dil; PFAS TOP

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537.1 Isotope Dil	PFAS TOP	Sample Specific Comments	TOTAL # BOTTLES
11028-01	BlackEffluent-030122	3/1/22	1025	WW	MLR	X	X		
02	FieldBlank-030122	3/1/22	1030	WW	MLR	X			

Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	3/1/22 1240	Pack + Send	3/1/22 1240
Fedex			3/2/22 1458

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2232459
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT PRECISION TOOLS
Project Number:	Not Specified
Report Date:	07/11/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2232459-01	POND	WATER	SWANTON, VT	06/13/22 09:55	06/17/22
L2232459-02	DRAIN	WATER	SWANTON, VT	06/13/22 09:40	06/17/22

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2232459-02: The sample was centrifuged and decanted prior to extraction due to sample matrix.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2232459-02 and WG1655833-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2232459-02: The sample was centrifuged and decanted prior to extraction due to sample matrix.

WG1655833-4: This blank represents the oxidation blank associated with L2232459-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Alycia Mogayzel

Title: Technical Director/Representative Date: 07/11/22

ORGANICS

SEMIVOLATILES

Project Name: VT PRECISION TOOLS
Lab Number: L2232459
Project Number: Not Specified
Report Date: 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02
Client ID: DRAIN
Sample Location: SWANTON, VT

Date Collected: 06/13/22 09:40
Date Received: 06/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/08/22 04:07
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 06/26/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.80		ng/l	1.78	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.78	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.84		ng/l	1.78	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.42		ng/l	1.78	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	--	1

Project Name: VT PRECISION TOOLS **Lab Number:** L2232459

Project Number: Not Specified **Report Date:** 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02 Date Collected: 06/13/22 09:40

Client ID: DRAIN Date Received: 06/17/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		22-136

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02
Client ID: DRAIN
Sample Location: SWANTON, VT

Date Collected: 06/13/22 09:40
Date Received: 06/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 11:02
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	8.98	--	1
Perfluoropentanoic Acid (PFPeA)	3.40		ng/l	1.80	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	--	1
Perfluorohexanoic Acid (PFHxA)	3.20		ng/l	1.80	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.80	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	--	1

Project Name: VT PRECISION TOOLS **Lab Number:** L2232459

Project Number: Not Specified **Report Date:** 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02 Date Collected: 06/13/22 09:40

Client ID: DRAIN Date Received: 06/17/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	60		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	99		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	83		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	87		50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Lab ID: L2232459-02
Client ID: DRAIN
Sample Location: SWANTON, VT

Date Collected: 06/13/22 09:40
Date Received: 06/17/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	1.80		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	3.40		ng/l	3.40		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	3.20		ng/l	3.20		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	2.42		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6.6		ng/l

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/30/22 18:09
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 06/26/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1655507-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/30/22 18:09
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 06/26/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1655507-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	84		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 09:56
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 09:56
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		22-136

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 10:46
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 10:46
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	75		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	56		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	96		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	84		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	86		50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1655507-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	101		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	119		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	101		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	103		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	114		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	106		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	116		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	116		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	126		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	110		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	118		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	89		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	127		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	106		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	104		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT PRECISION TOOLS

Project Number: Not Specified

Lab Number: L2232459

Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1655507-2								
Perfluorotridecanoic Acid (PFTrDA)	140		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	138		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	110				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1655833-2 WG1655833-3								
Perfluorobutanoic Acid (PFBA)	101		103		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	98		102		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	99		101		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	99		101		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	102		107		52-156	5		30
Perfluoroheptanoic Acid (PFHpA)	98		98		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	117		122		69-177	4		30
Perfluorooctanoic Acid (PFOA)	106		104		63-159	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	101		112		61-179	10		30
Perfluorononanoic Acid (PFNA)	98		99		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	109		116		52-151	6		30
Perfluorodecanoic Acid (PFDA)	101		107		63-171	6		30
Perfluorononanesulfonic Acid (PFNS)	101		122		48-150	19		30
Perfluoroundecanoic Acid (PFUnA)	108		115		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	100		97		38-156	3		30
Perfluorododecanoic Acid (PFDoA)	109		106		67-153	3		30
Perfluorotridecanoic Acid (PFTrDA)	114		123		48-158	8		30
Perfluorotetradecanoic Acid (PFTA)	94		96		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1655833-2 WG1655833-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		86		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		89		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		81		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		77		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		73		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-3 QC Sample: L2233499-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.7	36.8	98		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	36.7	37.8	101		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.6	32.5	100		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.4	39.8	115		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	36.7	36.6	100		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.6	35.0	101		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.7	37.2	100		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33.6	38.7	115		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	36.7	38.6	104		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35	39.0	112		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35	42.1	120		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	36.7	42.4	115		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.1	41.7	122		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.7	39.9	109		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.3	38.4	109		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.3	37.4	106		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.7	39.1	106		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.7	33.4	91		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.5	34.2	96		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.7	41.0	112		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.7	32.0	87		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.7	40.2	109		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT PRECISION TOOLS

Project Number: Not Specified

Lab Number: L2232459

Report Date: 07/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-3 QC Sample: L2233499-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.7	51.4	140		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.7	52.4	143		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	358	393F	110		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.8	35.7	103		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.7	38.5	105		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	36.7	12.3	34		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**155**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	80				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	80				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: VT PRECISION TOOLS

Project Number: Not Specified

Lab Number: L2232459

Report Date: 07/11/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-3 QC Sample: L2233499-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	67				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-4 QC Sample: L2233499-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-4 QC Sample: L2233499-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		84		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**186**	Q	**187**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**184**	Q	**180**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		83		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		89		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115		119		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-4 QC Sample: L2233499-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		66		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		19		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		67		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		53		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		111		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	76		78		10-206

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2232459-01A	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-01B	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-01C	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-01D	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-02A	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-537-ISOTOPE(14)
L2232459-02B	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-537-ISOTOPE(14)
L2232459-02C	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2232459-02D	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT PRECISION TOOLS
Project Number:

Lab Number: L2232459
Report Date: 07/11/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Data Qualifiers

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

6/18/22 Alpha L2232459[illegible] Serial_No:07112215:43

con-test ANALYTICAL LABORATORY

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

http://www.contestlabs.com Doc # 381 Rev 1_03242017

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Company Name: Weston + Sampson
Address: 98 S Main Waterbury, VT
Phone:
Project Name: VT Precision Tools
Project Location: Swanton, VT
Project Number:
Project Manager: Steven LaRosa
Con-Test Quote Name/Number:
Invoice Recipient: invoice@wseinc.com
Sampled By: Maggie Reilly

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☒
Other: envirodata8
CLP Like Data Pkg Required: ☐
Email To: larosas@wseinc.com
Fax To #: reilly.margaret@wse...

ANALYSIS REQUESTED: PFAS, PFAS TOP

# of Containers
[2] Preservation Code
[3] Container Code

Dissolved Metals Samples
O Field Filtered
O Lab to Filter

Orthophosphate Samples
O Field Filtered
O Lab to Filter

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	PFAS	PFAS TOP
32459 -01	Pond	6/13/22	0955		X	WW	U	2	2
-02	Drain	6/13/22	0940		X	WW	U	2	2

Comments: Report to MDL

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

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

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

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

Signature	Date/Time
Relinquished by: (signature) Maggie Reilly	6/13/22 1200
Received by: (signature) Fridge	6/13/22 1200
Relinquished by: (signature) [illegible]	6/18/22 0400
Received by: (signature) B. Lyons AAL	6/17/22 14:25
Relinquished by: (signature) B. Lyons	6/17/22 16:20
Received by: (signature) [illegible] 6/18/22	6/18/22 0030

[illegible] 6/18/22 0655 AAC1 - AAL 6/18/22 0655

Detection Limit Requirements
MA:
CT:
Other:

Special Requirements
☐ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

con-test ANALYTICAL LABORATORY www.contestlabs.com

NELAC and AIHA-LAP, LLC Accredited

Project Entity
☐ Government ☐ Municipality ☐ MWRA ☐ WRTA
☐ Federal ☐ 21 J ☐ School
☐ City ☐ Brownfield ☐ MBTA

Other
☐ Chromatogram
☐ AIHA-LAP, LLC

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

ANALYTICAL REPORT

Lab Number:	L2243719
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDECP2
Project Number:	Not Specified
Report Date:	09/19/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2243719-01	VTPF-WW TANK	WATER	VT	08/03/22 13:00	08/12/22
L2243719-02	EDLUND-WW TANK	WATER	VT	08/03/22 09:40	08/12/22
L2243719-03	BODY COTE-WW TANK	WATER	VT	08/04/22 11:40	08/12/22
L2243719-04	VISHAY-TREATMENT TANK	WATER	VT	08/04/22 09:35	08/12/22

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VTDECP2 **Lab Number:** L2243719
Project Number: Not Specified **Report Date:** 09/19/22

Case Narrative (continued)

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

Perfluorinated Alkyl Acids by Isotope Dilution
L2243719-01D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.
L2243719-01D, -02, -02RE, -03, -04 and WG1680581-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2243719-02/RE: The sample was centrifuged and decanted prior to extraction due to sample matrix.
The WG1675760-1 Method Blank, associated with L2243719-02, -03 and -04, has concentrations above the reporting limits for 6:2FTS. The sample was re-extracted with the method required holding time exceeded. The results of both extractions are reported and the original sample results are reported with a "B" qualifier.
The WG1675760-1 Method Blank, associated with L2243719-01D, has a concentration above the reporting limit for 6:2 FTS . The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2243719-01D and -02: The sample was centrifuged and decanted prior to extraction due to sample matrix.
L2243719-01D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.
L2243719-01D, -02, -03, -04 and WG1676075-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2243719-03 and WG1676075-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative (continued)

WG1676075-4: This blank represents the oxidation blank associated with L2243719-01D, -02, -03, and -04.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Alycia Mogayzel

Title: Technical Director/Representative Date: 09/19/22

ORGANICS

SEMIVOLATILES

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/28/22 18:06
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	88.5	18.0	50
Perfluoropentanoic Acid (PFPeA)	63.4	J	ng/l	88.5	17.5	50
Perfluorobutanesulfonic Acid (PFBS)	61.6	J	ng/l	88.5	10.5	50
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	88.5	20.0	50
Perfluorohexanoic Acid (PFHxA)	248		ng/l	88.5	14.5	50
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	88.5	10.8	50
Perfluoroheptanoic Acid (PFHpA)	162		ng/l	88.5	9.96	50
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	88.5	16.6	50
Perfluorooctanoic Acid (PFOA)	63.7	J	ng/l	88.5	10.4	50
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	14500		ng/l	88.5	58.9	50
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	88.5	30.4	50
Perfluorononanoic Acid (PFNA)	ND		ng/l	88.5	13.8	50
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	88.5	22.3	50
Perfluorodecanoic Acid (PFDA)	ND		ng/l	88.5	13.4	50
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	88.5	53.6	50
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	88.5	49.6	50
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	118		ng/l	88.5	28.7	50
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	88.5	11.5	50
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	88.5	43.4	50
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	88.5	25.7	50
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	122		ng/l	88.5	35.6	50
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	88.5	16.5	50
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	88.5	14.5	50
Perfluorotetradecanoic Acid (PFTA)	17.3	J	ng/l	88.5	11.0	50

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D Date Collected: 08/03/22 13:00

Client ID: VTPF-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**294**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	84		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/14/22 09:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	391		ng/l	44.3	1.81	5
Perfluoropentanoic Acid (PFPeA)	778		ng/l	8.86	1.75	5
Perfluorobutanesulfonic Acid (PFBS)	37.5		ng/l	8.86	1.05	5
Perfluorohexanoic Acid (PFHxA)	1170		ng/l	8.86	1.45	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	8.86	1.09	5
Perfluoroheptanoic Acid (PFHpA)	277		ng/l	8.86	0.998	5
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	8.86	1.67	5
Perfluorooctanoic Acid (PFOA)	51.2		ng/l	8.86	1.04	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	8.86	3.05	5
Perfluorononanoic Acid (PFNA)	2.13	JF	ng/l	8.86	1.38	5
Perfluorooctanesulfonic Acid (PFOS)	290		ng/l	8.86	2.23	5
Perfluorodecanoic Acid (PFDA)	4.41	JF	ng/l	8.86	1.35	5
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	8.86	4.96	5
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	8.86	1.15	5
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	8.86	4.34	5
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	8.86	1.65	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	8.86	1.45	5
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	8.86	1.10	5

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	4		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	120		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	122		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	122		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	82		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	54		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	71		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 04:10
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	13.4		ng/l	2.13	0.434	1
Perfluoropentanoic Acid (PFPeA)	6.98		ng/l	2.13	0.421	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.13	0.253	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.13	0.481	1
Perfluorohexanoic Acid (PFHxA)	2.41		ng/l	2.13	0.349	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.13	0.261	1
Perfluoroheptanoic Acid (PFHpA)	1.38	J	ng/l	2.13	0.240	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.13	0.400	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.13	0.251	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8.06	B	ng/l	2.13	1.42	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.13	0.732	1
Perfluorononanoic Acid (PFNA)	0.400	JF	ng/l	2.13	0.332	1
Perfluorooctanesulfonic Acid (PFOS)	5.16	F	ng/l	2.13	0.536	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.13	0.323	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.13	1.29	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.13	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.13	0.690	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.13	0.277	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.13	1.04	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.13	0.617	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.24		ng/l	2.13	0.856	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.13	0.396	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.13	0.348	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.13	0.264	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02 Date Collected: 08/03/22 09:40

Client ID: EDLUND-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**17**	Q	62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	71		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**382**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**1180**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**1050**	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**527**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**1120**	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**729**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**122**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 18:12
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.05	J	ng/l	9.66	0.394	1
Perfluoropentanoic Acid (PFPeA)	2.54		ng/l	1.93	0.382	1
Perfluorobutanesulfonic Acid (PFBS)	1.02	J	ng/l	1.93	0.230	1
Perfluorohexanoic Acid (PFHxA)	3.63		ng/l	1.93	0.317	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.93	0.237	1
Perfluoroheptanoic Acid (PFHpA)	1.31	J	ng/l	1.93	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	0.386	J	ng/l	1.93	0.363	1
Perfluorooctanoic Acid (PFOA)	3.16		ng/l	1.93	0.228	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	0.664	1
Perfluorononanoic Acid (PFNA)	0.452	J	ng/l	1.93	0.301	1
Perfluorooctanesulfonic Acid (PFOS)	1.50	J	ng/l	1.93	0.487	1
Perfluorodecanoic Acid (PFDA)	0.313	J	ng/l	1.93	0.294	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.93	1.08	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	0.251	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	0.946	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	0.359	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	0.316	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	0.239	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02 Date Collected: 08/03/22 09:40

Client ID: EDLUND-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	18		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	72		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	63		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	66		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02 RE
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 15:23
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.83		ng/l	1.93	1.28	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**312**	Q	14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		69-131

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 04:27
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.439	J	ng/l	1.98	0.403	1
Perfluoropentanoic Acid (PFPeA)	0.870	J	ng/l	1.98	0.392	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.235	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.98	0.447	1
Perfluorohexanoic Acid (PFHxA)	0.945	J	ng/l	1.98	0.324	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.242	1
Perfluoroheptanoic Acid (PFHpA)	0.308	J	ng/l	1.98	0.223	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	0.546	J	ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.86	B	ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.680	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.98	0.308	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.98	0.498	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.300	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.641	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.969	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.574	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.795	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.324	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03 Date Collected: 08/04/22 11:40

Client ID: BODY COTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**157**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**189**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**45**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 18:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.58	J	ng/l	10.0	0.408	1
Perfluoropentanoic Acid (PFPeA)	1.60	J	ng/l	2.00	0.396	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238	1
Perfluorohexanoic Acid (PFHxA)	3.39		ng/l	2.00	0.328	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245	1
Perfluoroheptanoic Acid (PFHpA)	0.628	J	ng/l	2.00	0.225	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376	1
Perfluorooctanoic Acid (PFOA)	0.692	J	ng/l	2.00	0.236	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504	1
Perfluorodecanoic Acid (PFDA)	0.312	J	ng/l	2.00	0.304	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03 Date Collected: 08/04/22 11:40

Client ID: BODY COTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**67**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	71		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	64		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	69		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03 RE
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 15:40
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 04:44
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	44.1		ng/l	1.83	0.373	1
Perfluoropentanoic Acid (PFPeA)	1.19	J	ng/l	1.83	0.362	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	0.218	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	0.413	1
Perfluorohexanoic Acid (PFHxA)	0.845	J	ng/l	1.83	0.300	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	0.224	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	0.206	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	0.344	1
Perfluorooctanoic Acid (PFOA)	1.25	JF	ng/l	1.83	0.216	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.80	B	ng/l	1.83	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	0.629	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.83	0.461	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	0.278	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	1.11	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.83	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.83	0.593	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	0.238	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.83	0.896	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	0.530	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.83	0.735	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	0.340	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.83	0.299	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.83	0.227	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04 Date Collected: 08/04/22 09:35

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**235**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	145		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	61		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	40		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 18:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	59.6		ng/l	9.10	0.372	1
Perfluoropentanoic Acid (PFPeA)	2.05		ng/l	1.82	0.360	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	1.04	J	ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.223	1
Perfluoroheptanoic Acid (PFHpA)	0.561	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.342	1
Perfluorooctanoic Acid (PFOA)	1.08	J	ng/l	1.82	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.626	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.459	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.892	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04 Date Collected: 08/04/22 09:35

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	72		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	67		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	55		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	63		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04 RE
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 15:56
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-01
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	391		ng/l	391		ng/l
Perfluoropentanoic Acid (PFPeA)	63.4	J	ng/l	778		ng/l	715		ng/l
Perfluorobutanesulfonic Acid (PFBS)	61.6	J	ng/l	37.5		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	248		ng/l	1170		ng/l	922		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	162		ng/l	277		ng/l	115		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	63.7	J	ng/l	51.2		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.13	JF	ng/l	2.13	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	290		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	4.41	JF	ng/l	4.41	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	17.3	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							2150	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-02
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	13.4		ng/l	7.05	J	ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	6.98		ng/l	2.54		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.02	J	ng/l	1.02	J	ng/l
Perfluorohexanoic Acid (PFHxA)	2.41		ng/l	3.63		ng/l	1.22		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	1.38	J	ng/l	1.31	J	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	0.386	J	ng/l	0.386	J	ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	3.16		ng/l	3.16		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	0.400	JF	ng/l	0.452	J	ng/l	0.052	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	5.16	F	ng/l	1.50	J	ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	0.313	J	ng/l	0.313	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6.15	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-03
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.439	J	ng/l	6.58	J	ng/l	6.14	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.870	J	ng/l	1.60	J	ng/l	0.730	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.945	J	ng/l	3.39		ng/l	2.45		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.308	J	ng/l	0.628	J	ng/l	0.320	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.546	J	ng/l	0.692	J	ng/l	0.146	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	0.312	J	ng/l	0.312	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							10.1	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	44.1		ng/l	59.6		ng/l	15.5		ng/l
Perfluoropentanoic Acid (PFPeA)	1.19	J	ng/l	2.05		ng/l	0.860		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.845	J	ng/l	1.04	J	ng/l	0.195	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.561	J	ng/l	0.561	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.25	JF	ng/l	1.08	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							17.1	J	ng/l

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.82		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	110		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	120		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-4					
Perfluorobutanoic Acid (PFBA)	5.07	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.460	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.516	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-4

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	70		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	72		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	57		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	62		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	124		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	114		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	134		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorobutanoic Acid (PFBA)	101		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	100		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	95		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	108		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	104		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	106		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	91		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	83		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	96		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	100		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	101		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-04 Batch: WG1676075-2 WG1676075-3								
Perfluorobutanoic Acid (PFBA)	94		92		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	90		90		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		91		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	105		102		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	92		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	110		107		69-177	3		30
Perfluorooctanoic Acid (PFOA)	96		96		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		115		61-179	18		30
Perfluorononanoic Acid (PFNA)	94		104		68-171	10		30
Perfluorooctanesulfonic Acid (PFOS)	104		121		52-151	15		30
Perfluorodecanoic Acid (PFDA)	98		109		63-171	11		30
Perfluorononanesulfonic Acid (PFNS)	104		116		48-150	11		30
Perfluoroundecanoic Acid (PFUnA)	95		81		60-153	16		30
Perfluorodecanesulfonic Acid (PFDS)	104		119		38-156	13		30
Perfluorododecanoic Acid (PFDoA)	95		94		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	102		105		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	83		98		59-182	17		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-04 Batch: WG1676075-2 WG1676075-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	131		127		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		120		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		**134**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		120		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		105		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		108		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		112		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	94		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	99		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	111		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	93		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	89		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	88		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	94		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	91		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	138		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	122				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	125				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	127				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**148**	Q			22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	10.5	37.2	49.4	105		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	12.4	37.2	53.0	109		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	4.49	33	38.6	103		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.9	42.1	121		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	15.2	37.2	56.1	110		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	37.3	106		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	3.77	37.2	43.1	106		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	3.68	34	47.6	129		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	9.79	37.2	53.1	116		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.38B	35.4	45.9	109		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.5	37.2	105		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	2.19F	37.2	45.3	116		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	9.95F	34.5	50.5	117		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	1.29JF	37.2	46.5	122		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.19J	35.7	37.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	31.1	87		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	46.3	124		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	47.8	129		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	17.5F	49		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	40.2F	108		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.18JF	37.2	48.9	128		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	43.0	116		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	46.6	125		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.2	48.7	131		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**358**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**190**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**348**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	34				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**34**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**34**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	85				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.50	36.5	40.6	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	5.48	36.5	42.3	101		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.19	32.4	36.8	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.3	35.8	104		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	5.74	36.5	43.2	102		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.4	34.2	99		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	5.27	36.5	40.0	95		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.987J	33.4	38.7	113		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	10.0F	36.5	43.1	91		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.8	38.9	112		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.9	36.1	104		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	1.97F	36.5	34.8	90		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	71.7	33.9	99.7	83		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	2.21F	36.5	34.1	87		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.1	34.2	98		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.2	35.6	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.5	36.5	100		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	0.621JF	36.5	32.6	88		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.70JF	35.3	52.6	144		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	3.57	36.5	40.1F	100		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.865J	36.5	34.4	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.5	33.9	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.5	36.2F	99		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.5	28.8	79		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	125				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	115				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**166**	Q			22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	1.35J	1.20J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	5.14	3.86	ng/l	28		30
Perfluoropentanesulfonic Acid (PFPeS)	1.17J	0.786J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.51	2.84	ng/l	21		30
Perfluorohexanesulfonic Acid (PFHxS)	2.19	1.81J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	15.2	11.8	ng/l	25		30
Perfluorononanoic Acid (PFNA)	1.62J	1.35J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	5.38	5.24	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	1.73J	1.55J	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	12.1	6.30	ng/l	**63**	Q	30
Perfluoroundecanoic Acid (PFUnA)	0.297JF	0.608JF	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**192**	Q	**216**	Q	12-142

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		86		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		73		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	78		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		66		62-124
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		63		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56		**54**	Q	55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51		59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		51		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.651J	0.564J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.866J	0.828J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	0.316JF	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	0.271J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.495J	0.613J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.262J	0.468JF	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		85		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		82		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		111		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		63		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		93		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		100		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		108		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		11		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	120		89		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**168**	Q	**147**	Q	22-136

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2243719-01A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-01B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-01C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-01D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: **Report Date:** 09/19/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:09192212:46

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 8/13/22

ALPHA Job #: L2243719

Project Information
Project Name: VTDEC P2
Project Location: VT
Project #:
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: Weston Sampson
Address: 98 S Main St
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #: invoice@wseinc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Vishay-Treatment tank pH=3.9 Report Enviro data 8
Report to MDL

Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: 537 TOP	ANALYSIS: 537 ISOTOPE	Sample Specific Comments	Total Bottle
43719-01	VTPF - WW Tank	8/13/22	1300	WW	MLR	X	X	May contain high	
-02	Edlund - WW Tank	8/13/22	0940	WW	MLR	X	X	levels of PFAS	
-03	Body Cote - WW Tank	8/4/22	1140	WW	MLR	X	X	for all samples!	
-04	Vishay - Treatment tank	8/4/22	0935	WW	MLR	X	X	3.9 pH!	

Preservative Code	Container Code
A = None	P = Plastic
B = HCl	A = Amber Glass
C = HNO_3	V = Vial
D = H_2SO_4	G = Glass
E = NaOH	B = Bacteria Cup
F = MeOH	C = Cube
G = $NaHSO_4$	O = Other
H = $Na_2S_2O_3$	E = Encore
K/E = Zn Ac/NaOH	D = BOD Bottle
O = Other	

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

	537 TOP	537 ISOTOPE
Container Type	P	P
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie	8/4/22 1430	Fridge	8/4/22 1430
Fridge	8/12/22 1430	RO...	8/12/22 1430
	8/12/22 1430		
R. ...	8-13-22		8/13/22 0030

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

AAL 8/13/22 0235 Wendy Marong CAAAL 8/13/22 0255 8/13/22 1:30 AAL 8/13/22 0130

ANALYTICAL REPORT

Lab Number:	L2243727
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDECP2
Project Number:	Not Specified
Report Date:	09/19/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2243727-01	VTPF-WW TANK	WATER	VT	08/10/22 13:00	08/12/22
L2243727-02	EDLUND-WW TANK	WATER	VT	08/10/22 06:30	08/12/22
L2243727-03	BODYCOTE-WW TANK	WATER	VT	08/10/22 08:45	08/12/22
L2243727-04	VISHAY-TREATMENT TANK	WATER	VT	08/10/22 10:45	08/12/22

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2243727-02: Results for this sample cannot be reported.

L2243727-01D: The sample was centrifuged and decanted prior to extraction due to sample matrix. The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L2243727-01D, -03 and -04: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1675760-1 Method Blank, associated with L2243727-01D, has a concentration above the reporting limit for 6:2 FTS. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

The WG1675760-1 Method Blank, associated with L2243727-03 and -04, has concentrations above the reporting limits for 6:2fts. The sample was re-extracted with the method required holding time exceeded. The results of both extractions are reported and the original sample results are reported with a "B" qualifier.

WG1680581-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2243727-02: Results for this sample cannot be reported.

L2243727-01D: The sample was centrifuged and decanted prior to extraction due to sample matrix. The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L2243727-01D, -03, and -04: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative (continued)

different PFAS constituent (Limit 0-25%).

L2243727-03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1676075-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1676075-4: This blank represents the oxidation blank associated with L2243727-01D, -03, and -04.

WG1676075-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 09/19/22

ORGANICS

SEMIVOLATILES

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/28/22 18:23
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	87.9	17.9	50
Perfluoropentanoic Acid (PFPeA)	81.2	J	ng/l	87.9	17.4	50
Perfluorobutanesulfonic Acid (PFBS)	54.3	J	ng/l	87.9	10.5	50
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	21.4	J	ng/l	87.9	19.9	50
Perfluorohexanoic Acid (PFHxA)	309		ng/l	87.9	14.4	50
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	87.9	10.8	50
Perfluoroheptanoic Acid (PFHpA)	164		ng/l	87.9	9.90	50
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	87.9	16.5	50
Perfluorooctanoic Acid (PFOA)	82.3	JF	ng/l	87.9	10.4	50
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	14400		ng/l	87.9	58.6	50
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	87.9	30.2	50
Perfluorononanoic Acid (PFNA)	ND		ng/l	87.9	13.7	50
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	87.9	22.2	50
Perfluorodecanoic Acid (PFDA)	22.0	J	ng/l	87.9	13.4	50
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	87.9	53.3	50
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	87.9	49.2	50
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	64.0	J	ng/l	87.9	28.5	50
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	87.9	11.4	50
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	87.9	43.1	50
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	87.9	25.5	50
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	81.6	J	ng/l	87.9	35.3	50
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	87.9	16.4	50
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	87.9	14.4	50
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	87.9	10.9	50

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D Date Collected: 08/10/22 13:00

Client ID: VTPF-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	117		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**275**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	91		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/14/22 10:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	365		ng/l	48.8	1.99	5
Perfluoropentanoic Acid (PFPeA)	870		ng/l	9.77	1.93	5
Perfluorobutanesulfonic Acid (PFBS)	41.8		ng/l	9.77	1.16	5
Perfluorohexanoic Acid (PFHxA)	1570		ng/l	9.77	1.60	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	9.77	1.20	5
Perfluoroheptanoic Acid (PFHpA)	299		ng/l	9.77	1.10	5
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	9.77	1.84	5
Perfluorooctanoic Acid (PFOA)	78.7		ng/l	9.77	1.15	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	9.77	3.36	5
Perfluorononanoic Acid (PFNA)	3.38	JF	ng/l	9.77	1.52	5
Perfluorooctanesulfonic Acid (PFOS)	328		ng/l	9.77	2.46	5
Perfluorodecanoic Acid (PFDA)	6.43	J	ng/l	9.77	1.48	5
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	9.77	5.47	5
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	9.77	1.27	5
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	9.77	4.79	5
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	9.77	1.82	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	9.77	1.60	5
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	9.77	1.21	5

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	112		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	81		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	66		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	70		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 05:33
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.23	J	ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	1.38	J	ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	0.265	J	ng/l	1.84	0.219	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	0.417	1
Perfluorohexanoic Acid (PFHxA)	1.15	J	ng/l	1.84	0.302	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	0.226	1
Perfluoroheptanoic Acid (PFHpA)	0.490	JF	ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	0.346	1
Perfluorooctanoic Acid (PFOA)	0.682	JF	ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.51	B	ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.634	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.464	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.84	1.03	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.597	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.903	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.534	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.741	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.228	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03 Date Collected: 08/10/22 08:45

Client ID: BODYCOTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**244**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**174**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**171**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	51		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 19:35
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.52	J	ng/l	9.93	0.405	1
Perfluoropentanoic Acid (PFPeA)	1.91	J	ng/l	1.98	0.393	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.236	1
Perfluorohexanoic Acid (PFHxA)	1.33	J	ng/l	1.98	0.326	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.243	1
Perfluoroheptanoic Acid (PFHpA)	0.632	J	ng/l	1.98	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.373	1
Perfluorooctanoic Acid (PFOA)	0.711	J	ng/l	1.98	0.234	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.683	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.98	0.310	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.98	0.500	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.302	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.258	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.973	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.369	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.325	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.246	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03 Date Collected: 08/10/22 08:45

Client ID: BODYCOTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	66		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	64		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	64		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03 RE
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 16:29
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		69-131

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 05:50
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	17.4		ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	0.679	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	0.754	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	1.34	J	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.33	B	ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.277	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	1.12	J	ng/l	1.78	0.871	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.220	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04 Date Collected: 08/10/22 10:45

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**236**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 19:51
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	20.2		ng/l	9.10	0.371	1
Perfluoropentanoic Acid (PFPeA)	1.51	J	ng/l	1.82	0.360	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	0.979	J	ng/l	1.82	0.298	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.223	1
Perfluoroheptanoic Acid (PFHpA)	0.452	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.342	1
Perfluorooctanoic Acid (PFOA)	1.30	J	ng/l	1.82	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.626	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	0.513	J	ng/l	1.82	0.459	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	0.990	J	ng/l	1.82	0.892	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04 Date Collected: 08/10/22 10:45

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	74		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	72		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	72		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04 RE
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 16:46
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.19	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	75		69-131

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Lab ID: L2243727-01
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	365		ng/l	365		ng/l
Perfluoropentanoic Acid (PFPeA)	81.2	J	ng/l	870		ng/l	789		ng/l
Perfluorobutanesulfonic Acid (PFBS)	54.3	J	ng/l	41.8		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	309		ng/l	1570		ng/l	1260		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	164		ng/l	299		ng/l	135		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	82.3	JF	ng/l	78.7		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	3.38	JF	ng/l	3.38	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	328		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	22.0	J	ng/l	6.43	J	ng/l	0	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							2550	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Lab ID: L2243727-03
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	1.23	J	ng/l	7.52	J	ng/l	6.29	J	ng/l
Perfluoropentanoic Acid (PFPeA)	1.38	J	ng/l	1.91	J	ng/l	0.530	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	0.265	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorohexanoic Acid (PFHxA)	1.15	J	ng/l	1.33	J	ng/l	0.180	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.490	JF	ng/l	0.632	J	ng/l	0.142	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.682	JF	ng/l	0.711	J	ng/l	0.029	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							7.17	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Lab ID: L2243727-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	17.4		ng/l	20.2		ng/l	2.80		ng/l
Perfluoropentanoic Acid (PFPeA)	0.679	J	ng/l	1.51	J	ng/l	0.831	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.754	J	ng/l	0.979	J	ng/l	0.225	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.452	J	ng/l	0.452	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.34	J	ng/l	1.30	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	0.513	J	ng/l	0.513	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	1.12	J	ng/l	0.990	J	ng/l	0	J	ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							4.82	J	ng/l

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.82		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	110		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	120		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03-04 Batch: WG1676075-4					
Perfluorobutanoic Acid (PFBA)	5.07	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.460	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.516	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03-04 Batch: WG1676075-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	70		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	72		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	57		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	62		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	124		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	114		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	134		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorobutanoic Acid (PFBA)	101		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	100		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	95		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	108		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	104		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	106		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	91		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	83		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	96		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	100		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	101		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1676075-2 WG1676075-3								
Perfluorobutanoic Acid (PFBA)	94		92		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	90		90		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		91		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	105		102		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	92		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	110		107		69-177	3		30
Perfluorooctanoic Acid (PFOA)	96		96		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		115		61-179	18		30
Perfluorononanoic Acid (PFNA)	94		104		68-171	10		30
Perfluorooctanesulfonic Acid (PFOS)	104		121		52-151	15		30
Perfluorodecanoic Acid (PFDA)	98		109		63-171	11		30
Perfluorononanesulfonic Acid (PFNS)	104		116		48-150	11		30
Perfluoroundecanoic Acid (PFUnA)	95		81		60-153	16		30
Perfluorodecanesulfonic Acid (PFDS)	104		119		38-156	13		30
Perfluorododecanoic Acid (PFDoA)	95		94		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	102		105		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	83		98		59-182	17		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1676075-2 WG1676075-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	131		127		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		120		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		**134**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		120		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		105		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		108		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		112		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	94		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	99		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	111		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	93		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	89		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	88		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	94		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	91		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	138		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	122				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	125				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	127				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**148**	Q			22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	10.5	37.2	49.4	105		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	12.4	37.2	53.0	109		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	4.49	33	38.6	103		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.9	42.1	121		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	15.2	37.2	56.1	110		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	37.3	106		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	3.77	37.2	43.1	106		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	3.68	34	47.6	129		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	9.79	37.2	53.1	116		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.38B	35.4	45.9	109		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.5	37.2	105		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	2.19F	37.2	45.3	116		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	9.95F	34.5	50.5	117		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	1.29JF	37.2	46.5	122		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.19J	35.7	37.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	31.1	87		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	46.3	124		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	47.8	129		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	17.5F	49		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	40.2F	108		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.18JF	37.2	48.9	128		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	43.0	116		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	46.6	125		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.2	48.7	131		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**358**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**190**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**348**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	34				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**34**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**34**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	85				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.50	36.5	40.6	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	5.48	36.5	42.3	101		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.19	32.4	36.8	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.3	35.8	104		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	5.74	36.5	43.2	102		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.4	34.2	99		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	5.27	36.5	40.0	95		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.987J	33.4	38.7	113		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	10.0F	36.5	43.1	91		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.8	38.9	112		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.9	36.1	104		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	1.97F	36.5	34.8	90		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	71.7	33.9	99.7	83		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	2.21F	36.5	34.1	87		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.1	34.2	98		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.2	35.6	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.5	36.5	100		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	0.621JF	36.5	32.6	88		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.70JF	35.3	52.6	144		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	3.57	36.5	40.1F	100		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.865J	36.5	34.4	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.5	33.9	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.5	36.2F	99		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.5	28.8	79		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	125				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	115				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**166**	Q			22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	1.35J	1.20J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	5.14	3.86	ng/l	28		30
Perfluoropentanesulfonic Acid (PFPeS)	1.17J	0.786J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.51	2.84	ng/l	21		30
Perfluorohexanesulfonic Acid (PFHxS)	2.19	1.81J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	15.2	11.8	ng/l	25		30
Perfluorononanoic Acid (PFNA)	1.62J	1.35J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	5.38	5.24	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	1.73J	1.55J	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	12.1	6.30	ng/l	**63**	Q	30
Perfluoroundecanoic Acid (PFUnA)	0.297JF	0.608JF	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**192**	Q	**216**	Q	12-142

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		86		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		73		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	78		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		66		62-124
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		63		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56		**54**	Q	55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51		59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		51		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.651J	0.564J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.866J	0.828J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	0.316JF	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	0.271J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.495J	0.613J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.262J	0.468JF	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		85		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		82		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		111		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		63		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		93		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		100		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		108		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		11		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	120		89		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**168**	Q	**147**	Q	22-136

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2243727-01A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-01B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-01C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-01D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-02A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-02B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-02C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-02D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-03A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-03B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-03C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-03D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: **Report Date:** 09/19/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 8/13/22

ALPHA Job #: L2243727

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Project Information
Project Name: VTDEC P2
Project Location: VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☐ Same as Client Info
PO # invoice @ wseinc.com

Client Information
Client: Weston Sampson
Address: 98 S Main St Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Report to MDL

Please specify Metals or TAL.

ANALYSIS: 537 Isotope | 537 TOP

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 Isotope	537 TOP	Sample Specific Comments	Total Bottles
43727-01	VTPF-WW Tank	8/10	1300	WW	MLR	X	X	All samples	
-02	Edlund-WW Tank	8/10	0630	WW	MLR	X	X	may contain	
-03	Bodycote-WW Tank	8/10	0845	WW	MLR	X	X	high levels	
-04	Vishay-Treatment Tank	8/10	1045	WW	MLR	X	X	of PFAS!	

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

	537 Isotope	537 TOP
Container Type	P	P
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Morgan	8/10/22 1530	Fridge	8/10/22 1530
Fridge	8/12/22 1430	RC Kanaley	8/12/22 1430
RC Kanaley	8/12/22		8/13/22 0030
Mindy Moreno	8/13/22 1:30	GCAAL	8/13/22 0130
GCAAL 8/13/22 0255		AAL	8/13/22 0255

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2245047
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	09/27/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2245047-01	EDLUND WW TANK	WATER	VT	08/17/22 06:30	08/19/22
L2245047-02	BODYCOTE-WW TANK	WATER	VT	08/17/22 09:00	08/19/22
L2245047-03	VISHAY-WW TANK	WATER	VT	08/17/22 10:45	08/19/22
L2245047-04	VT PF-WW TANK	WATER	VT	08/17/22 12:35	08/19/22

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2245047-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix

L2245047-01, -02, -03, WG1679735-1, WG1679735-2, WG1679735-3, and WG1679735-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2245047-04D: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2245047-04D: The sample has elevated detection limits due to the dilution required by the sample matrix.

The WG1679735-3 MS recoveries, performed on L2245047-02, are outside the acceptance criteria for perfluoroundecanoic acid (pfuna) (156%).

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2245047-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2245047-01, -02, -03, -04RE and WG1680745-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2245047-01,-02, -03, WG1680745-4 and WG1691701-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2245047-04RE: The sample was re-extracted at lesser volume with the method required holding time exceeded due to matrix interference in the original extraction. The results of the re-extraction are reported.

WG1680745-4: This blank represents the oxidation blank associated with L2245047-01 through -03.

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Case Narrative (continued)

WG1691701-4: This blank represents the oxidation blank associated with L2245047-04RE.

The WG1680745-2/-3 LCS/LCSD RPD(s), associated with L2245047-01 through -03, are above the acceptance criteria for perfluorodecanesulfonic acid (pfds) (31%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Alycia Mogayzel

Title: Technical Director/Representative Date: 09/27/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01
Client ID: EDLUND WW TANK
Sample Location: VT

Date Collected: 08/17/22 06:30
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/20/22 23:53
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.90	J	ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	10.0	2.26	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	1.18	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01 Date Collected: 08/17/22 06:30

Client ID: EDLUND WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**160**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	125		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01
Client ID: EDLUND WW TANK
Sample Location: VT

Date Collected: 08/17/22 06:30
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	27.5	J	ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	2.30	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01 Date Collected: 08/17/22 06:30

Client ID: EDLUND WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	65		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	64		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	6		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**54**	Q	62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	50		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	67		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	69		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	60		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/17/22 09:00
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 17:03
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.378	J	ng/l	1.75	0.357	1
Perfluoropentanoic Acid (PFPeA)	0.438	J	ng/l	1.75	0.347	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.75	0.396	1
Perfluorohexanoic Acid (PFHxA)	0.627	J	ng/l	1.75	0.287	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.75	0.215	1
Perfluoroheptanoic Acid (PFHpA)	0.312	J	ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.329	1
Perfluorooctanoic Acid (PFOA)	0.469	J	ng/l	1.75	0.207	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.75	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.602	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.273	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.75	0.441	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.266	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.75	0.980	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.567	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.228	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.858	1
Perfluorooctanesulfonamide (FOSA)	0.609	JF	ng/l	1.75	0.508	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.704	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.326	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.75	0.217	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02 Date Collected: 08/17/22 09:00

Client ID: BODYCOTE-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**261**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**215**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**187**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**151**	Q	22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/17/22 09:00
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:38
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.73	J	ng/l	8.84	0.361	1
Perfluoropentanoic Acid (PFPeA)	1.25	J	ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.210	1
Perfluorohexanoic Acid (PFHxA)	1.22	J	ng/l	1.77	0.290	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	0.217	1
Perfluoroheptanoic Acid (PFHpA)	0.453	J	ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	0.410	J	ng/l	1.77	0.209	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.446	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.269	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.77	0.991	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.867	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.329	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02 Date Collected: 08/17/22 09:00

Client ID: BODYCOTE-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	81		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	76		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	66		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03
Client ID: VISHAY-WW TANK
Sample Location: VT

Date Collected: 08/17/22 10:45
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 17:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	19.9		ng/l	1.92	0.392	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.92	0.381	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.229	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.435	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.316	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.236	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.92	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.362	1
Perfluorooctanoic Acid (PFOA)	1.03	J	ng/l	1.92	0.227	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.662	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.92	0.485	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.292	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.17	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.623	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.943	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.558	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.774	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.358	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.315	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.238	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03 Date Collected: 08/17/22 10:45

Client ID: VISHAY-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	140		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**183**	Q	22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03
Client ID: VISHAY-WW TANK
Sample Location: VT

Date Collected: 08/17/22 10:45
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	24.0		ng/l	8.81	0.360	1
Perfluoropentanoic Acid (PFPeA)	0.769	J	ng/l	1.76	0.349	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210	1
Perfluorohexanoic Acid (PFHxA)	0.631	J	ng/l	1.76	0.289	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	0.300	J	ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	0.550	J	ng/l	1.76	0.208	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.76	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.987	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.864	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.328	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.76	0.218	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03 Date Collected: 08/17/22 10:45

Client ID: VISHAY-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	79		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	77		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	66		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 RE
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 17:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1140		ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	2350		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	48.7		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	2870		ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	392		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	132		ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	8.76	J	ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	708		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	20.3		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	1.46	J	ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	4.26	J	ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 RE
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	148		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	139		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	139		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 D
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/22/22 08:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	377	77.0	200
Perfluoropentanoic Acid (PFPeA)	76.2	J	ng/l	377	74.7	200
Perfluorobutanesulfonic Acid (PFBS)	45.3	J	ng/l	377	44.9	200
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	377	85.2	200
Perfluorohexanoic Acid (PFHxA)	259	J	ng/l	377	61.9	200
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	377	46.2	200
Perfluoroheptanoic Acid (PFHpA)	144	J	ng/l	377	42.5	200
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	377	70.9	200
Perfluorooctanoic Acid (PFOA)	77.7	J	ng/l	377	44.5	200
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	11200		ng/l	377	251.	200
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	377	130.	200
Perfluorononanoic Acid (PFNA)	ND		ng/l	377	58.8	200
Perfluorooctanesulfonic Acid (PFOS)	987	F	ng/l	377	95.0	200
Perfluorodecanoic Acid (PFDA)	ND		ng/l	377	57.3	200
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	377	228.	200
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	377	211.	200
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	377	122.	200
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	377	49.0	200
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	377	185.	200
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	377	109.	200
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	377	152.	200
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	377	70.2	200
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	377	61.7	200
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	377	46.8	200

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 D
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	108		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	89		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-01
Client ID: EDLUND WW TANK
Sample Location: VT

Date Collected: 08/17/22 06:30
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	2.90	J	ng/l	27.5	J	ng/l	24.6	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.30	J	ng/l	2.30	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.18	J	ng/l	ND		ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							26.9	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-02
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/17/22 09:00
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.378	J	ng/l	6.73	J	ng/l	6.35	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.438	J	ng/l	1.25	J	ng/l	0.812	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.627	J	ng/l	1.22	J	ng/l	0.593	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.312	J	ng/l	0.453	J	ng/l	0.141	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.469	J	ng/l	0.410	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							7.9	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-03
Client ID: VISHAY-WW TANK
Sample Location: VT

Date Collected: 08/17/22 10:45
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	19.9		ng/l	24.0		ng/l	4.10		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	0.769	J	ng/l	0.769	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	0.631	J	ng/l	0.631	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.300	J	ng/l	0.300	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.03	J	ng/l	0.550	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							5.8	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-04
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1140		ng/l	1140		ng/l
Perfluoropentanoic Acid (PFPeA)	76.2	J	ng/l	2350		ng/l	2270		ng/l
Perfluorobutanesulfonic Acid (PFBS)	45.3	J	ng/l	48.7		ng/l	3.40		ng/l
Perfluorohexanoic Acid (PFHxA)	259	J	ng/l	2870		ng/l	2610		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	144	J	ng/l	392		ng/l	248		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	77.7	J	ng/l	132		ng/l	54.3		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	8.76	J	ng/l	8.76	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	987	F	ng/l	708		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.3		ng/l	20.3		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.46	J	ng/l	1.46	J	ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	4.26	J	ng/l	4.26	J	ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6370	J	ng/l

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 16:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1679735-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 16:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1679735-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**144**	Q	22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 08:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1680745-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 08:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1680745-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	121		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-03 Batch: WG1680745-4					
Perfluorobutanoic Acid (PFBA)	5.11	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-03 Batch: WG1680745-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**58**	Q	62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	52		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	78		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	81		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	67		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 16:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 16:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	116		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 17:28
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-4					
Perfluorobutanoic Acid (PFBA)	5.72	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 17:28
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**163**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	146		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**155**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1679735-2								
Perfluorobutanoic Acid (PFBA)	112		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	111		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	111		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	121		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	112		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	116		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	112		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	130		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	107		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	121		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	97		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	108		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	105		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	140		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	93		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	118		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	144		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	96		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	110		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	118		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	118		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2245047

Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1679735-2								
Perfluorotridecanoic Acid (PFTrDA)	117		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	71		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	108				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**157**	Q			22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-03 Batch: WG1680745-2 WG1680745-3								
Perfluorobutanoic Acid (PFBA)	87		88		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	83		85		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	84		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	84		82		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	83		93		52-156	11		30
Perfluoroheptanoic Acid (PFHpA)	78		82		58-159	5		30
Perfluorohexanesulfonic Acid (PFHxS)	98		110		69-177	12		30
Perfluorooctanoic Acid (PFOA)	74		84		63-159	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	97		100		61-179	3		30
Perfluorononanoic Acid (PFNA)	87		81		68-171	7		30
Perfluorooctanesulfonic Acid (PFOS)	98		98		52-151	0		30
Perfluorodecanoic Acid (PFDA)	92		95		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	100		106		48-150	6		30
Perfluoroundecanoic Acid (PFUnA)	94		93		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	84		115		38-156	**31**	Q	30
Perfluorododecanoic Acid (PFDoA)	106		94		67-153	12		30
Perfluorotridecanoic Acid (PFTrDA)	91		80		48-158	13		30
Perfluorotetradecanoic Acid (PFTA)	90		68		59-182	28		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-03 Batch: WG1680745-2 WG1680745-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		90		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	117		99		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		108		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		63		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 04 Batch: WG1691701-2 WG1691701-3								
Perfluorobutanoic Acid (PFBA)	96		106		67-148	10		30
Perfluoropentanoic Acid (PFPeA)	95		105		63-161	10		30
Perfluorobutanesulfonic Acid (PFBS)	91		100		65-157	9		30
Perfluorohexanoic Acid (PFHxA)	96		107		69-168	11		30
Perfluoropentanesulfonic Acid (PFPeS)	96		108		52-156	12		30
Perfluoroheptanoic Acid (PFHpA)	93		102		58-159	9		30
Perfluorohexanesulfonic Acid (PFHxS)	106		118		69-177	11		30
Perfluorooctanoic Acid (PFOA)	87		95		63-159	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	83		92		61-179	10		30
Perfluorononanoic Acid (PFNA)	88		95		68-171	8		30
Perfluorooctanesulfonic Acid (PFOS)	95		106		52-151	11		30
Perfluorodecanoic Acid (PFDA)	93		104		63-171	11		30
Perfluorononanesulfonic Acid (PFNS)	84		94		48-150	11		30
Perfluoroundecanoic Acid (PFUnA)	108		116		60-153	7		30
Perfluorodecanesulfonic Acid (PFDS)	85		91		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	95		109		67-153	14		30
Perfluorotridecanoic Acid (PFTrDA)	87		100		48-158	14		30
Perfluorotetradecanoic Acid (PFTA)	98		107		59-182	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 04 Batch: WG1691701-2 WG1691701-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		123		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		108		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117		117		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		119		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		113		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		124		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		109		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		104		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	2		2		0-25
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		95		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		87		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-3 QC Sample: L2245047-02 Client ID: BODYCOTE-WW TANK												
Perfluorobutanoic Acid (PFBA)	0.378J	35.4	40.6	114		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.438J	35.4	39.9	112		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	31.4	35.5	113		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	33.2	41.7	126		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	0.627J	35.4	40.4	112		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	33.3	38.7	116		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.312J	35.4	40.4	113		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	32.3	41.9	130		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.469J	35.4	38.8	108		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	33.7	41.0	122		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	33.8	35.2	104		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	35.4	35.8	101		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	32.8	35.6	108		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	35.4	37.2	105		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	34	44.6	131		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	34	33.6	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	35.4	44.6	126		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	35.4	55.3	**156**	Q	-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	34.2	31.9	93		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	0.609JF	35.4	40.0	111		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	35.4	45.6	129		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	35.4	44.4	125		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2245047

Report Date: 09/27/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-3 QC Sample: L2245047-02 Client ID: BODYCOTE-WW TANK												
Perfluorotridecanoic Acid (PFTrDA)	ND	35.4	46.0	130		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	35.4	28.1	79		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**187**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**240**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**209**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	121				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	99				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-4 QC Sample: L2245047-03 Client ID: VISHAY-WW TANK						
Perfluorobutanoic Acid (PFBA)	19.9	19.6	ng/l	2		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	1.03J	0.967J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-4 QC Sample: L2245047-03 Client ID: VISHAY-WW TANK						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	140		133		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		83		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		102		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		95		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		95		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		110		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		24		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112		106		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		100		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-4 QC Sample: L2245047-03 Client ID: VISHAY-WW TANK

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**183**	Q	**173**	Q	22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2245047-01A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-01B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-01C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-01D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-02A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-02B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-02C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-02D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-03A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-03B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-03C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-03D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-04A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-04B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-04C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-04D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2
Project Number:

Lab Number: L2245047
Report Date: 09/27/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL
Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 8/20/22

ALPHA Job #: L2245047

Client Information
Client: Weston & Sampson
Address: 98 Main St
Waterbury, VT
Phone:
Fax:
Email: larosa@wse.inc.com

Project Information
Project Name: VTDEC P2
Project Location: VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO # invoice@wse.inc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Report to MDL

Please specify Metals or TAL.

ANALYSIS
537 PFAS
PFAS TOP

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 PFAS	PFAS TOP	Sample Specific Comments	Total Bottle
45047.01	Edlund WW tank	8/17/22	0630	WW	MLR	X	X		4
-02	Bodycote-WW tank	8/17/22	0905	WW	MLR	X	X		4
-03	Vishay-WW tank	8/17/22	1045	WW	MLR	X	X		4
-04	VTDF - WW Tank	8/17/22	1235	WW	MLR	X	X		4

Container Type: P P
Preservative: A A

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	8/18/22 0800	Bridge	8/18/22 0800
	8/19/22 2130		8/19/22 1410
	8/19/22 1815		8/20/22 0020
ELAD	8/20/22 0145	ELAD	8/20/22 0145
ELAD	8/20/22 0245		8/20/22 0245

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2254154
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	11/02/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2254154-01	EDLUND-WW TANK	WATER	VT	09/27/22 07:00	09/30/22

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2254154
Project Number: Not Specified **Report Date:** 11/02/22

Case Narrative (continued)

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

Perfluorinated Alkyl Acids by Isotope Dilution
L2254154-01 and -01RE: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2254154-01 and -01RE: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
The WG1697897-1 Method Blank, associated with L2254154-01, has concentrations above the reporting limits for 6:2FTS. The sample was re-extracted with the method required holding time exceeded. The results of both extractions are reported and the original sample results are reported with a "B" qualifier.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2254154-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2254154-01 and WG1697787-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
WG1697787-4: This blank represents the oxidation blank associated with L2254154-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Alycia Mogayzel

Title: Technical Director/Representative Date: 11/02/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 20:35
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	24.6	J	ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	3.26	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	3.52	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	1.52	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	3.88	J	ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01 Date Collected: 09/27/22 07:00

Client ID: EDLUND-WW TANK Date Received: 09/30/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	83		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	70		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	64		50-150

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/22 22:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	35.1	G	ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	10.0	2.26	1
Perfluorohexanoic Acid (PFHxA)	2.28	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	1.80	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	2.88	JF	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	25.5	B	ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01 Date Collected: 09/27/22 07:00

Client ID: EDLUND-WW TANK Date Received: 09/30/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**59**	Q	62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**238**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**198**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**179**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01 RE
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 04:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**186**	Q	14-147

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Lab ID: L2254154-01
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	35.1	G	ng/l	24.6	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	3.26	J	ng/l	3.26	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	2.28	J	ng/l	3.52	J	ng/l	1.24	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	1.80	J	ng/l	1.52	J	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	2.88	JF	ng/l	3.88	J	ng/l	1.00	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							5.5	J	ng/l

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	114		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	142		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	129		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	112		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	119		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:29
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-4					
Perfluorobutanoic Acid (PFBA)	4.58	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:29
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	83		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	79		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	65		50-150

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/22 16:01
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1697897-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	6.61		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/22 16:01
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1697897-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	72		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	111		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 02:33
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1704177-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 02:33
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1704177-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 17:09
Analyst: LV

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1704177-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	64		5-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1697787-2 WG1697787-3								
Perfluorobutanoic Acid (PFBA)	102		100		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	102		99		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	98		96		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	101		99		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	102		97		52-156	5		30
Perfluoroheptanoic Acid (PFHpA)	99		96		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	114		112		69-177	2		30
Perfluorooctanoic Acid (PFOA)	98		102		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	117		107		61-179	9		30
Perfluorononanoic Acid (PFNA)	104		102		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	115		105		52-151	9		30
Perfluorodecanoic Acid (PFDA)	105		102		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	109		94		48-150	15		30
Perfluoroundecanoic Acid (PFUnA)	100		103		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	98		94		38-156	4		30
Perfluorododecanoic Acid (PFDoA)	108		104		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	114		113		48-158	1		30
Perfluorotetradecanoic Acid (PFTA)	106		102		59-182	4		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1697787-2 WG1697787-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	111		111		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		136		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		127		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		109		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		134		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	116		109		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		126		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		106		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		115		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		105		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1697897-2								
Perfluorobutanoic Acid (PFBA)	112		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	111		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	112		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	115		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	114		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	105		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	107		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	128		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	113		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	135		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	126		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	115		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	126		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	124		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	144		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	105		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	124		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	120		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	94		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	112		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	104		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	119		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1697897-2								
Perfluorotridecanoic Acid (PFTrDA)	118		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	130		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	55				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1704177-2								
Perfluorobutanoic Acid (PFBA)	100		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	103		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	102		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	108		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	99		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	113		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	99		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	106		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	113		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	105		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	120		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	109		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	108		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	109		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	116		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	102		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	105		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2254154

Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1704177-2								
Perfluorotridecanoic Acid (PFTrDA)	117		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	105		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2254154

Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1704177-2								
Perfluorooctanesulfonamide (FOSA)	107		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63				5-112

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-3 QC Sample: L2253632-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	38.1	42.9	113		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.482J	38.1	43.7	113		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.8	37.7	111		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.7	41.7	117		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	0.584JF	38.1	43.8	113		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35.9	36.6	102		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.657J	38.1	41.4	107		-	-		58-159	-		30
Perfluorohexanesulfonic Acid-Branched (br-PFHxS)	ND	7.24	8.10	112		-	-		69-177	-		30
Perfluorohexanesulfonic Acid-Linear (L-PFHxS)	ND	30.8	34.0	110		-	-		69-177	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34.8	42.2	121		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	1.78J	38.1	45.9	116		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.24B	36.3	48.0	118		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.3	43.8	121		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.1	45.1	118		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	1.33J	35.3	43.6	120		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.1	45.1	118		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.6	54.9	150		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.6	32.2	88		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.1	45.3	119		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.1	43.2	113		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.8	32.8	89		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.1	48.0F	126		-	-		46-170	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-3 QC Sample: L2253632-01 Client ID: MS Sample												
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.09	38.1	35.0	84		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.1	51.0	134		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	38.1	47.7	125		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.1	47.7	125		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	371	569	153		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36	36.4	101		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	38.1	47.5	125		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	38.1	10.0	26		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	60				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114				71-134

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 ***Lab Number:*** L2254154

Project Number: Not Specified ***Report Date:*** 11/02/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-3 QC Sample: L2253632-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69				10-206
Perfluoro[13C4]Butanoic Acid (MPFBA)	81				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	68				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-3 QC Sample: L2257791-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	9.24	39.4	45.0	91		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	18.0	39.4	58.3	102		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.728J	35	34.9	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.9	41.4	112		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	18.2	39.4	57.9	101		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.294J	37.1	37.8	101		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	5.03	39.4	45.6	103		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	2.37	36	44.8	118		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	10.0	39.4	53.7	111		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.99	37.5	39.9	101		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	37.6	43.0	114		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.928J	39.4	40.9	102		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	8.10	36.5	52.2	121		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	1.43J	39.4	44.2	109		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.8	41.3	109		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.9	37.1	98		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.16	39.4	43.9	103		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.4	33.4	85		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38	30.8	81		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.4	38.9	99		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.35F	39.4	40.6	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.4	35.2	89		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2254154

Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-3 QC Sample: L2257791-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	39.4	38.3	97		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.4	37.9	96		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	384	357	93		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	37.2	32.9	88		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	39.4	42.5	108		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	39.4	34.6	88		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**208**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**202**	Q			14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	51				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	29				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	16				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 ***Lab Number:*** L2254154

Project Number: Not Specified ***Report Date:*** 11/02/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-3 QC Sample: L2257791-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-4 QC Sample: L2253632-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	229	234	ng/l	2		30
Perfluoropentanoic Acid (PFPeA)	697	707	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	23.4	23.7	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	3.62	3.58	ng/l	1		30
Perfluorohexanoic Acid (PFHxA)	804	828	ng/l	3		30
Perfluoropentanesulfonic Acid (PFPeS)	12.3	12.8	ng/l	4		30
Perfluoroheptanoic Acid (PFHpA)	810	816	ng/l	1		30
Perfluorohexanesulfonic Acid (PFHxS)	42.6	43.8	ng/l	3		30
Perfluorooctanoic Acid (PFOA)	1170E	1370E	ng/l	16		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97.0	101	ng/l	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	4.59	4.65	ng/l	1		30
Perfluorononanoic Acid (PFNA)	55.7	56.0	ng/l	1		30
Perfluorooctanesulfonic Acid (PFOS)	93.3	101	ng/l	8		30
Perfluorodecanoic Acid (PFDA)	1.50JF	2.08	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.85	2.26	ng/l	23		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-4 QC Sample: L2253632-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.46J	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		74		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		81		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	118		116		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		62		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		75		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**163**	Q	**159**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		65		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		94		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-4 QC Sample: L2253632-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		49		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		70		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	51		40		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	41		39		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65		58		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		51		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		83		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	60		61		10-206

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-4 QC Sample: L2258293-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	7.53	6.64	ng/l	13		30
Perfluoropentanoic Acid (PFPeA)	16.1	15.8	ng/l	2		30
Perfluorobutanesulfonic Acid (PFBS)	5.35	5.15	ng/l	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	15.8	15.0	ng/l	5		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.18	3.17	ng/l	0		30
Perfluorohexanesulfonic Acid (PFHxS)	1.34J	1.20J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	6.15	6.40	ng/l	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.98	1.73J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.631J	0.755J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.18	3.28	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	0.396J	0.540J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-4 QC Sample: L2258293-01 Client ID: DUP Sample						
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30
Perfluorododecane Sulfonic Acid (PFDoDS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluoropropane Sulfonic Acid (PFPrS)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	9.33	9.68	ng/l	4		30
PFAS, Total (5)	14.5J	14.8J	ng/l	NC		30
PFAS, Total (6)	14.9J	15.3J	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-4 QC Sample: L2258293-01 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		82		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**184**	Q	**181**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		111		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**175**	Q	**173**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	159		136		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		86		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		82		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	83		84		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44		48		10-206
1H,1H,2H,2H-Perfluorododecane Sulfonate (M2D4-10:2FTS)	139		122		50-150

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2254154-01A	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(14)
L2254154-01B	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(14)
L2254154-01C	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2254154-01D	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: VT DEC P2
Project Number:

Lab Number: L2254154
Report Date: 11/02/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA — NEW YORK CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 10/1/22

ALPHA Job #: L2254154

Westborough, MA 01581, 8 Walkup Dr., TEL: 508-898-9220, FAX: 508-898-9193
Mansfield, MA 02048, 320 Forbes Blvd, TEL: 508-822-9300, FAX: 508-822-3288

Project Information
Project Name: VT DEC P2
Project Location: VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Client Information
Client: Weston + Sampson
Address: 98 S Main St, Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #: invoice@wseinc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility: ☐ NJ ☐ NY ☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Report to DEC   Report envirodata 8

Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: 537 TOP	537 Isotope	Sample Specific Comments	Total Bottles
4154-01	Edlund-WW Tank	9/27/22	0700	WW	MLR	X	X	May contain high levels of PFAS!	

	537 TOP	537 Isotope
Container Type	P	P
Preservative	X	X

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, K/E = Zn Ac/NaOH, O = Other

Container Code: P = Plastic, A = Amber Glass, V = Vial, G = Glass, B = Bacteria Cup, C = Cube, O = Other, E = Encore, D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilly	9/27/22 0800	Fridge 9/27/22	0800
[signature]	9/30/22 13:10	B. Lyons 9/30/22 AAL	13:10
B. Lyons	9/30/22 15:10	R. Manlo	10/1/22 0000
[signature]	10/1/22 6:00		

R. Manlo
Sam Oldrid 10/1/22 07:10

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

APPENDIX B

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2155560	L2155560-01, -02, and WG1559893-4 Pre-TOP	10/6/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2155560	L2155560-01, -02, and Pre-TOP	10/6/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 4:2FTS, 6:2FTS and 8:2FTS
L2155560	WG1559893-4 Post-TOP	10/6/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q,	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2156904	L2156904-01	10/15/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 6:2FTS and 8:2FTS
L2156904	L2156904-02RE	10/15/2021	Wastewater	Sample re-extracted within hold time due to QC failure in original extraction. Results of re-extraction reported. Sample has elevated detection limits due to limited sample volume for re-extraction.	None	None	None Required	No
L2156904	L2156904-02 Post TOP	10/15/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q,	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2156904	WG1564148-3 and -4	10/15/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2156904	WG1564148-3 and -4	10/15/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 6:2FTS and 8:2FTS
L2158553	L2158553-01	10/26/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2158553	WG1568346-1, -2	10/26/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2158553	WG1568346-3 Matrix Spike	10/26/2021	Solid Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for nearly all compounds. These could result in low bias respectively on reported results.	Spike recoveries for nearly all compounds were below the lower acceptable criteria. Most compound recoveries were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project. However, However, 6:2FTS, 8:2FTS, NMeFOSAA, PFNS and PFDS had 0% recovery. This may effect the data usability for these compounds.	Potential low bias to 6:2FTS, 8:2FTS, NMeFOSAA, PFNS and PFDS in L2158553-01
L2161202	L2161202-01 Pre-TOP	11/2/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 4:2FTS, 6:2FTS and 8:2FTS
L2161202	L2161202-01 RE Post-TOP	11/2/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) M3PFPeA, M4PFOA, M2PFHxA
L2161202	WG1571085-4 Post-TOP	11/2/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for M3PFPeA, M4PFOA, M2PFHxA
L2161537	L2161537-01	11/5/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2161537	WG1572518-1, -2	11/5/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2161537	WG1572518-3	11/5/2021	Lab QA Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA
L2161537	WG1572518-4	11/5/2021	Lab QA Lab Dup	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2162582	L2162582-01	11/10/2021	Wastewater PreTOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)
L2162582	L2162582-01; WG1573037-4	11/10/2021	Wastewater Method Blank Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2162582	WG153357-3	11/10/2021	Lab QA Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA,
L2202626	L2202626-01, -03	1/15/2022	Wastewater Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2202626	L2202626-02	1/15/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2202626	L2202626-03	1/15/2022	Wastewater Pre TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2202626	WG1597792-4	1/15/2022	Lab QA Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2169100	L2169100-01	12/10/2021	Storm Water Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2169100	L2169100-02	12/10/2021	Mist Suppresent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2169100	L2169100-02	12/10/2021	Mist Suppresent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2169100	L2169100-02	12/10/2021	Mist Suppresent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	E	Extracted compounds exceeded the calibration range	Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument	Potential high bias of all compounds
L2169100	L2169100-03	12/10/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2170827	L2170827-01	12/22/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2170827	L2170827-01	12/22/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2170827	L2170827-01	12/22/2021	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2170827	L2170827-02	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2170827	L2170827-02	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2170827	L2170827-03	12/22/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2170827	L2170827-03	12/22/2021	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA
L2170827	L2170827-04	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d5NetFOSAA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFNA,1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NetFOSAA, PFOA
L2170827	L2170827-04	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	G	The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated	Surrogate recoveries may be biased high due to interference for PFOS	Potential high bias for PFOS
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	F	The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration	Surrogate recoveries may be reported as maximum concentrations for PFHxS, PFOS	Potential low bias for PFHxS, PFOS
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M3PFPeA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) M3PFPeA
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2204817	L2204817-01	1/21/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2204817	L2204817 - Method Blank	1/21/2022	Method Blank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2214714	L2214714-01	1/26/2022	Filter Cake	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M5PFHxA, M4PFHpA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFHxA, PFHpA
L2214714	L2214714	1/26/2022	Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d5NetFOSAA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFNA,1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NetFOSAA, PFOA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2211036	L2211036-02	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2211036	L2211036-02	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2211036	L2211036-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), M5PFHxA, M3PFHxS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d5-NetFOSAA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), PFHxA, PFHxS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), NetFOSAA
L2211036	L2211036-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030-01	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d3-NMeFOSAA, d5NetFOSAA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NMeFOSAA, NetFOSAA
L2211030	L2211030-01	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA
L2211030	L2211030-01	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030-01	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2211030	L2211030-01	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the below acceptable criteria for M8FOSAThis significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for FOSA
L2211030	L2211030-01	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030-03	2/25/2022	Field Blank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030	2/25/2022	Method Blank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2211032	L2211032-01	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)
L2211032	L2211032-01	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the below acceptable criteria for d3-NMeFOSAA, M7-PFUDA, M8FOSA, d5-NetFOSAA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for NMeFOSAA, PFUDA, FOSA, NEtMeFOSAA
L2211032	L2211032-01	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2211032	L2211032-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS, d5NetFOSAA, MPFDOA, M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), NetFOSAA, PFDOA, PFTeDA
L2211032	L2211032-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2212981	L2212981-01	3/8/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2212981	L2212981-01	3/8/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2212981	L2212981-02	3/8/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2212981	L2212981-02	3/8/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the lower acceptable criteria for M5PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential low bias for PFHxA
L2212981	L2212981-02	3/8/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2212981	L2212981-02	3/8/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2212981	L2212981-03	3/8/2022	DI Rinse Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2211028	L2211028-01	3/1/2022	Black Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M2PFTeDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFTeDA
L2211028	L2211028-01	3/1/2022	Black Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211028	L2211028-01	3/1/2022	Black Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA
L2211028	L2211028-01	3/1/2022	Black Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2243719	L2243719-01	8/3/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2243719	L2243719-02	8/3/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for MPFBA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), M5PFHXA, M4PFHpA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d3-NMeFOSAA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPeA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), PFHxA, PFHpA 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NMeFOSAA
L2243719	L2243719-03	8/4/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), MPFDOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), PFDOA
L2243719	L2243719-03	8/4/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2243719	L2243719-04	8/4/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)
L2243727	L2243727-01	8/10/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2243727	L2243727-03	8/10/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential h+I126igh bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)
L2243727	L2243727-03	8/10/2022	WW Tank Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2243727	L2243727-03	8/10/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)
L2245047	L2245047-01	8/17/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2245047	L2245047-01	8/17/2022	WW Tank Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% below the lower acceptable criteria for M6PFDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential low bias for PFDA
L2245047	L2245047-02	8/17/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), PFTDEA
L2245047	L2245047-03	8/17/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFTDEA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2254154	L2254154-01	9/27/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)

TABLES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Vergennes Facility 1								Brattleboro Facility 1							
				TANK033						Wire Stripping		Seal Tank		EFFLUENT					
				10/15/2021		1/15/2022		3/8/2022		1/15/2022		10/25/2021		11/10/2021		1/21/2022		2/25/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)																			
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.595	U	2.38	U	1.94	U	0.236	U	5.95	U	0.212	U	1.81	U	1.76	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**1.67**	J	4.08	U	**2.75**		0.406	U	10.2	U	**0.672**	J	1.81	U	**0.994**	J
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.613	U	2.45	U	1.94	U	0.244	U	6.13	U	0.218	U	1.81	U	1.76	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.81**	J	**6.76**	J	1.94	U	0.394	U	9.9	U	**0.552**	J	1.81	U	1.76	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.94	U	3.67	U	1.94	U	0.374	U	9.4	U	0.334	U	**2.22**	F	1.76	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**2.16**	J	3.28	U	1.94	U	0.326	U	8.2	U	**0.352**	J	1.81	U	1.76	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		1.72	U	6.88	U	1.94	U	0.684	U	17.2	U	0.612	U	1.81	U	1.76	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.65**	J	2.25	U	**2.45**		0.224	U	5.63	U	**0.388**	JF	1.81	U	**0.222**	J
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		1.45	U	5.8	U	1.94	U	0.576	U	14.5	U	0.516	U	1.81	U	1.76	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	1.26	U	5.04	U	1.94	U	0.501	U	12.6	U	**2.62**		**21**	GF	17.6	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.78**	J	2.36	U	1.94	U	0.234	U	5.9	U	**0.694**	JF	1.81	U	**0.402**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		2.8	U	11.2	U	1.94	U	1.11	U	28	U	0.996	U	1.81	U	1.76	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	**3.1**	J	3.12	U	1.94	U	0.31	U	7.8	U	0.278	U	1.81	U	1.76	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		2.45	U	9.8	U	1.94	U	0.974	U	24.5	U	0.872	U	1.81	U	1.76	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.76	U	3.04	U	1.94	U	0.302	U	7.6	U	0.270	U	1.81	U	1.76	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.93	U	3.72	U	1.94	U	0.37	U	9.3	U	0.331	U	1.81	U	1.76	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.818	U	3.27	U	1.94	U	0.325	U	8.18	U	0.291	U	1.81	U	1.76	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.62	U	**8.36**	J	1.94	U	0.246	U	6.2	U	0.221	U	1.81	U	**0.874**	J
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		**2.15**	J	**3.56**	J	1.94	U	0.258	U	6.5	U	0.231	U	1.81	U	1.76	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		1.13	U	4.52	U	1.94	U	0.449	U	11.3	U	0.402	U	1.81	U	1.76	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		3.33	U	13.3	U	**3.64**		1.32	U	33.3	U	1.18	U	1.81	U	1.76	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		3.03	U	12.1	U	1.94	U	120	U	30.3	U	1.08	U	1.81	U	1.76	U
N-EtFOSAA	2991-50-6	ng/l		2.01	U	8.04	U	1.94	U	0.799	U	20.1	U	0.715	U	1.81	U	1.76	U
N-MeFOSAA	2355-31-9	ng/l		1.62	U	6.48	U	1.94	U	0.644	U	16.2	U	0.576	U	1.81	U	1.76	U
PFAS VT 5 (total)		ng/l	20	**4.53**	JY	5.04	U	**2.45**	Y	0.501	U	12.6	UY	**3.702**	JY	**23.22**	JY	**0.624**	JY
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)																			
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.595	U	2.38	U	2.02	U	0.251	U			0.212	U	4	U	4.0	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**18.4**	J	**62.2**	J	10.1	U	**6.24**	J			**7.13**	J	20	U	**13.8**	J
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.613	U	2.45	U	2.02	U	0.259	U			0.218	U	4	U	4.0	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**2.73**	J	**18.2**	J	**6.51**		**1.45**	J			**1.45**	J	4	U	**3.15**	J
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.94	U	**4.52**	J	2.02	U	0.397	U			0.334	U	4	U	4.0	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**3.71**	J	**17.3**	J	**5.95**		**0.782**	J			**0.922**	J	4	U	**1.72**	J
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		1.72	U	6.88	U	2.02	U	0.727	U			0.612	U	4	U	4.0	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.91**	J	**4.32**	JF	2.02	U	0.238	U			**0.541**	JF	4	U	4.0	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	1.26	U	**9.6**	J	2.02	U	0.532	U			**2.43**		4	U	**1.02**	J
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**1.42**	J	**2.48**	J	2.02	U	0.249	U			**1.22**	J	4	U	**0.592**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		2.8	U	11.2	U	2.02	U	1.18	U			0.997	U	4	U	4.0	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	**3.48**	J	3.12	U	2.02	U	0.33	U			0.278	U	4	U	4.0	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		2.45	U	9.8	U	2.02	U	1.04	U			0.872	U	4	U	4.0	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.76	U	3.04	U	2.02	U	0.321	U			0.27	U	4	U	4.0	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.93	U	3.72	U	2.02	U	0.393	U			0.331	U	4	U	4.0	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.818	U	3.27	U	2.02	U	0.346	U			0.291	U	4	U	4.0	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.62	U	2.48	U	2.02	U	0.262	U			0.221	U	4	U	4.0	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		**2.11**	J	**3.24**	JF	2.02	U	0.275	U			0.231	U	4	U	4.0	U
PFAS VT 5 (total)		ng/l	20	**5.81**	JY	**20.92**	JY	2.02	U	0.532	U			**4.191**		4	U	**5.612**	JY

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
PFAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^ 1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Swanton Facility 1												Rutland Facility 1					
				BLACK OXIDE EFFLUENT						STORM WATER				MIST SUPPRESSENT Diluted 5g/250ml		WASTEWATER EFFLUENT					
				11/2/2021		12/10/2021		3/1/2022		12/10/2021		6/13/2022		12/10/2021		10/6/2021		12/22/2021		2/25/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.217	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.215	U	1.97	U	1.81	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		0.372	U	50	U	**3.62**		50	U	**1.80**		50000	U	0.368	U	1.97	U	1.81	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.224	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.221	U	1.97	U	1.81	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.56**	J	50	U	**2.26**		50	U	1.78	U	50000	U	**0.718**	J	1.97	U	1.81	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.343	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.339	U	1.97	U	**1.79**	JF
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**0.591**	J	50	U	**0.531**	J	50	U	1.78	U	50000	U	**0.357**	JF	1.97	U	1.81	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.627	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.621	U	1.97	U	1.81	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.73**	J	50	U	**0.762**	J	50	U	1.78	U	50000	U	0.203	U	1.97	U	1.81	U
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		0.529	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.524	U	1.97	U	1.81	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	**1.06**	J	50	U	**0.72**	J	50	U	**2.42**		50000	U	**1.39**	JF	1.97	U	1.81	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.941**	J	50	U	**0.951**	JF	50	U	1.78	U	50000	U	**0.307**	J	1.97	U	**0.225**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		1.02	U	50	U	1.92	U	50	U	1.78	U	50000	U	1.01	U	1.97	U	1.81	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	**0.299**	J	50	U	1.92	U	50	U	1.78	U	50000	U	0.282	U	1.97	U	1.81	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.894	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.885	U	1.97	U	1.81	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.277	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.274	U	1.97	U	1.81	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.399	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.336	U	1.97	U	1.81	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.298	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.295	U	1.97	U	1.81	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		**0.292**	J	50	U	1.92	U	50	U	1.78	U	50000	U	0.224	U	1.97	U	**0.739**	J
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.237	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.235	U	1.97	U	1.81	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		0.412	U	50	U	1.92	U	50	U	1.78	U	**539,000**		0.408	U	1.97	U	1.81	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		1.21	U	**295**	^1	1.92	U	**130**	^1	**7.84**	U	**22,800,000**	E	**2.62**		1.97	U	1.81	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		1.1	U	50	U	1.92	U	50	U	1.78	U	**1,050,000**		1.09	U	1.97	U	1.81	U
N-EtFOSAA	2991-50-6	ng/l		0.733	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.726	U	1.97	U	1.81	U
N-MeFOSAA	2355-31-9	ng/l		0.591	U	50	U	1.92	U	50	U	1.78	U	50000	U	0.585	U	1.97	U	1.81	U
PFAS VT 5 (total)		ng/l	20	**3.03**	JY	50	U	**2.433**	JY	50	U	**2.42**	Y	50000	U	**1.697**	JY	1.97	U	**2.015**	JY
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		0.231	U	50	U	10	U	50	U	1.80	U			0.208	U	1.88	U	1.82	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**2.33**	J	250	U	**31.7**	J	250	U	1.80	U			**6.61**	J	1.88	U	**6.67**	J
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.238	U	50	U	10	U	50	U	1.80	U			0.214	U	1.88	U	1.82	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.06**	J	**165**		**5.7**	J	50	U	**3.40**				**1.67**	J	**4.18**		**4.87**	
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.364	U	50	U	10	U	50	U	1.80	U			0.328	U	1.88	U	1.82	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**0.744**	J	**55.7**		**1.8**	J	50	U	**3.20**				**0.838**	J	1.88	U	**2.74**	
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.667	U	50	U	10	U	50	U	1.80	U			0.6	U	1.88	U	1.82	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.574**	JF	50	U	**1.24**	J	50	U	1.80	U			**0.3**	J	1.88	U	**0.423**	J
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	**0.523**	J	50	U	10	U	50	U	1.80	U			0.44	U	1.88	U	1.82	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.969**	J	50	U	10	U	50	U	1.80	U			**0.538**	J	1.88	U	**0.306**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		1.08	U	50	U	10	U	50	U	1.80	U			0.977	U	1.88	U	1.82	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	0.302	U	50	U	10	U	50	U	1.80	U			0.272	U	1.88	U	1.82	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.95	U	50	U	10	U	50	U	1.80	U			0.855	U	1.88	U	1.82	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.294	U	50	U	10	U	50	U	1.80	U			0.265	U	1.88	U	1.82	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.36	U	50	U	10	U	50	U	1.80	U			0.325	U	1.88	U	1.82	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.317	U	50	U	10	U	50	U	1.80	U			0.286	U	1.88	U	1.82	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.24	U	50	U	10	U	50	U	1.80	U			0.216	U	1.88	U	1.82	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.252	U	50	U	10	U	50	U	1.80	U			0.227	U	1.88	U	1.82	U
PFAS VT 5 (total)		ng/l	20	**2.066**	JY	50	U	**1.24**	JY	50	U	1.80	U			**0.838**	JY	1.88	U	**0.729**	JY

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
PFAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Rutland Facility 2						Burlington Facility 1						Bennington Facility 1					
				WASTEWATER EFFLUENT						Wastewater Tank						Wastewater Tank					
				10/6/2021		12/22/2021		2/25/2022		8/3/2022		8/17/2022		9/27/2023		8/4/2022		8/10/2022		8/17/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		**0.864**	JF	1.99	U	**0.516**	JF	2.13	U	1.19	U	1.19	U	1.83	U	1.78	U	0.229	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**0.394**	J	1.99	U	1.78	U	**13.4**		**2.9**	J	**35.1**		**44.1**		**17.4**		**19.9**	
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.214	U	1.99	U	1.78	U	2.13	U	1.23	U	1.23	U	1.83	U	1.78	U	0.236	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**0.69**	J	1.99	U	**0.964**	J	**6.98**		1.98	U	1.98	U	**1.19**	J	**0.679**	J	0.381	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.327	U	1.99	U	1.78	U	2.13	U	1.88	U	1.88	U	1.83	U	1.78	U	0.362	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**0.881**	J	1.99	U	**0.388**	J	**2.41**		1.64	U	**2.28**	J	**0.845**	J	**0.754**	J	0.318	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.599	U	1.99	U	1.78	U	2.13	U	3.44	U	3.44	U	1.83	U	1.78	U	0.662	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**0.206**	J	1.99	U	1.78	U	**1.38**	J	1.13	U	**1.8**	J	1.83	U	1.78	U	0.217	U
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		0.505	U	1.99	U	1.78	U	2.13	U	2.9	U	2.9	U	1.83	U	1.78	U	0.558	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	0.439	U	1.99	U	1.78	U	**5.16**		2.52	U	2.52	U	1.83	U	1.78	U	0.485	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.369**	J	1.99	U	**0.32**	J	2.13	U	**1.18**	J	**2.88**	JF	**1.25**		**1.34**	J	**1.03**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		0.975	U	1.99	U	1.78	U	2.13	U	5.6	U	5.6	U	1.83	U	1.78	U	1.08	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	0.272	U	1.99	U	**0.288**	J	**0.4**		1.56	U	1.56	U	1.83	U	1.78	U	0.3	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.854	U	1.99	U	1.78	U	2.13	U	4.9	U	4.9	U	1.83	U	**1.12**	J	0.943	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.265	U	1.99	U	1.78	U	2.13	U	1.52	U	1.52	U	1.83	U	1.78	U	0.292	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.324	U	1.99	U	1.78	U	2.13	U	1.86	U	1.86	U	1.83	U	1.78	U	0.358	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.285	U	1.99	U	1.78	U	2.13	U	1.64	U	1.64	U	1.83	U	1.78	U	0.315	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.216	U	1.99	U	1.78	U	2.13	U	1.24	U	1.24	U	1.83	U	1.78	U	0.238	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.226	U	1.99	U	1.78	U	2.13	U	1.3	U	1.3	U	1.83	U	1.78	U	0.25	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		0.394	U	1.99	U	1.78	U	2.13	U	2.26	U	2.28	U	1.83	U	1.78	U	0.435	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		**2.45**		1.99	U	**1.2**	J	**8.06**	B	6.66	U	**25.5**	B	**5.8**	B	**5.33**	B	1.28	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		1.06	U	1.99	U	1.78	U	2.13	U	6.06	U	6.06	U	1.83	U	1.78	U	1.17	U
N-EtFOSAA	2991-50-6	ng/l		0.7	U	1.99	U	1.78	U	**4.24**		4.02	U	4.02	U	1.83	U	1.78	U	0.774	U
N-MeFOSAA	2355-31-9	ng/l		0.564	U	1.99	U	1.78	U	2.13	U	3.24	U	3.24	U	1.83	U	1.78	U	0.623	U
PFAS VT 5 (total)		ng/l	20	**0.575**	JY	1.99	U	**0.608**	JY	**6.94**	Y	**1.18**	Y	**4.68**	Y	**1.25**	Y	**1.34**	Y	**1.03**	Y
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)																					
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		**0.449**	J	1.93	U	1.81	U	**1.02**	J	1.19	U	1.19	U	1.82	U	1.82	U	0.21	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		**4.57**	J	9.67	U	**6.7**	J	**7.05**	J	**27.5**	J	**24.6**	J	**59.6**		**20.2**		**24.0**	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		0.217	U	1.93	U	1.81	U	1.93	U	1.23	U	1.23	U	1.82	U	1.82	U	0.126	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		**1.8**	U	1.93	U	**3.02**		**2.54**		1.98	U	**3.26**	J	**2.05**		**1.51**	J	**0.769**	J
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	0.332	U	1.93	U	1.81	U	**0.386**	J	1.88	U	1.88	U	1.82	U	1.82	U	0.331	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		**1.63**	J	1.93	U	**2.15**		**3.63**		**2.30**	J	**3.52**	J	**1.04**	J	**0.979**	J	**0.631**	J
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		0.608	U	1.93	U	1.81	U	1.93	U	3.44	U	3.44	U	1.82	U	1.82	U	0.606	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	**2.8**	J	1.93	U	**0.552**	J	**1.31**	J	1.13	U	**1.52**	J	**0.561**	J	**0.452**	J	**0.300**	J
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	0.446	U	1.93	U	1.81	U	**1.5**	J	2.52	U	2.52	U	1.82	U	**0.513**	J	0.444	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	**0.541**	J	1.93	U	**0.457**	J	**3.16**		1.18	U	**3.88**	J	**1.08**	J	**1.3**	J	**0.550**	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		0.991	U	1.93	U	1.81	U	1.93	U	5.60	U	5.6	U	1.82	U	1.82	U	0.987	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	0.276	U	1.93	U	**0.37**	J	**0.452**	J	1.56	U	1.56	U	1.82	U	1.82	U	0.275	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		0.867	U	1.93	U	1.81	U	1.93	U	4.90	U	4.9	U	1.82	U	**0.99**	J	0.864	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.269	U	1.93	U	1.81	U	**0.313**	J	1.52	U	1.52	U	1.82	U	1.82	U	0.268	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		0.329	U	1.93	U	1.81	U	1.93	U	1.86	U	1.86	U	1.82	U	1.82	U	0.328	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		0.289	U	1.93	U	1.81	U	1.93	U	1.64	U	1.64	U	1.82	U	1.82	U	0.288	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		0.219	U	1.93	U	1.81	U	1.93	U	1.24	U	1.24	U	1.82	U	1.82	U	0.218	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		0.23	U	1.93	U	1.81	U	1.93	U	1.30	U	1.3	U	1.82	U	1.82	U	0.229	U
PFAS VT 5 (total)		ng/l	20	**3.341**	JY	1.93	U	**1.379**	JY	**6.81**	Y	8.27	UY	**5.4**	Y	**1.64**	Y	**2.26**	Y	**0.850**	JY

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
[3]FAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^ 1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 1
AEROSPACE AND METAL FINISHING FACILITY STUDY
LIQUIDS PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	VGES	Rutland Facility 3						Springfield Facility 1					
				Wastewater Tank						Wastewater Tank					
				8/4/2022		8/10/2022		8/17/2022		8/3/2022		8/10/2022		8/17/2022	
				Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Pre-treatment)															
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		1.98	U	0.265	J	0.208	U	61.6	J	54.3	J	45.3	J
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		0.439	J	1.23	J	0.378	J	88.5	U	87.9	U	77	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		1.98	U	1.84	U	0.215	U	88.5	U	87.9	U	46.2	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		0.87	J	1.38	J	0.438	J	63.4	J	81.2	J	76.2	J
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	1.98	U	1.84	U	0.329	U	88.5	U	87.9	U	70.9	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		0.945	J	1.15	J	0.627	J	248		309		259	J
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		1.98	U	1.84	U	0.602	U	88.5	U	87.9	U	130	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	0.308	J	0.49		0.312	J	162		164		144	J
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/l		1.98	U	1.84	U	0.609	JF	88.5	U	87.9	U	109	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	1.98	U	1.84	U	0.441	U	1,900		1,900		987	F
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	0.546	J	0.682		0.469	J	63.7	J	82.3		77.7	J
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		1.98	U	1.84	U	0.98	U	88.5	U	87.9	U	211	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	1.98	U	1.84	U	0.273	U	88.5	U	87.9	U	58.8	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		1.98	U	1.84	U	0.858	U	88.5	U	87.9	U	185	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		1.98	U	1.84	U	0.266	U	88.5	U	22	J	57.3	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		1.98	U	1.84	U	0.326	U	88.5	U	87.9	U	70.2	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		1.98	U	1.84	U	0.286	U	88.5	U	87.9	U	61.7	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		1.98	U	1.84	U	0.217	U	17.3	J	87.9	U	46.8	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		1.98	U	1.84	U	0.228	U	88.5	U	87.9	U	49	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/l		1.98	U	1.84	U	0.396	U	88.5	U	21.4	J	85.2	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/l		5.86	B	1.8	U	1.17	U	14,500		14,400		11,200	
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/l		1.98	U	1.84	U	1.06	U	88.5	U	87.9	U	228	U
N-EtFOSAA	2991-50-6	ng/l		1.98	U	1.84	U	0.704	U	122		81.6	J	152	U
N-MeFOSAA	2355-31-9	ng/l		1.98	U	1.84	U	0.567	U	118		64	J	122	U
PFAS VT 5 (total)		ng/l	20	0.854	Y	1.172	Y	0.781	Y	2,126	Y	2,146	Y	1,209	FJY
Per- and Poly Fluoroalkyl Substances (PFAS)- LCMSMS-ID-TOP (Post-treatment)															
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/l		2	U	1.98	U	0.21	U	37.5		41.8		48.7	
Perfluorobutanoic acid (PFBA)	375-22-4	ng/l		6.58	J	7.52	J	6.73	J	391		365		1,140	
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/l		2	U	1.98	U	0.217	U	8.86	U	9.77	U	1.23	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/l		1.6	J	1.91	J	1.25	J	778		870		2,350	
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/l	20	2	U	1.98	U	0.332	U	8.86	U	9.77	U	1.88	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/l		3.39		1.33	J	1.22	J	1,170		1,570		2,870	
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/l		2	U	1.98	U	0.608	U	8.86	U	9.77	U	3.44	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/l	20	0.628	J	0.632	J	0.453	J	277		299		392	
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/l	20	2	U	1.98	U	0.446	U	290		328		708	
Perfluorooctanoic acid (PFOA)	335-67-1	ng/l	20	0.692	J	0.711	J	0.41	J	51.2		78.7		132	
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/l		2	U	1.98	U	0.991	U	8.86	U	9.77	U	5.6	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/l	20	2	U	1.98	U	0.276	U	2.13		3.38		8.76	J
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/l		2	U	1.98	U	0.867	U	8.86	U	9.77	U	4.9	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/l		0.312	J	1.98	U	0.269	U	4.41		6.43	J	20.3	
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/l		2	U	1.98	U	0.329	U	8.86	U	9.77	U	4.26	J
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/l		2	U	1.98	U	0.289	U	8.86	U	9.77	U	1.64	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/l		2	U	1.98	U	0.219	U	8.86	U	9.77	U	1.24	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/l		2	U	1.98	U	0.23	U	8.86	U	9.77	U	1.46	J
PFAS VT 5 (total)		ng/l	20	1.32	Y	1.343	Y	0.863	Y	620.3	Y	709.1	Y	1,241	Y

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
PFAS VT 5 (tota	sum of PFHxS, PFHpA, PFNA, PFOS, PFOA
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/L	nanograms per liter
U	not detected above laboratory reporting limit
Y	calculated value
B	analyte detected in method blank. sample result <10x blank concentration
E	result exceeded calibration range
F	ratio of quantifier ion to qualifier ion outside criteria. Result considered maximum
G	high bias due to matrix interference with non-target compound(s). Result is estimated.
J	estimated; less than reporting limit, but greater than the method detection limit
^ 1	samples/analyses potentially impacted by mist supressent sample
Blank Cell	Not Analyzed
Bold	Cncentration above laboratory detection limit
Bold	Exceedance of VGES

TABLE 2
AEROSPACE AND METAL FINISHING FACILITY STUDY
SLUDGE PFAS CONCENTRATION SUMMARY

Parameter	CAS	Units	Vergennes Facility 1						Brattleboro Facility 1								Rutland Facility 1				Rutland Facility 2			
			PRETREATMENT SLUDGE						NA CAKE		COMBINED FILTER CAKE						Sludge				Sludge			
			10/15/2021		1/15/2022		3/8/2022		10/25/2021		11/5/2021		1/26/2022		2/25/2022		12/22/2021		2/25/2022		12/22/2021		2/25/2022	
			Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Per- and Poly Fluoroalkyl Substances (PFAS) - LCMSMS-ID																								
Perfluorobutanesulfonic acid (PFBS)	375-73-5	ng/g	0.125	U	0.098	U	0.379	U	11.9	U	0.485	U	--		7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/g	0.073	U	0.057	U	0.758	U	6.94	U	0.282	U	12.3	U	14.8	U	0.342	U	**0.064**	J	0.589	U	0.904	U
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	0.268	U	**0.245**	J	1.52	U	25.5	U	1.04	U	--		29.5	U	0.684	U	0.804	U	1.18	U	1.81	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/g	0.148	U	**0.229**	J	0.758	U	14.1	U	0.572	U	12.3	U	14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	ng/g	0.194	U	0.152	U	0.379	U	18.5	U	0.753	U	--		7.38	U	0.171	U	0.804	U	0.589	U	0.904	U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/g	0.168	U	0.132	U	0.758	U	16.1	U	0.653	U	12.3	U	14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	ng/g	0.438	U	0.343	U	0.758	U	41.8	U	1.7	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/g	0.145	U	0.133	U	0.379	U	13.8	U	0.561	U	6.13	U	7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorooctanesulfonamide (FOSA)	75491-6	ng/g	--		0.246	U	0.758	U	39.8	U	1.22	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ng/g	**0.552**	J	**0.764**		0.379	U	39.8	U	**8.95**	F	--		73.8	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/g	**0.499**	J	**0.318**	J	0.379	U	12.8	U	0.521	U	6.13	U	7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorononanesulfonic acid (PFNS)	98789-57-2	ng/g	0.959	U	0.752	U	1.52	U	91.5	U	3.72	U	--		29.5	U	0.684	U	0.804	U	1.18	U	1.81	U
Perfluorononanoic acid (PFNA)	375-95-1	ng/g	**0.786**	J	**0.553**	J	0.379	U	22.9	U	0.933	U	--		7.38	U	0.171	U	0.201	U	0.294	U	0.452	U
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/g	0.491	U	0.385	U	0.758	U	46.8	U	1.9	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/g	0.215	U	0.168	U	0.379	U	20.5	U	0.834	U	--		7.38	U	0.171	U	0.201	U	0.294	U	0.904	U
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/g	0.224	U	0.176	U	0.758	U	21.4	U	0.871	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/g	0.656	U	0.514	U	0.758	U	62.6	U	2.54	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	ng/g	0.173	U	**0.293**	J	0.758	U	16.5	U	0.672	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/g	**0.279**	J	**0.277**	J	0.758	U	14.3	U	0.582	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
4:2 Fluorotelomersulfonic acid (4:2FTS)	757124-72-4	ng/g	0.207	U	0.162	U	1.52	U	19.7	U	0.803	U	--		29.5	U	0.684	U	0.804	U	1.18	U	1.81	U
6:2 Fluorotelomersulfonic acid (6:2FTS)	27619-97-2	ng/g	**0.714**	J	**0.737**	J	**0.881**		54.9	U	2.23	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
8:2 Fluorotelomersulfonic acid (8:2FTS)	39108-34-4	ng/g	0.92	U	0.722	U	0.758	U	87.8	U	3.57	U	--		14.8	U	0.342	U	0.403	U	0.589	U	0.904	U
N-EtFOSAA	2991-50-6	ng/g	**0.308**	J	**0.314**	J	0.758	U	25.8	U	1.05	U	--		14.8	U	0.342	U	0.402	U	0.589	U	0.904	U
N-MeFOSAA	2355-31-9	ng/g	0.646	U	0.507	U	0.758	U	61.6	U	2.51	U	6.13	U	14.8	U	0.342	U	0.402	U	0.589	U	0.904	U

NOTES:

VGES	Groundwater: Vermont Groundwater Enforcement Standard (I-Rule; July 6, 2019)
--	No comparison-analytes not detected above detection limits
RPD	Relative Percent Difference between sample and blind field duplicate
ng/Lg	nanograms per gram (ppb)
U	not detected above laboratory reporting limit
Y	calculated value
E	result exceeded calibration range
J	estimated; less than reporting limit, but greater than the method detection limit
F	ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Result is estimated maximum.
Blank Cell	Not Analyzed
Bold	Concentration above laboratory detection limit

APPENDIX A

ANALYTICAL REPORT

Lab Number:	L2155560
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDEC P2
Project Number:	Not Specified
Report Date:	10/29/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2155560-01	GE-3-0306 EFFLUENT	WATER	RUTLAND, VT	10/06/21 11:50	10/12/21
L2155560-02	GE-3-1270-EFFLUENT	WATER	RUTLAND, VT	10/06/21 10:48	10/12/21
L2155560-03	FIELD BLANK	WATER	RUTLAND, VT	10/06/21 10:48	10/12/21

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VTDEC P2 **Lab Number:** L2155560
Project Number: Not Specified **Report Date:** 10/29/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2155560-01 and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2155560-01 and -02: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1559893-4: This blank represents the TOP oxidation blank associated with L2155560-01 and -02. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 10/29/21

ORGANICS

SEMIVOLATILES

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 11:50
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 11:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	0.718	J	ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	0.408	1
Perfluorohexanoic Acid (PFHxA)	0.357	JF	ng/l	1.80	0.296	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	0.221	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	0.307	J	ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.62		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	1.39	JF	ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.80	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.885	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.524	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01 Date Collected: 10/06/21 11:50

Client ID: GE-3-0306 EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	62		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**324**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**186**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**45**	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**65**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**61**	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**258**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	75		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		22-136

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 11:50
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 23:11
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.61	J	ng/l	6.96	0.356	1
Perfluoropentanoic Acid (PFPeA)	1.67	J	ng/l	1.74	0.346	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.208	1
Perfluorohexanoic Acid (PFHxA)	0.838	J	ng/l	1.74	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.214	1
Perfluoroheptanoic Acid (PFHpA)	0.300	J	ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.328	1
Perfluorooctanoic Acid (PFOA)	0.538	J	ng/l	1.74	0.206	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.600	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.74	0.440	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.977	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.855	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.325	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-01 Date Collected: 10/06/21 11:50

Client ID: GE-3-0306 EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	62		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	63		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	75		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	67		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	60		50-150

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02
Client ID: GE-3-1270-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 12:13
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.394	J	ng/l	1.74	0.355	1
Perfluoropentanoic Acid (PFPeA)	0.690	J	ng/l	1.74	0.345	1
Perfluorobutanesulfonic Acid (PFBS)	0.864	JF	ng/l	1.74	0.207	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.394	1
Perfluorohexanoic Acid (PFHxA)	0.881	J	ng/l	1.74	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.214	1
Perfluoroheptanoic Acid (PFHpA)	0.206	J	ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.327	1
Perfluorooctanoic Acid (PFOA)	0.369	J	ng/l	1.74	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.45		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.599	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.74	0.439	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.975	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.564	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.854	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.505	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.700	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.285	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02 Date Collected: 10/06/21 10:48

Client ID: GE-3-1270-EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**48**	Q	58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**50**	Q	62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**281**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**52**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**55**	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**59**	Q	62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**191**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	71		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**244**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		22-136

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02
Client ID: GE-3-1270-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 23:27
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.57	J	ng/l	7.08	0.361	1
Perfluoropentanoic Acid (PFPeA)	1.80		ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	0.449	J	ng/l	1.77	0.210	1
Perfluorohexanoic Acid (PFHxA)	1.63	J	ng/l	1.77	0.290	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	0.217	1
Perfluoroheptanoic Acid (PFHpA)	0.280	J	ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	0.541	J	ng/l	1.77	0.209	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.446	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.269	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.77	0.991	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.867	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.329	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-02 Date Collected: 10/06/21 10:48

Client ID: GE-3-1270-EFFLUENT Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	76		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	68		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	60		50-150

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-03
Client ID: FIELD BLANK
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 12:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.214	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	0.407	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	0.296	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	0.221	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.62	J	ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.620	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.281	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.454	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.80	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.584	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.234	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.883	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.724	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.335	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.223	1

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

SAMPLE RESULTS

Lab ID: L2155560-03 Date Collected: 10/06/21 10:48

Client ID: FIELD BLANK Date Received: 10/12/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	64		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	73		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Lab ID: L2155560-01
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 11:50
Date Received: 10/12/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.61	J	ng/l	6.61	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.718	J	ng/l	1.67	J	ng/l	0.952	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.357	JF	ng/l	0.838	J	ng/l	0.481	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.300	J	ng/l	0.300	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.307	J	ng/l	0.538	J	ng/l	0.231	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	1.39	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							8.57	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Lab ID: L2155560-02
Client ID: GE-3-1270-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 10/06/21 10:48
Date Received: 10/12/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Units	Post-Treatment Results	Post-Treatment Qualifier	Units	Difference Results	Difference Qualifier	Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.394	J	ng/l	4.57	J	ng/l	4.18	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.690	J	ng/l	1.80		ng/l	1.11		ng/l
Perfluorobutanesulfonic Acid (PFBS)	0.864	JF	ng/l	0.449	J	ng/l	0	J	ng/l
Perfluorohexanoic Acid (PFHxA)	0.881	J	ng/l	1.63	J	ng/l	0.749	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.206	J	ng/l	0.280	J	ng/l	0.074	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.369	J	ng/l	0.541	J	ng/l	0.172	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6.28	J	ng/l

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 05:28
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1559407-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.49	J	ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/21/21 05:28
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/16/21 03:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1559407-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	101		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	124		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	8.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.548	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:54
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	8.00	0.408
Perfluoropentanoic Acid (PFPeA)	1.01	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDEC P2 **Lab Number:** L2155560

Project Number: Not Specified **Report Date:** 10/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/21 22:54
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/19/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-02 Batch: WG1559893-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	59		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**59**	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**59**	Q	62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**57**	Q	62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	66		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	62		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	53		50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1559407-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	100		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	108		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	102		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	99		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	97		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	98		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	99		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	94		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	103		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	86		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	102		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	113		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	104		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	105		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1559407-2								
Perfluorotridecanoic Acid (PFTrDA)	113		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	102		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	98				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	85				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-02 Batch: WG1559893-2 WG1559893-3								
Perfluorobutanoic Acid (PFBA)	111		109		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	110		108		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	106		103		65-157	3		30
Perfluorohexanoic Acid (PFHxA)	114		114		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	96		100		52-156	4		30
Perfluoroheptanoic Acid (PFHpA)	111		109		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	104		108		69-177	4		30
Perfluorooctanoic Acid (PFOA)	113		109		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	112		113		61-179	1		30
Perfluorononanoic Acid (PFNA)	104		102		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	96		94		52-151	2		30
Perfluorodecanoic Acid (PFDA)	108		103		63-171	5		30
Perfluorononanesulfonic Acid (PFNS)	100		100		48-150	0		30
Perfluoroundecanoic Acid (PFUnA)	102		104		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	124		122		38-156	2		30
Perfluorododecanoic Acid (PFDoA)	124		121		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	102		107		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	104		111		59-182	7		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-02 Batch: WG1559893-2 WG1559893-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		93		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		74		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		76		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		83		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		90		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		71		22-136

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-3 QC Sample: L2154676-01 Client ID: MS Sample												
Perfluorobutanesulfonic Acid (PFBS)	ND	34.4	31.8	92		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.2	35.6	98		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	38.7	36.6	95		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36.4	31.8	87		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	38.7	35.5	92		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	35.4	32.9	93		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.241J	38.7	37.2	96		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.58J	36.8	37.3	97		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.8	36.5	99		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.7	35.1	91		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.9	32.5	90		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.7	34.4	89		-	-		63-171	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.7	42.7	110		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.7	35.1	91		-	-		60-153	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	38.7	36.9	95		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.7	39.6	102		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	38.7	41.8	108		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.7	37.6	97		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	377	327	87		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36.5	30.2	83		-	-		69-143	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	36.1	34.3	95		-	-		55-158	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDEC P2 ***Lab Number:*** L2155560

Project Number: Not Specified ***Report Date:*** 10/29/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-3 QC Sample: L2154676-01 Client ID: MS Sample												
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	36.5	33.2	91		-	-		52-156	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	80				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67				22-136
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-4 QC Sample: L2154676-03 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.52JF	1.63J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1559407-4 QC Sample: L2154676-03 Client ID: DUP Sample						
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		77		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		83		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		86		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		90		62-124
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		88		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		94		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		105		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	116		115		10-165

Project Name: VTDEC P2
Project Number: Not Specified

Lab Number: L2155560
Report Date: 10/29/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2155560-01A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-01B	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-01C	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-01D	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-02A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-02B	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)
L2155560-02C	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-02D	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2155560-03A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDEC P2	**Lab Number:**	L2155560
Project Number:	Not Specified	**Report Date:**	10/29/21

Data Qualifiers

NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
P	- The RPD between the results for the two columns exceeds the method-specified criteria.
Q	- The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
R	- Analytical results are from sample re-analysis.
RE	- Analytical results are from sample re-extraction.
S	- Analytical results are from modified screening analysis.
V	- The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
Z	- The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 10/13/21

ALPHA Job #: L2155560

Client Information

Client: Weston & Sampson
Address: 9 Saint Waterbury VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information

Project Name: VT DEC PFAS Inputs
Project Location: Rutland, VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steve LaRosa
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Report to MDE
send results in enviodata8 format

Please specify Metals or TAL.

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information

☒ Same as Client Info
PO #

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility:
☐ NJ ☐ NY
☐ Other:

Sample Filtration

☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: A7_537isotope	ANALYSIS: TOP-PFAS	Total Bottle
55560-01	GE-3-0306Effluent	10/6/21	1150	WW	MLR	X	X	
-02	GE-3-1270-Effluent	10/6/21	1648	WW	MLR	X	X	
-03	Field Blank	—	—	—	—	X		

Container Type: P P
Preservative: / /

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	10/6/21 1500	Fridge	10/6/21 1500
			10/12/21 1850
	10/12/21 18:30		10/13/21 01:30
Wendy Manning	10/13/21 4:00		10/13/21 4:20
	10/13/21 6:00		10/13/21 0600

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2156904
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS/COLBAS AERO
Project Number:	Not Specified
Report Date:	11/05/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2156904-01	PRETREATMENT SLUDGE	SLUDGE	VERGENNES, VT	10/15/21 11:30	10/18/21
L2156904-02	TANK033	WATER	VERGENNES, VT	10/15/21 11:25	10/18/21

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2156904-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2156904-01: The MeOH fraction of the extraction is reported for Perfluorooctanesulfonamide (FOSA) due to better extraction efficiency of the M8FOSA Surrogate (Extracted Internal Standard).

L2156904-02RE: The sample was re-extracted within holding time due to QC failures in the original extraction. The results of the re-extraction are reported. The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

WG1564148-3 and WG1564148-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2156904-02: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2156904-02: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2156904-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1563880-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1563880-4: This blank represents the TOP oxidation blank associated with L2156904-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 11/05/21

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01
Client ID: PRETREATMENT SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:30
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 07:32
Analyst: HT
Percent Solids: 15%

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.60	0.073	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.60	0.148	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.802	0.125	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.21	0.207	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.60	0.168	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	3.21	0.268	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.802	0.145	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.802	0.194	1
Perfluorooctanoic Acid (PFOA)	0.499	J	ng/g	0.802	0.134	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.714	J	ng/g	1.60	0.576	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.60	0.438	1
Perfluorononanoic Acid (PFNA)	0.786	J	ng/g	0.802	0.240	1
Perfluorooctanesulfonic Acid (PFOS)	0.552	J	ng/g	0.802	0.417	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.802	0.215	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.60	0.920	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	3.21	0.959	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.60	0.646	1
Perfluoroundecanoic Acid (PFUnA)	0.279	J	ng/g	1.60	0.150	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.60	0.491	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.308	J	ng/g	1.60	0.271	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.60	0.224	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.60	0.656	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.60	0.173	1

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01 Date Collected: 10/15/21 11:30

Client ID: PRETREATMENT SLUDGE Date Received: 10/18/21

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	110		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	74		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**327**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**244**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		24-159

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01
Client ID: PRETREATMENT SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:30
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/03/21 12:42
Analyst: MP
Percent Solids: 15%

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.60	0.314	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-117

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02
Client ID: TANK033
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:25
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 19:08
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	18.4	J	ng/l	20.0	1.02	1
Perfluoropentanoic Acid (PFPeA)	2.73	J	ng/l	5.00	0.990	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	5.00	0.595	1
Perfluorohexanoic Acid (PFHxA)	3.71	J	ng/l	5.00	0.820	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	5.00	0.613	1
Perfluoroheptanoic Acid (PFHpA)	0.910	J	ng/l	5.00	0.563	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	5.00	0.940	1
Perfluorooctanoic Acid (PFOA)	1.42	J	ng/l	5.00	0.590	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	5.00	1.72	1
Perfluorononanoic Acid (PFNA)	3.48	J	ng/l	5.00	0.780	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	5.00	1.26	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	5.00	0.760	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	5.00	2.80	1
Perfluoroundecanoic Acid (PFUnA)	2.11	J	ng/l	5.00	0.650	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	5.00	2.45	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	5.00	0.930	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	5.00	0.818	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	5.00	0.620	1

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02 Date Collected: 10/15/21 11:25

Client ID: TANK033 Date Received: 10/18/21

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	75		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	72		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	59		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**46**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	76		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	102		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	90		50-150

Project Name: VT DEC PFAS/COLBAS AERO
Lab Number: L2156904
Project Number: Not Specified
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02 RE
Client ID: TANK033
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:25
Date Received: 10/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/30/21 19:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/29/21 18:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.67	J	ng/l	5.00	1.02	1
Perfluoropentanoic Acid (PFPeA)	1.81	J	ng/l	5.00	0.990	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	5.00	0.595	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	5.00	1.13	1
Perfluorohexanoic Acid (PFHxA)	2.16	J	ng/l	5.00	0.820	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	5.00	0.613	1
Perfluoroheptanoic Acid (PFHpA)	0.650	J	ng/l	5.00	0.563	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	5.00	0.940	1
Perfluorooctanoic Acid (PFOA)	0.780	J	ng/l	5.00	0.590	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	5.00	3.33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	5.00	1.72	1
Perfluorononanoic Acid (PFNA)	3.10	J	ng/l	5.00	0.780	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	5.00	1.26	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	5.00	0.760	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	5.00	3.03	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	5.00	2.80	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	5.00	1.62	1
Perfluoroundecanoic Acid (PFUnA)	2.15	J	ng/l	5.00	0.650	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	5.00	2.45	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	5.00	1.45	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	5.00	2.01	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	5.00	0.930	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	5.00	0.818	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	5.00	0.620	1

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-02 RE Date Collected: 10/15/21 11:25
Client ID: TANK033 Date Received: 10/18/21
Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY
RESULTS SUMMARY

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Lab ID: L2156904-02
Client ID: TANK033
Sample Location: VERGENNES, VT

Date Collected: 10/15/21 11:25
Date Received: 10/18/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	1.67	J	ng/l	18.4	J	ng/l	16.7	J	ng/l
Perfluoropentanoic Acid (PFPeA)	1.81	J	ng/l	2.73	J	ng/l	0.920	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	2.16	J	ng/l	3.71	J	ng/l	1.55	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.650	J	ng/l	0.910	J	ng/l	0.260	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.780	J	ng/l	1.42	J	ng/l	0.640	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	3.10	J	ng/l	3.48	J	ng/l	0.380	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	2.15	J	ng/l	2.11	J	ng/l	0	J	ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							20.5	J	ng/l

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:02
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:02
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	0		0-25
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		22-136

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:51
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-4					
Perfluorobutanoic Acid (PFBA)	6.67	J	ng/l	8.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.448	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.328	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 18:51
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/27/21 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1563880-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	81		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	109		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	98		50-150

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 06:59
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1564148-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/29/21 06:59
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1564148-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	116		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	62		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		24-159

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/03/21 12:27
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 10/28/21 08:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1564148-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74		10-117

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/30/21 18:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/29/21 18:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1565045-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.468	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS/COLBAS AERO **Lab Number:** L2156904

Project Number: Not Specified **Report Date:** 11/05/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/30/21 18:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/29/21 18:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1565045-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	68		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1563880-2 WG1563880-3								
Perfluorobutanoic Acid (PFBA)	102		100		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	102		99		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	101		97		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	100		98		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	105		105		52-156	0		30
Perfluoroheptanoic Acid (PFHpA)	102		100		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	99		96		69-177	3		30
Perfluorooctanoic Acid (PFOA)	102		102		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		98		61-179	1		30
Perfluorononanoic Acid (PFNA)	89		89		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	106		101		52-151	5		30
Perfluorodecanoic Acid (PFDA)	98		97		63-171	1		30
Perfluorononanesulfonic Acid (PFNS)	95		95		48-150	0		30
Perfluoroundecanoic Acid (PFUnA)	93		93		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	98		100		38-156	2		30
Perfluorododecanoic Acid (PFDoA)	103		110		67-153	7		30
Perfluorotridecanoic Acid (PFTrDA)	108		111		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	105		106		59-182	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1563880-2 WG1563880-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		102		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		92		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		110		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		91		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		73		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		70		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1564148-2								
Perfluorobutanoic Acid (PFBA)	93		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	94		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	90		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	90		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	94		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	88		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	96		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	87		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	82		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	91		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	84		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	88		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	89		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	87		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	89		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	96		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1564148-2								
Perfluorotridecanoic Acid (PFTrDA)	100		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	94		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	104				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	122				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	137				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1564148-2								
Perfluorooctanesulfonamide (FOSA)	111		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74				10-117

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1565045-2								
Perfluorobutanoic Acid (PFBA)	105		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	103		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	102		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	111		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	104		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	100		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	101		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	104		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	96		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	96		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	99		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	81		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	99		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	109		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	104		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified
Lab Number: L2156904
Report Date: 11/05/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1565045-2								
Perfluorotridecanoic Acid (PFTrDA)	105		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	106		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81				22-136

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1564148-3 WG1564148-4 QC Sample: L2156904-01 Client ID: PRETREATMENT SLUDGE												
Perfluorobutanoic Acid (PFBA)	ND	16.2	14.8	92		15.3	92		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	ND	16.2	14.9	92		15.2	92		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	14.4	14.0	98		13.9	95		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	15.1	15.1	100		15.2	98		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	ND	16.2	14.7	91		15.0	91		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	15.2	15.3	101		15.1	97		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	ND	16.2	14.6	90		14.9	90		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	14.8	14.0	95		14.4	95		67-130	3		30
Perfluorooctanoic Acid (PFOA)	0.499J	16.2	14.9	89		14.8	86		69-133	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.714J	15.4	16.0	99		15.7	95		64-140	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	15.4	14.5	94		14.3	91		70-132	1		30
Perfluorononanoic Acid (PFNA)	0.786J	16.2	14.7	86		14.8	85		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	0.552J	15	15.7	101		15.0	94		68-136	5		30
Perfluorodecanoic Acid (PFDA)	ND	16.2	14.1	87		14.2	86		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	15.5	14.0	90		13.3	84		65-137	5		30
Perfluorononanesulfonic Acid (PFNS)	ND	15.6	13.8	89		14.1	88		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	16.2	16.2	100		15.7	95		63-144	3		30
Perfluoroundecanoic Acid (PFUnA)	0.279J	16.2	14.1	86		14.3	85		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	ND	15.6	13.8	89		14.4	90		59-134	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.308J	16.2	17.3	105		17.2	102		61-139	1		30
Perfluorododecanoic Acid (PFDoA)	ND	16.2	15.7	97		15.8	95		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	16.2	17.7	109		18.3	110		66-139	3		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1564148-3 WG1564148-4 QC Sample: L2156904-01 Client ID: PRETREATMENT SLUDGE												
Perfluorotetradecanoic Acid (PFTA)	ND	16.2	14.2	88		14.9	90		69-133	5		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**225**	Q	**239**	Q	19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	131		136		14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**310**	Q	**323**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		56		34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		54		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		76		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**69**	Q	**74**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**57**	Q	**57**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**62**	Q	**63**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		95		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		72		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		75		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	**58**	Q	**58**	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**57**	Q	**57**	Q	58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		97		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**71**	Q	**73**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**71**	Q	75		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		101		74-139

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO

Project Number: Not Specified

Lab Number: L2156904

Report Date: 11/05/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-3 QC Sample: L2158657-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	39.7	41.6	105		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.399J	39.7	40.8	102		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	35.3	35.3	100		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	37.2	40.7	109		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	39.7	41.2	104		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	37.3	36.3	97		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	39.7	39.7	100		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	36.3	36.2	100		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	39.7	40.4	102		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	37.8	39.7	105		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	37.8	40.8	108		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	39.7	38.4	97		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	36.8	35.4	96		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	39.7	38.1	96		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	38.1	37.4	98		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	38.2	38.5	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.7	35.8	90		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.7	38.8	98		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38.3	40.6	106		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.7	36.8	93		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	39.7	36.2	91		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.7	40.7	102		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO

Project Number: Not Specified

Lab Number: L2156904

Report Date: 11/05/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-3 QC Sample: L2158657-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	39.7	42.6	107		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.7	42.2	106		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	92				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-4 QC Sample: L2158657-05 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	17.4	17.2	ng/l	1		30
Perfluoropentanoic Acid (PFPeA)	31.6	31.2	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	2.78	2.69	ng/l	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	40.7	40.9	ng/l	0		30
Perfluoropentanesulfonic Acid (PFPeS)	0.659J	0.593J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	21.0	20.4	ng/l	3		30
Perfluorohexanesulfonic Acid (PFHxS)	4.18	4.36	ng/l	4		30
Perfluorooctanoic Acid (PFOA)	43.0	43.4	ng/l	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.714J	0.668J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	5.26	4.85	ng/l	8		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-4 QC Sample: L2158657-05 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		89		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**207**	Q	**207**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		86		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**172**	Q	**167**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		117		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		82		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		27		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		84		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1565045-4 QC Sample: L2158657-05 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		75		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

SAMPLE RESULTS

Lab ID: L2156904-01
Client ID: PRETREATMENT SLUDGE
Sample Location: VERGENNES, VT

Sample Depth:
Matrix: Sludge

Date Collected: 10/15/21 11:30
Date Received: 10/18/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	14.9		%	0.100	0.100	1	-	10/29/21 10:04	121,2540G	NG

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1564746-1 QC Sample: L2158246-01 Client ID: DUP Sample						
Solids, Total	45.4	46.3	%	2		10

Project Name: VT DEC PFAS/COLBAS AERO
Project Number: Not Specified

Lab Number: L2156904
Report Date: 11/05/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2156904-01A	Plastic 8oz unpreserved	A	NA		4.7	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2156904-01B	Plastic 8oz unpreserved	A	NA		4.7	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2156904-02A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2156904-02B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2156904-02C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2156904-02D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC PFAS/COLBAS AERO
Project Number:

Lab Number: L2156904
Report Date: 11/05/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS/COLBAS AERO	**Lab Number:**	L2156904
Project Number:	Not Specified	**Report Date:**	11/05/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA — NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 10/19/21

ALPHA Job #: L2156904

Client Information
Client: Weston&Sampson
Address: 98 S Main, Waterbury VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information
Project Name: VTDEC PFAS P2/Collins Aero
Project Location: Vergennes, VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steve LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☒ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
PH on Sample Pretreatment Sludge: ~10
Please report in envirodata 8 format

Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: TOC	ANALYSIS: PFAS 537 Isotope	Sample Specific Comments	Total Bottle
56904-01	Pretreatment Sludge	10/15/21	1030	Sludge	MLR	/	X		
-02	Tank 033	10/15/21	1125	WW	MLR	X	X		

Container Type	P	P
Preservative	/	/

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, K/E = Zn Ac/NaOH, O = Other

Container Code: P = Plastic, A = Amber Glass, V = Vial, G = Glass, B = Bacteria Cup, C = Cube, O = Other, E = Encore, D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Kelly	10/15/21 1730	Fridge	10/15/21 1730
[illegible]	10/18/2021 12:50	R. Konahey	10/18/21 1250
R. Konahey	10/18/21 2030	[illegible]	10/19/21 00:50
Wendy Moreno	10/19/21 4:00	[illegible]	10/19/21 4:30
[illegible]	10/19/21 5:20	[illegible]	10/19/21 0530

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2158553
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	GSP COATING
Project Number:	Not Specified
Report Date:	11/16/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2158553-01	NA CAKE	SOLID	BRATTLEBORO VT	10/25/21 12:05	10/26/21
L2158553-02	SEAL TANK	WATER	BRATTLEBORO VT	10/25/21 12:15	10/26/21

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2158553-01RE\D: The sample was re-extracted at lesser volume due to matrix interference in the original extraction. The results of the re-extraction are reported. The sample has elevated detection limits due to the analytical dilution required by the sample matrix.

L2158553-01RE\D, WG1568346-3D and WG1568346-4D: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2158553-02: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

The Extracted Internal Standard recovery for the WG1568346-1 Method Blank, associated with L2158553-01RE\D, is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (less than 5%); however, the method blank is non-detect for all associated target analytes; therefore, no further action was taken.

WG1568346-2: The Extracted Internal Standard recovery is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (less than 5%); however, all associated target analytes are within criteria; therefore, no further action was taken.

The WG1568346-3D MS recoveries, performed on L2158553-01, are outside the acceptance criteria for perfluorobutanoic acid (pfba) (69%), perfluorobutanesulfonic acid (pfbs) (70%), 1h,1h,2h,2h-perfluorohexanesulfonic acid (4:2fts) (61%), perfluoropentanesulfonic acid (pfpes) (70%), perfluoroheptanoic acid (pfhpa) (70%), perfluorohexanesulfonic acid (pfhxs) (67%, perfluorooctanoic acid (pfoa) (67%), 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (0%), perfluoroheptanesulfonic acid (pfhps) (66%), perfluorononanoic acid (pfna) (62%), perfluorodecanoic acid (pfda) (64%), 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (0%), perfluorononanesulfonic acid (pfns) (0%), n-methyl

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Case Narrative (continued)

perfluorooctanesulfonamidoacetic acid (nmefosaa) (0%), perfluoroundecanoic acid (pfuna) (62%), perfluorodecanesulfonic acid (pfds) (0%), perfluorooctanesulfonamide (fosa) (48%), n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (51%) and perfluorotridecanoic acid (pftrda) (0%) due to the dilution required by the sample matrix.

WG1568346-4D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 11/16/21

ORGANICS

SEMIVOLATILES

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-01 RE\D
Client ID: NA CAKE
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:05
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/13/21 06:06
Analyst: MP
Percent Solids: 25%

Extraction Method: ALPHA 23528
Extraction Date: 11/08/21 09:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	153	6.94	20
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	153	14.1	20
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	76.5	11.9	20
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	306	19.7	20
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	153	16.1	20
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	306	25.5	20
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	76.5	13.8	20
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	76.5	18.5	20
Perfluorooctanoic Acid (PFOA)	ND		ng/g	76.5	12.8	20
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	153	54.9	20
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	153	41.8	20
Perfluorononanoic Acid (PFNA)	ND		ng/g	76.5	22.9	20
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	76.5	39.8	20
Perfluorodecanoic Acid (PFDA)	ND		ng/g	76.5	20.5	20
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	153	87.8	20
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	306	91.5	20
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	153	61.6	20
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	153	14.3	20
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	153	46.8	20
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	153	30.0	20
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	153	25.8	20
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	153	21.4	20
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	153	62.6	20
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	153	16.5	20

Project Name: GSP COATING **Lab Number:** L2158553

Project Number: Not Specified **Report Date:** 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-01 RE\D
Client ID: NA CAKE
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:05
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	136		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**30**	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**49**	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**22**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		24-159

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-02
Client ID: SEAL TANK
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:15
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/06/21 20:39
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 11/05/21 03:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50.0	10.2	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	9.90	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	5.95	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	50.0	11.3	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	8.20	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	6.13	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	5.63	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	9.40	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	5.90	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	34.5	J	ng/l	50.0	33.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	17.2	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	7.80	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	12.6	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	7.60	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	50.0	30.3	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	28.0	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	16.2	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	6.50	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	24.5	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	14.5	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	20.1	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	9.30	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	8.18	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	6.20	1

Project Name: GSP COATING **Lab Number:** L2158553

Project Number: Not Specified **Report Date:** 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-02 Date Collected: 10/25/21 12:15

Client ID: SEAL TANK Date Received: 10/26/21

Sample Location: BRATTLEBORO VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	124		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		22-136

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/06/21 19:49
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 11/05/21 03:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1567435-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/06/21 19:49
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 11/05/21 03:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1567435-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		22-136

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/11/21 01:58
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/08/21 09:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1568346-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.250	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.250	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/11/21 01:58
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/08/21 09:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1568346-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	92		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**4**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1567435-2								
Perfluorobutanoic Acid (PFBA)	100		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	101		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	96		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	111		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	95		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	95		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	91		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	87		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	84		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	85		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	90		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	89		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	88		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	102		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1567435-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	97		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	68				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	73				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	42				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	43				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1568346-2								
Perfluorobutanoic Acid (PFBA)	94		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	91		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	100		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	86		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	94		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	89		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	97		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	89		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	91		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	86		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	94		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	89		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	89		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	94		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	94		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	93		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1568346-2								
Perfluorotridecanoic Acid (PFTrDA)	113		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	102		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	120				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	111				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**3**	Q			10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89				24-159

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-3 QC Sample: L2159211-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.86	37.3	41.5	98		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	3.70	37.3	40.2	98		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	4.23	33.2	37.4	100		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35	37.5	107		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	3.26	37.3	39.2	96		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.460J	35.1	39.6	112		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	3.31	37.3	38.4	94		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	2.84	34.1	36.6	99		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	12.4	37.3	47.7	94		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.57	35.6	40.4	98		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.6	38.4	108		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.782J	37.3	34.4	90		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	11.2	34.6	45.0	98		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.3	34.2	92		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.8	33.3	93		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.9	29.0	81		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.3	41.5	111		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.3	34.5	92		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36	30.0	83		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.3	35.2	94		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.3	41.6	111		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.3	37.8	101		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-3 QC Sample: L2159211-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.3	39.2	105		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.3	37.4	100		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	35				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	27				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	39				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	72				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94				70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-3 QC Sample: L2158553-01 Client ID: NA CAKE												
Perfluorobutanoic Acid (PFBA)	ND	75.8	52.0J	**69**	Q	-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	75.8	55.5J	73		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	67.3	46.8J	**70**	Q	-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	70.9	42.9J	**61**	Q	-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	75.8	53.6J	71		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	71.2	49.8J	**70**	Q	-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	75.8	52.9J	**70**	Q	-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	69.2	46.2J	**67**	Q	-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	75.8	50.5J	**67**	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	72.1	ND	**0**	Q	-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	72.1	47.9J	**66**	Q	-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	75.8	46.8J	**62**	Q	-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	70.3	71.7JF	102		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	75.8	48.5J	**64**	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	72.7	ND	**0**	Q	-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	72.9	ND	**0**	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	75.8	ND	**0**	Q	-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	75.8	46.7J	**62**	Q	-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	73	ND	**0**	Q	-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	75.8	36.5JF	**48**	Q	-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	75.8	38.3J	**51**	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	75.8	59.6J	79		-	-		69-135	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2158553

Report Date: 11/16/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-3 QC Sample: L2158553-01 Client ID: NA CAKE												
Perfluorotridecanoic Acid (PFTrDA)	ND	75.8	ND	**0**	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	75.8	56.8J	75		-	-		69-133	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	137				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**20**	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**57**	Q			61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84				24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113				74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-4 QC Sample: L2159211-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	5.59	5.59	ng/l	0		30
Perfluoropentanoic Acid (PFPeA)	4.76	4.77	ng/l	0		30
Perfluorobutanesulfonic Acid (PFBS)	4.94	4.94	ng/l	0		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	3.82	3.75	ng/l	2		30
Perfluoropentanesulfonic Acid (PFPeS)	0.521J	0.571J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	4.26	4.35	ng/l	2		30
Perfluorohexanesulfonic Acid (PFHxS)	2.83	2.72	ng/l	4		30
Perfluorooctanoic Acid (PFOA)	15.5	16.2	ng/l	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	3.41	4.13	ng/l	19		30
Perfluorooctanesulfonic Acid (PFOS)	11.8	13.5F	ng/l	13		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-4 QC Sample: L2159211-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		63		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		88		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		81		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		71		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		70		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		80		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		71		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		54		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		71		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		74		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		**61**	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		52		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	24		24		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		65		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		**9**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**22**	Q	**22**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51		51		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1567435-4 QC Sample: L2159211-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		43		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-4 QC Sample: L2158553-01 Client ID: NA CAKE						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-4 QC Sample: L2158553-01 Client ID: NA CAKE						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		111		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		113		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		91		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		114		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		108		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		105		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		94		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		119		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		104		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		103		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	136		129		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**30**	Q	48		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**49**	Q	**59**	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		26		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**22**	Q	**19**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		97		54-150

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1568346-4 QC Sample: L2158553-01 Client ID: NA CAKE

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		89		24-159

INORGANICS
&
MISCELLANEOUS

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

SAMPLE RESULTS

Lab ID: L2158553-01
Client ID: NA CAKE
Sample Location: BRATTLEBORO VT

Date Collected: 10/25/21 12:05
Date Received: 10/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	24.9		%	0.100	0.100	1	-	11/05/21 08:03	121,2540G	NG

Lab Duplicate Analysis

Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1567549-1 QC Sample: L2159902-01 Client ID: DUP Sample						
Solids, Total	63.3	61.9	%	2		10

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2158553
Report Date: 11/16/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2158553-01A	Plastic 8oz unpreserved	A	NA		3.5	Y	Absent		A2-537-ISOTOPE(14)
L2158553-01B	Plastic 8oz unpreserved	A	NA		3.5	Y	Absent		A2-TS(7)
L2158553-02A	Plastic 250ml unpreserved	A	NA		3.5	Y	Absent		A2-537-ISOTOPE(14)
L2158553-02B	Plastic 250ml unpreserved	A	NA		3.5	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: GSP COATING
Project Number:

Lab Number: L2158553
Report Date: 11/16/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2158553
Project Number:	Not Specified	**Report Date:**	11/16/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 10/27/21

ALPHA Job #: L2158553

Client Information
Client: Weston + Sampson
Address: 98 Main St. Suite 2 Waterbury, VT
Phone: 802-505-8909
Fax:
Email: larosas@wseinc.com

Project Information
Project Name: OSP Coating
Project Location: Brattleboro VT
Project #
(Use Project name as Project #) ✓
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ✓ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO # invoice@wseinc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DFAS-Isotope Dilution	Total Bottle	Sample Specific Comments
58553-01	NA Cake	10/25/21	12:05	Solid		X		
02	Seal Tank	10/25/21	12:15	Liquid		X		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	250mL							
Preservative	—							

Relinquished By:	Date/Time	Received By:	Date/Time
	10/25/21 15:30		10/25/21 15:30
	10/26/21 14:33		10/26/21 14:33
	10/26/21 18:40		10/26/21 18:40
	10/27/21 4:00		10/27/21 04:00
	10/27/21 0520		10/27/21 0520

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2161202
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS P2
Project Number:	Not Specified
Report Date:	11/29/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2161202-01	BLACK OXIDE EFFLUENT	WATER	SWANTON, VT	11/02/21 10:50	11/05/21

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2161202-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2161202-01RE: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%). Please note the sample did not exhibit full oxidation due to matrix interferences.

L2161202-01RE: The sample was re-extracted within holding time due to QC failures in the original extraction. The results of the re-extraction are reported.

L2161202-01RE: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1571085-4: This blank represents the TOP oxidation blank associated with L2161202-01RE.

WG1571085-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1571085-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 11/29/21

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01
Client ID: BLACK OXIDE EFFLUENT
Sample Location: SWANTON, VT

Date Collected: 11/02/21 10:50
Date Received: 11/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/24/21 15:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/12/21 08:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	1.56	J	ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	0.412	1
Perfluorohexanoic Acid (PFHxA)	0.591	J	ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.224	1
Perfluoroheptanoic Acid (PFHpA)	0.730	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	0.941	J	ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.627	1
Perfluorononanoic Acid (PFNA)	0.299	J	ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	1.06	J	ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.733	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	0.292	J	ng/l	1.82	0.226	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01 Date Collected: 11/02/21 10:50

Client ID: BLACK OXIDE EFFLUENT Date Received: 11/05/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**290**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**276**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**223**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	30		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	32		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	52		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01 RE
Client ID: BLACK OXIDE EFFLUENT
Sample Location: SWANTON, VT

Date Collected: 11/02/21 10:50
Date Received: 11/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 16:39
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.33	J	ng/l	9.70	0.395	1
Perfluoropentanoic Acid (PFPeA)	1.06	J	ng/l	1.94	0.384	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.231	1
Perfluorohexanoic Acid (PFHxA)	0.744	J	ng/l	1.94	0.318	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.94	0.238	1
Perfluoroheptanoic Acid (PFHpA)	0.574	JF	ng/l	1.94	0.218	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.364	1
Perfluorooctanoic Acid (PFOA)	0.969	J	ng/l	1.94	0.229	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.667	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	0.302	1
Perfluorooctanesulfonic Acid (PFOS)	0.523	J	ng/l	1.94	0.488	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.294	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.94	1.08	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.252	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.950	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.360	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.317	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	0.240	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

SAMPLE RESULTS

Lab ID: L2161202-01 RE Date Collected: 11/02/21 10:50
Client ID: BLACK OXIDE EFFLUENT Date Received: 11/05/21
Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**33**	Q	0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**269**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**199**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**207**	Q	50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY
RESULTS SUMMARY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Lab ID: L2161202-01
Client ID: BLACK OXIDE EFFLUENT
Sample Location: SWANTON, VT

Date Collected: 11/02/21 10:50
Date Received: 11/05/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.33	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	1.56	J	ng/l	1.06	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.591	J	ng/l	0.744	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.730	J	ng/l	0.574	JF	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.941	J	ng/l	0.969	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	0.299	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	1.06	J	ng/l	0.523	J	ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	0.292	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total								J	ng/l

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/23/21 02:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/12/21 08:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1570529-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	0.456	J	ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.272	J	ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/23/21 02:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/12/21 08:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1570529-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 15:16
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 15:16
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	131		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 16:06
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-4					
Perfluorobutanoic Acid (PFBA)	5.29	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.400	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2161202

Project Number: Not Specified **Report Date:** 11/29/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/22/21 16:06
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/14/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1571085-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**255**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**223**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**209**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1570529-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	93		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	102		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	96		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	95		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	107		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	121		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	97		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	88		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	106		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	94		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	99		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	94		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	98		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	96		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	100		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified
Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1570529-2								
Perfluorotridecanoic Acid (PFTrDA)	124		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1571085-2 WG1571085-3								
Perfluorobutanoic Acid (PFBA)	97		102		67-148	5		30
Perfluoropentanoic Acid (PFPeA)	99		103		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	93		98		65-157	5		30
Perfluorohexanoic Acid (PFHxA)	101		103		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	92		96		52-156	4		30
Perfluoroheptanoic Acid (PFHpA)	103		105		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	105		110		69-177	5		30
Perfluorooctanoic Acid (PFOA)	104		105		63-159	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	108		106		61-179	2		30
Perfluorononanoic Acid (PFNA)	96		102		68-171	6		30
Perfluorooctanesulfonic Acid (PFOS)	125		124		52-151	1		30
Perfluorodecanoic Acid (PFDA)	106		109		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	111		105		48-150	6		30
Perfluoroundecanoic Acid (PFUnA)	98		98		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	108		113		38-156	5		30
Perfluorododecanoic Acid (PFDoA)	93		103		67-153	10		30
Perfluorotridecanoic Acid (PFTrDA)	109		114		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	95		102		59-182	7		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1571085-2 WG1571085-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	132		127		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		115		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		116		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		92		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		111		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		103		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	119		128		22-136

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2161202

Report Date: 11/29/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1570529-3 QC Sample: L2160858-01 Client ID: MS Sample												
Perfluorooctanoic Acid (PFOA)	0.411J	35.9	36.2	100		-	-		63-159	-		30
Perfluorononanoic Acid (PFNA)	ND	35.9	31.8	89		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	33.3	36.9	111		-	-		52-151	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96				59-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1570529-4 QC Sample: L2160858-03 Client ID: DUP Sample						
Perfluorooctanoic Acid (PFOA)	23.1	22.3	ng/l	4		30
Perfluorononanoic Acid (PFNA)	0.841J	0.807J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	27.0	26.3	ng/l	3		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		81		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		93		69-131

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2161202
Report Date: 11/29/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2161202-01A	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-537-ISOTOPE(14)
L2161202-01B	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-537-ISOTOPE(14)
L2161202-01C	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2161202-01D	Plastic 250ml unpreserved	A	NA		2.7	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2161202
Project Number:	Not Specified	**Report Date:**	11/29/21

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 11/6/21

ALPHA Job #: L2161202

Client Information

Client: Weston & Sampson
Address: 98 S Main St.
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information

Project Name: VT DEC PFAS P2
Project Location: Swanton, VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please report enviradata format
send results to LaRosaS@wseinc.com AND reilly.margaret@wseinc.com

Please specify Metals or TAL.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS	PFAS-TOP	Total Bottle
L2161202-01	Black Oxide Effluent	11/2/21	1050	WW	MLR	X	X	

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	P	P										
Preservative	A	A										

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	11/2/21 1400	Endge	11/2/21 1400
		B Lyons	11-5-21 15:00 AT
B. Lyon	11-5-21 19:20		11/6/21 01:05
Wendy Mooney	11/6/21 3:30		11/6/21 0330
DSC 11/6/21 0540		ARC 11/6/21 0540	

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2161537
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	GSP COATING
Project Number:	Not Specified
Report Date:	12/06/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2161537-01	GS PRECISION FILTER CAKE	SOLID	BRATTLEBORO, VT	11/05/21 05:30	11/09/21

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: GSP COATING **Lab Number:** L2161537
Project Number: Not Specified **Report Date:** 12/06/21

Case Narrative (continued)

Report Submission

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

Sample Receipt

The sample was received at the laboratory above the required temperature range. The sample was transported via Express Ship in a cooler with ice. All requested analyses were performed.

Perfluorinated Alkyl Acids by Isotope Dilution

L2161537-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2161537-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The Extracted Internal Standard recovery for the WG1572518-1 Method Blank, associated with L2161537-01, is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (3%); however, the method blank is non-detect for all associated target analytes; therefore, no further action was taken.

WG1572518-1, WG1572518-2, and WG1572518-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1572518-2: The Extracted Internal Standard recovery is below the acceptance criteria for perfluoro[13c8]octanesulfonamide (m8fosa) (4%); however, all associated target analytes are within criteria; therefore, no further action was taken.

The WG1572518-3 MS recoveries, performed on L2161537-01, are outside the acceptance criteria for perfluorononanesulfonic acid (pfns) (63%), n-methyl perfluorooctanesulfonamidoacetic acid (nmefosaa) (155%), and perfluorodecanesulfonic acid (pfds) (39%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 12/06/21

ORGANICS

SEMIVOLATILES

Project Name: GSP COATING
Project Number: Not Specified
Lab Number: L2161537
Report Date: 12/06/21

SAMPLE RESULTS

Lab ID: L2161537-01
Client ID: GS PRECISION FILTER CAKE
Sample Location: BRATTLEBORO, VT

Date Collected: 11/05/21 05:30
Date Received: 11/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/30/21 01:03
Analyst: SG
Percent Solids: 29%

Extraction Method: ALPHA 23528
Extraction Date: 11/17/21 14:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	6.22	0.282	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	6.22	0.572	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	3.11	0.485	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	12.4	0.803	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	6.22	0.653	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	12.4	1.04	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	3.11	0.561	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	3.11	0.753	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	3.11	0.521	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	6.22	2.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	6.22	1.70	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	3.11	0.933	1
Perfluorooctanesulfonic Acid (PFOS)	8.95	F	ng/g	3.11	1.62	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	3.11	0.834	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	6.22	3.57	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	12.4	3.72	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	6.22	2.51	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	6.22	0.582	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	6.22	1.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	6.22	1.22	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	6.22	1.05	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	6.22	0.871	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	6.22	2.54	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	6.22	0.672	1

Project Name: GSP COATING **Lab Number:** L2161537

Project Number: Not Specified **Report Date:** 12/06/21

SAMPLE RESULTS

Lab ID: L2161537-01 Date Collected: 11/05/21 05:30

Client ID: GS PRECISION FILTER CAKE Date Received: 11/09/21

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**254**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**423**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**242**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	104		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**598**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**469**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**349**	Q	24-159

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/29/21 23:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 11/17/21 14:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1572518-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.250	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.250	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/29/21 23:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 11/17/21 14:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1572518-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**27**	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**47**	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**169**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**42**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**54**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**63**	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**178**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**293**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**3**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1572518-2								
Perfluorobutanoic Acid (PFBA)	96		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	93		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	99		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	94		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	91		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	101		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	100		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	102		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	88		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	99		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	99		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	65		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	102		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	139		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	100		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	114		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	77		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	116		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1572518-2								
Perfluorotridecanoic Acid (PFTrDA)	121		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**31**	Q			61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**50**	Q			58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	152				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**45**	Q			66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**57**	Q			71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**68**	Q			75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**163**	Q			20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**259**	Q			19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**4**	Q			10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74				24-159

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2161537

Report Date: 12/06/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-3 QC Sample: L2161537-01 Client ID: GS PRECISION FILTER CAKE												
Perfluorobutanoic Acid (PFBA)	ND	65.1	64.7	99		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	65.1	63.1	97		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	57.8	56.5	98		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	61	60.1	99		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	65.1	61.0	94		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	61.2	52.9	86		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	65.1	66.3	102		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	59.5	59.4	100		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	65.1	70.6	108		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	62	69.3	112		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	62	51.2	83		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	65.1	70.0	107		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	8.95F	60.4	64.8F	92		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	65.1	71.6	110		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	62.5	46.9	75		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	62.6	39.2	**63**	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	65.1	101	**155**	Q	-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	65.1	64.2	99		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	62.8	24.4	**39**	Q	-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	65.1	57.5F	88		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	65.1	73.0F	112		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	65.1	65.6	101		-	-		69-135	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: GSP COATING

Project Number: Not Specified

Lab Number: L2161537

Report Date: 12/06/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-3 QC Sample: L2161537-01 Client ID: GS PRECISION FILTER CAKE												
Perfluorotridecanoic Acid (PFTrDA)	ND	65.1	66.8	103		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	65.1	59.5	91		-	-		69-133	-		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**402**	Q			19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**327**	Q			14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**429**	Q			20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**287**	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**26**	Q			31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**311**	Q			54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**284**	Q			24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	97				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	59				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-4 QC Sample: L2161407-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-4 QC Sample: L2161407-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		**60**	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		88		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		94		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	144		140		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		**63**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		71		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		98		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**152**		**155**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		91		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		101		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		91		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**224**	Q	**236**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		88		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		106		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		79		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		92		54-150

Lab Duplicate Analysis
Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1572518-4 QC Sample: L2161407-01 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		73		24-159

INORGANICS
&
MISCELLANEOUS

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

SAMPLE RESULTS

Lab ID: L2161537-01
Client ID: GS PRECISION FILTER CAKE
Sample Location: BRATTLEBORO, VT

Date Collected: 11/05/21 05:30
Date Received: 11/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	28.7		%	0.100	0.100	1	-	12/02/21 12:37	121,2540G	AV

Lab Duplicate Analysis

Batch Quality Control

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1578280-1 QC Sample: L2159990-15 Client ID: DUP Sample						
Solids, Total	31.2	29.9	%	4		10

Project Name: GSP COATING
Project Number: Not Specified

Lab Number: L2161537
Report Date: 12/06/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2161537-01A	Plastic 8oz unpreserved	A	NA		11.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2161537-01B	Plastic 8oz unpreserved	A	NA		11.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: GSP COATING
Project Number:

Lab Number: L2161537
Report Date: 12/06/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	GSP COATING	**Lab Number:**	L2161537
Project Number:	Not Specified	**Report Date:**	12/06/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA ANALYTICAL

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 11/9/21

ALPHA Job #: L2161537

Client Information
Client: Weston + Sampson
Address: 48 S Main St, Suite 2, Waterbury, VT
Phone: 802-505-8909
Fax:
Email: lacasas@wseinc.com

Project Information
Project Name: GSP Coating
Project Location: Brattleboro, VT
Project #
(Use Project name as Project #) ☑
Project Manager: Steven La Rosa
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO # invoice@wseinc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS Targeted Analysis	Total Bottle	Sample Specific Comments
61537-01	GSPrecision filter cake, combined rinse waters	11/5/21	05:30	Solid	REM	X		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	8oz HDPE							
Preservative	none							

Relinquished By:	Date/Time	Received By:	Date/Time
	20211105 15:00	Maggie Reilly	20211105 15:00
Maggie Reilly	20211105 17:30	Single Fridge	20211105 17:30
	20211108	UPS	
UPS	11/9/21 11:18		11/9/21 11:18

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

WESTON & SAMPSON
80224450511
98 SOUTH MAIN STREET SUITE 2
WATERBURY VT 05676-1588

15 LBS
1 OF 1
RS
DWT: 24,14,14

SHIP TO:
LOGIN DEPT MANSFIELD
508-898-9220
ALPHA ANALYTICAL INC
320 FORBES BLVD
MANSFIELD MA 02048

MA 024 9-02

UPS NEXT DAY AIR
TRACKING #: 1Z 19E 18E 84 9754 7451
1

BILLING: P/P
DESC: Laboratory Samples
RETURN SERVICE

CS 22.0.18. WNTNV50 46.0A 11/2021*

ANALYTICAL REPORT

Lab Number:	L2162582
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	12/17/21

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2162582-01	GSP DISCHARGE	WATER	BRATTLEBORO, VT	11/10/21 14:10	11/12/21

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2162582
Project Number: Not Specified **Report Date:** 12/17/21

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2162582-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1573357-1 and WG1573357-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2162582-01: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2162582-01 and WG1573037-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2162582-01 and WG1573037-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1573037-4: This blank represents the TOP oxidation blank associated with L2162582-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Alycia Mogayzel

Title: Technical Director/Representative Date: 12/17/21

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01
Client ID: GSP DISCHARGE
Sample Location: BRATTLEBORO, VT

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

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 15:00
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.13	J	ng/l	8.90	0.363	1
Perfluoropentanoic Acid (PFPeA)	1.45	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
Perfluorohexanoic Acid (PFHxA)	0.922	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	0.541	JF	ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	1.22	J	ng/l	1.78	0.210	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	2.43		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.997	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01 Date Collected: 11/10/21 14:10

Client ID: GSP DISCHARGE Date Received: 11/12/21

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**266**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**204**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**172**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01
Client ID: GSP DISCHARGE
Sample Location: BRATTLEBORO, VT

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

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/03/21 07:39
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 03:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.672	J	ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	0.552	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	0.352	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	0.388	JF	ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	0.694	JF	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	2.62		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

SAMPLE RESULTS

Lab ID: L2162582-01 Date Collected: 11/10/21 14:10

Client ID: GSP DISCHARGE Date Received: 11/12/21

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**573**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**324**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**303**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	106		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	121		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Lab ID: L2162582-01
Client ID: GSP DISCHARGE
Sample Location: BRATTLEBORO, VT

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

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.672	J	ng/l	7.13	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.552	J	ng/l	1.45	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.352	J	ng/l	0.922	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.388	JF	ng/l	0.541	JF	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.694	JF	ng/l	1.22	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	2.62		ng/l	2.43		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 13:54
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 13:54
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	135		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		22-136

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 14:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-4					
Perfluorobutanoic Acid (PFBA)	5.94	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.660	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 11/26/21 14:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1573037-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**279**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**198**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**181**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/03/21 01:01
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 03:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1573357-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	0.328	JF	ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2162582

Project Number: Not Specified **Report Date:** 12/17/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/03/21 01:01
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 11/19/21 03:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1573357-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	138		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	139		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**166**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**259**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	104		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**129**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1573037-2 WG1573037-3								
Perfluorobutanoic Acid (PFBA)	97		97		67-148	0		30
Perfluoropentanoic Acid (PFPeA)	99		98		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	91		93		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	97		98		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	88		90		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	99		98		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	101		102		69-177	1		30
Perfluorooctanoic Acid (PFOA)	108		104		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		99		61-179	0		30
Perfluorononanoic Acid (PFNA)	98		101		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	114		112		52-151	2		30
Perfluorodecanoic Acid (PFDA)	102		101		63-171	1		30
Perfluorononanesulfonic Acid (PFNS)	96		103		48-150	7		30
Perfluoroundecanoic Acid (PFUnA)	95		96		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	111		111		38-156	0		30
Perfluorododecanoic Acid (PFDoA)	97		104		67-153	7		30
Perfluorotridecanoic Acid (PFTrDA)	104		114		48-158	9		30
Perfluorotetradecanoic Acid (PFTA)	95		100		59-182	5		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1573037-2 WG1573037-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	131		142		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	6		5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		89		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		88		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		87		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1573357-2								
Perfluorobutanoic Acid (PFBA)	107		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	107		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	103		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	116		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	104		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	107		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	112		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	105		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	113		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	110		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	132		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	112		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	101		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	113		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	110		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	109		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	128		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	109		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	109		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	112		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2162582

Report Date: 12/17/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1573357-2								
Perfluorotridecanoic Acid (PFTrDA)	133		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	109		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	140				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**168**	Q			14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**191**	Q			10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**119**	Q			24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	118				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76				22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-3 QC Sample: L2162171-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	13.6	38.8	52.2	100		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	38.9	38.8	76.7	98		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.44	34.4	40.1	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.3	37.2	102		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	31.1	38.8	68.7	97		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	9.62	36.4	42.4	90		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	42.7	38.8	80.9	98		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	49.1	35.4	86.6	106		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	260	38.8	294	88		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8.57	36.9	45.4	100		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	24.6	36.9	80.6	152		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	32.8	38.8	71.2	99		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	1580E	36	1680E	**278**	Q	-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	25.9	38.8	69.6	113		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.2	29.4	79		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.3	50.5	135		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.24	38.8	38.8	94		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	1.95JF	38.8	42.2	104		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.4	54.9	147		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	1.74JF	38.8	42.4F	105		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	5.43	38.8	50.8	117		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.8	42.4	109		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2162582

Report Date: 12/17/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-3 QC Sample: L2162171-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	38.8	51.7	133		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.8	44.5	115		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**538**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**562**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**582**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	110				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**125**	Q			24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	134				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	89				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	129				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-4 QC Sample: L2162171-04 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	13.1	12.6	ng/l	4		30
Perfluoropentanoic Acid (PFPeA)	17.2	16.2	ng/l	6		30
Perfluorobutanesulfonic Acid (PFBS)	6.62	6.57	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	13.0	12.5	ng/l	4		30
Perfluoropentanesulfonic Acid (PFPeS)	0.519J	0.481J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	6.87	6.16	ng/l	11		30
Perfluorohexanesulfonic Acid (PFHxS)	3.56	3.59	ng/l	1		30
Perfluorooctanoic Acid (PFOA)	18.5	17.9	ng/l	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	3.36	2.58	ng/l	26		30
Perfluorooctanesulfonic Acid (PFOS)	41.1	41.7	ng/l	1		30
Perfluorodecanoic Acid (PFDA)	2.62	1.60J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.03	2.69	ng/l	12		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	1.82JF	1.51JF	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-4 QC Sample: L2162171-04 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.40J	1.25J	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	141		153		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**314**	Q	**326**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		102		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**319**	Q	**326**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		77		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**328**	Q	**298**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**119**	Q	**129**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		18		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**133**	Q	**152**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		83		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1573357-4 QC Sample: L2162171-04 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		64		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2162582
Report Date: 12/17/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2162582-01A	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(14)
L2162582-01B	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(14)
L2162582-01C	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2162582-01D	Plastic 250ml unpreserved	A	NA		2.2	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2
Project Number:

Lab Number: L2162582
Report Date: 12/17/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2162582
Project Number:	Not Specified	**Report Date:**	12/17/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/13/21 | ALPHA Job #: L2162582

Client Information

Client: Weston & Sampson
Address: 98 South Main Street Suite 2
Waterbury, VT
Phone: 802-244-5051
Fax:
Email: LaRosaS@wseinc.com
☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name: ~~PFAS~~ VT DEC R2
Project Location: ~~NORTHWEST~~ Brattleboro, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ Rush (ONLY IF PRE-APPROVED)
Due Date: Time:

Report Information — Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
~~WEEK 9~~16
Report enviodata 8

ANALYSIS

537 ISOTOPE - PFAS
PFAS-TOP

SAMPLE HANDLING
Filtration
☐ Done ☐ Not Needed ☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments
	~~duplicate~~	~~11/10/21~~	~~1415~~	~~WW~~	~~MLF~~	
62582-01	~~GSP-Process~~	11/10/21	1410	WW	MLF	4 Bottles
	GSP-Discharge					"

Container Type: P P - - - - - - - - - -
Preservative: X X - - - - - - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Kelley	11/10/21 1720	Fedge	11/10/21 1720
James Jayne	11/12/2021 9:30	Jayne	
B Lyons	11-12-21 14:30	B Lyons	11-12-21 1426
Wendy Mann	11/13/21 3:30	[illegible]	11/13/21 00:45
[illegible] 11/13/21 0600		[illegible]	11/13/21 0500

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I-NJ) (rev. 5-JAN-12)

ANALYTICAL REPORT

Lab Number:	L2202626
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS P2
Project Number:	Not Specified
Report Date:	02/08/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2202626-01	WIRE STRIPPING	WATER	VERGENNES, VT	01/15/22 10:20	01/18/22
L2202626-02	SLUDGE	SLUDGE	VERGENNES, VT	01/15/22 10:40	01/18/22
L2202626-03	EFFLUENT	WATER	VERGENNES, VT	01/15/22 10:50	01/18/22

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626
Project Number: Not Specified **Report Date:** 02/08/22

Case Narrative (continued)

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

Perfluorinated Alkyl Acids by Isotope Dilution
L2202626-02 and -03RE: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2202626-03RE: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2202626-03RE: The sample was re-extracted within holding time due to QC failures in the original extraction. The results of the re-extraction are reported.
WG1596153-2, WG1596153-3, and WG1596153-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2202626-01 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2202626-01 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2202626-03: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
WG1597792-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
WG1597792-4: This blank represents the oxidation blank associated with L2202626-01 and -03.
WG1597792-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Case Narrative (continued)

analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 02/08/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01
Client ID: WIRE STRIPPING
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:20
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/24/22 20:02
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.99	0.406	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.99	0.394	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.99	0.236	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.99	0.449	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.99	0.326	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.99	0.244	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.99	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.99	0.374	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.99	0.234	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	0.684	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.99	0.310	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.99	0.501	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.99	0.302	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	1.20	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.99	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.99	0.644	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	0.258	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	0.974	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.99	0.576	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.99	0.799	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	0.370	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	0.325	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	0.246	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01 Date Collected: 01/15/22 10:20

Client ID: WIRE STRIPPING Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01
Client ID: WIRE STRIPPING
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:20
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:08
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.24	J	ng/l	10.6	0.431	1
Perfluoropentanoic Acid (PFPeA)	1.45	J	ng/l	2.11	0.418	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.11	0.251	1
Perfluorohexanoic Acid (PFHxA)	0.782	J	ng/l	2.11	0.346	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.11	0.259	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.11	0.238	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.11	0.397	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.11	0.249	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.11	0.727	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.11	0.330	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.11	0.532	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.11	0.321	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.11	1.18	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.11	0.275	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.11	1.04	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.11	0.393	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.11	0.346	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.11	0.262	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-01 Date Collected: 01/15/22 10:20

Client ID: WIRE STRIPPING Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**204**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**169**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**171**	Q	50-150

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-02
Client ID: SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:40
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 08:15
Analyst: HT
Percent Solids: 19%

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.26	0.057	1
Perfluoropentanoic Acid (PFPeA)	0.229	J	ng/g	1.26	0.116	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.629	0.098	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.51	0.162	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.26	0.132	1
Perfluoropentanesulfonic Acid (PFPeS)	0.245	J	ng/g	2.51	0.210	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.629	0.113	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.629	0.152	1
Perfluorooctanoic Acid (PFOA)	0.318	J	ng/g	0.629	0.105	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.737	J	ng/g	1.26	0.451	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.26	0.343	1
Perfluorononanoic Acid (PFNA)	0.553	J	ng/g	0.629	0.189	1
Perfluorooctanesulfonic Acid (PFOS)	0.764		ng/g	0.629	0.327	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.629	0.168	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.26	0.722	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	2.51	0.752	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.26	0.507	1
Perfluoroundecanoic Acid (PFUnA)	0.277	J	ng/g	1.26	0.118	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.26	0.385	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.26	0.246	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.314	J	ng/g	1.26	0.212	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.26	0.176	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.26	0.514	1
Perfluorotetradecanoic Acid (PFTA)	0.293	J	ng/g	1.26	0.136	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-02 Date Collected: 01/15/22 10:40

Client ID: SLUDGE Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**308**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**65**	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	141		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		24-159

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:25
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	62.2	J	ng/l	100	4.08	1
Perfluoropentanoic Acid (PFPeA)	18.2	J	ng/l	20.0	3.96	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	20.0	2.38	1
Perfluorohexanoic Acid (PFHxA)	17.3	J	ng/l	20.0	3.28	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	20.0	2.45	1
Perfluoroheptanoic Acid (PFHpA)	4.32	JF	ng/l	20.0	2.25	1
Perfluorohexanesulfonic Acid (PFHxS)	4.52	J	ng/l	20.0	3.76	1
Perfluorooctanoic Acid (PFOA)	2.48	J	ng/l	20.0	2.36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	20.0	6.88	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	20.0	3.12	1
Perfluorooctanesulfonic Acid (PFOS)	9.60	J	ng/l	20.0	5.04	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	3.04	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	20.0	11.2	1
Perfluoroundecanoic Acid (PFUnA)	3.24	JF	ng/l	20.0	2.60	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	20.0	9.80	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	3.72	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	3.27	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	20.0	2.48	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03 Date Collected: 01/15/22 10:50

Client ID: EFFLUENT Date Received: 01/18/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**205**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**180**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**172**	Q	50-150

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03 RE
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 01:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 08:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	20.0	4.08	1
Perfluoropentanoic Acid (PFPeA)	6.76	J	ng/l	20.0	3.96	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	20.0	2.38	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	20.0	4.52	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	20.0	3.28	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	20.0	2.45	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	20.0	2.25	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	20.0	3.76	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	20.0	2.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	20.0	13.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	20.0	6.88	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	20.0	3.12	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	20.0	5.04	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	3.04	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	20.0	12.1	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	20.0	11.2	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	20.0	6.48	1
Perfluoroundecanoic Acid (PFUnA)	3.56	J	ng/l	20.0	2.60	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	20.0	9.80	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	20.0	5.80	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	20.0	8.04	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	3.72	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	3.27	1
Perfluorotetradecanoic Acid (PFTA)	8.36	J	ng/l	20.0	2.48	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-03 RE
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	37		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**26**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**148**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Lab ID: L2202626-01
Client ID: WIRE STRIPPING
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:20
Date Received: 01/18/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.24	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.45	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	0.782	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Lab ID: L2202626-03
Client ID: EFFLUENT
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:50
Date Received: 01/18/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	62.2	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	6.76	J	ng/l	18.2	J	ng/l	0	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	17.3	J	ng/l	0	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	4.32	JF	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	4.52	J	ng/l	0	J	ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.48	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	9.60	J	ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	3.56	J	ng/l	3.24	JF	ng/l	0	J	ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	8.36	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 07:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1596153-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	0.058	J	ng/g	0.250	0.027

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 07:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1596153-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	154		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	132		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	131		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		24-159

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/21/22 14:16
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/20/22 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1596153-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	109		10-117

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/24/22 17:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1597243-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/24/22 17:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1597243-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	59		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/25/22 10:43
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 01/24/22 07:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1597243-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	100		10-112

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 00:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1597783-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.864	J	ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 00:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1597783-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	103		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 16:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 16:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:41
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-4					
Perfluorobutanoic Acid (PFBA)	6.56	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.93	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	1.94	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	0.332	J	ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2202626

Project Number: Not Specified **Report Date:** 02/08/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/26/22 17:41
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/25/22 09:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1597792-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	71		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**205**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**177**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**176**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1596153-2								
Perfluorobutanoic Acid (PFBA)	85		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	81		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	91		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	86		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	89		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	84		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	85		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	86		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	92		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	88		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	97		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	79		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	89		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	81		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	82		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	90		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1596153-2								
Perfluorotridecanoic Acid (PFTrDA)	88		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	87		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	163				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	138				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	125				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	55				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69				24-159

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1596153-2								
Perfluorooctanesulfonamide (FOSA)	110		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**126**	Q			10-117

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1597243-2								
Perfluorobutanoic Acid (PFBA)	114		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	114		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	113		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	132		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	114		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	121		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	115		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	132		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	107		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	131		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	112		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	117		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	128		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	114		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	130		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	119		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	130		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	115		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	127		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	108		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	116		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	113		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1597243-2								
Perfluorotridecanoic Acid (PFTrDA)	130		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	115		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	132				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1597243-2								
Perfluorooctanesulfonamide (FOSA)	136		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	103				10-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1597783-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	107		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	101		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	111		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	108		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	109		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	107		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	116		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	100		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	115		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	105		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	117		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	116		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	119		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	103		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	115		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	102		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	110		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	111		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1597783-2								
Perfluorotridecanoic Acid (PFTrDA)	106		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	108		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	139				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	70				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1597792-2 WG1597792-3								
Perfluorobutanoic Acid (PFBA)	92		91		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	96		96		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	87		88		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	95		94		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	95		98		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	96		95		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	109		109		69-177	0		30
Perfluorooctanoic Acid (PFOA)	97		98		63-159	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	100		90		61-179	11		30
Perfluorononanoic Acid (PFNA)	94		93		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	113		105		52-151	7		30
Perfluorodecanoic Acid (PFDA)	92		92		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	104		99		48-150	5		30
Perfluoroundecanoic Acid (PFUnA)	93		94		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	117		104		38-156	12		30
Perfluorododecanoic Acid (PFDoA)	97		95		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	102		94		48-158	8		30
Perfluorotetradecanoic Acid (PFTA)	98		98		59-182	0		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1597792-2 WG1597792-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		96		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		87		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		88		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		87		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		69		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1596153-3 WG1596153-4 QC Sample: L2202626-02 Client ID: SLUDGE												
Perfluorobutanoic Acid (PFBA)	ND	12.6	10.4	83		10.8	84		71-135	4		30
Perfluoropentanoic Acid (PFPeA)	0.229J	12.6	11.6	90		11.8	90		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	11.2	9.11	81		9.49	83		72-128	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	11.8	10.3	87		10.8	90		62-145	5		30
Perfluorohexanoic Acid (PFHxA)	ND	12.6	10.8	86		10.9	85		70-132	1		30
Perfluoropentanesulfonic Acid (PFPeS)	0.245J	11.8	10.8	89		10.9	88		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	ND	12.6	10.7	85		10.9	85		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	11.5	10.3	89		10.7	91		67-130	4		30
Perfluorooctanoic Acid (PFOA)	0.318J	12.6	11.3	87		11.3	86		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.737J	12	11.4	89		11.7	90		64-140	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	12	10.8	90		10.5	86		70-132	3		30
Perfluorononanoic Acid (PFNA)	0.553J	12.6	11.7	88		12.1	90		72-129	3		30
Perfluorooctanesulfonic Acid (PFOS)	0.764	11.7	11.8	94		11.6	91		68-136	2		30
Perfluorodecanoic Acid (PFDA)	ND	12.6	10.8	86		10.8	84		69-133	0		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	12.1	11.3	93		11.6	94		65-137	3		30
Perfluorononanesulfonic Acid (PFNS)	ND	12.1	11.4	94		11.2	91		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	12.6	13.5	107		12.7	99		63-144	6		30
Perfluoroundecanoic Acid (PFUnA)	0.277J	12.6	10.4	80		10.6	80		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	ND	12.2	11.3	93		10.7	87		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	ND	12.6	11.8F	94		10.9F	85		67-137	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.314J	12.6	10.9	84		11.4	86		61-139	4		30
Perfluorododecanoic Acid (PFDoA)	ND	12.6	10.8	86		11.4	89		69-135	5		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1596153-3 WG1596153-4 QC Sample: L2202626-02 Client ID: SLUDGE												
Perfluorotridecanoic Acid (PFTrDA)	ND	12.6	10.6	84		10.8	84		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	0.293J	12.6	10.7	83		10.5	80		69-133	2		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	138		138		19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		95		14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**266**	Q	**282**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		93		34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		74		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		85		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	76		75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		68		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		72		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		92		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		94		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		60		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		75		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		64		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**4**	Q	**5**	Q	10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		89		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		75		75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**63**	Q	**61**	Q	72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		105		74-139

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1597243-3 WG1597243-4 QC Sample: L2203390-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	14.4	37.6	56.3	112		56.1	111		67-148	0		30
Perfluoropentanoic Acid (PFPeA)	34.5	37.6	78.1	116		77.9	115		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	5.44	33.3	41.6	108		41.8	109		65-157	0		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.2	46.2	131		47.7	136		37-219	3		30
Perfluorohexanoic Acid (PFHxA)	40.0	37.6	82.8	114		83.1	115		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	0.946J	35.3	42.3	117		41.7	115		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	13.6	37.6	56.6	115		55.3	111		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	7.70	34.3	53.0	132		53.4	133		69-177	1		30
Perfluorooctanoic Acid (PFOA)	49.8	37.6	91.5	111		90.8	109		63-159	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.8	44.5	124		44.8	125		49-187	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.938J	35.8	42.5	116		42.8	117		61-179	1		30
Perfluorononanoic Acid (PFNA)	0.446JF	37.6	43.6	115		43.6	115		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	8.91F	34.8	54.6	131		56.4	136		52-151	3		30
Perfluorodecanoic Acid (PFDA)	ND	37.6	40.2	107		43.9	117		63-171	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36	49.2	136		46.5	129		56-173	6		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.1	42.0	116		43.5	120		48-150	4		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.6	47.2	126		44.9	119		60-166	5		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.6	40.9	109		42.5	113		60-153	4		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.2	42.6	118		43.9	121		38-156	3		30
Perfluorooctanesulfonamide (FOSA)	ND	37.6	41.6	111		41.1F	109		46-170	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.6	45.6	121		41.8	111		45-170	9		30
Perfluorododecanoic Acid (PFDoA)	ND	37.6	43.6	116		44.5	118		67-153	2		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified
Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1597243-3 WG1597243-4 QC Sample: L2203390-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.6	50.1	133		47.5	126		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.6	45.4	121		46.8	124		59-182	3		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		118		10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**201**	Q	**192**	Q	12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**190**	Q	**178**	Q	14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		66		27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		60		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		72		55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		70		62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		66		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		96		71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		67		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		60		22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		79		62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		21		10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		86		69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		74		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		73		59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		92		70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-3 QC Sample: L2202947-05 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.65	38.1	43.2	101		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	4.48	38.1	45.0	106		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	2.59	33.8	38.9	107		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.7	41.1	115		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	3.88	38.1	43.2	103		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35.8	20.3	57		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	1.79J	38.1	40.9	103		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.44JF	34.8	39.4	109		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	3.39	38.1	41.4	100		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.70	36.3	46.0	111		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.3	33.4	92		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.402JF	38.1	39.6	103		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	2.15F	35.4	44.4	119		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.1	40.3	106		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.76JF	36.6	47.2	124		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.6	30.1	82		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.1	38.6	101		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.1	39.2	103		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.7	28.8	78		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.1	39.4	103		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.42JF	38.1	35.9	90		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.1	37.7	99		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2202626

Report Date: 02/08/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-3 QC Sample: L2202947-05 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	38.1	44.7	117		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	0.891J	38.1	37.5	96		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	132				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**556**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**341**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**141**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	129				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**148**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**255**	Q			22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	95				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	129				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**132**	Q			70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-4 QC Sample: L2203767-05 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	6.03	6.21	ng/l	3		30
Perfluoropentanoic Acid (PFPeA)	4.24	4.57	ng/l	7		30
Perfluorobutanesulfonic Acid (PFBS)	2.87	2.84	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	3.29	3.46	ng/l	5		30
Perfluoropentanesulfonic Acid (PFPeS)	0.755JF	0.938JF	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.701J	0.665J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.895J	0.886J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-4 QC Sample: L2203767-05 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.972J	0.801J	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**142**	Q	**144**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**471**	Q	**494**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**148**	Q	**142**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		126		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		104		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**280**	Q	**279**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		107		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		86		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**551**	Q	**554**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128	Q	106		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		63		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		66		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1597783-4 QC Sample: L2203767-05 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		72		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

SAMPLE RESULTS

Lab ID: L2202626-02
Client ID: SLUDGE
Sample Location: VERGENNES, VT

Date Collected: 01/15/22 10:40
Date Received: 01/18/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	18.8		%	0.100	0.100	1	-	01/20/22 17:37	121,2540G	GF

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1596100-1 QC Sample: L2202703-01 Client ID: DUP Sample						
Solids, Total	11.2	11.1	%	1		10

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2202626
Report Date: 02/08/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2202626-01A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-01B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-01C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2202626-01D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2202626-02A	Plastic 8oz unpreserved	A	NA		3.4	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2202626-02B	Plastic 8oz unpreserved	A	NA		3.4	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2202626-03A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-03B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2202626-03C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2202626-03D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2202626
Project Number:	Not Specified	**Report Date:**	02/08/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 1/19/22

ALPHA Job #: L2202626

Client Information

Client: Weston & Sampson
Address: 98 S Main St.
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Project Information

Project Name: VTDEC PFAS P2
Project Location: Vergennes, VT
Project #
(Use Project name as Project #) ☒
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

6mL OF WIRE STRIPPING PRODUCT IN 246ML PFAS FREE DI WATER! PRODUCT EXPECTED TO CONTAIN PFAS.

~~Please specify Metals or TAL~~ ↑ Report to MDL.

Email results to Reilly.Margaret@wseinc.com AND larosas@wseinc.com

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537-Isotope	PFAS TOP							Sample Specific Comments	Total Bottle
02626 -01	Wire Stripping	1/15/22	1620	WW	MLR	X	X							*6mL product in 246mL DI water*	
-02	Sludge	1/15/22	1040	S	MLR	X	X								
-03	Effluent	1/15/22	1050	WW	MLR	X	X								

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Container Type	P	P							
Preservative		A							

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	1/15/22 1300	Fedex	1/15/22 1300
[signature] 1/18/22	1030	[signature]	1/18/22 1030
			1/19/22 0050
Wendy Mooney	1/19/22 2:30	[signature]	1/19/22 0345
[signature] 1/19/22	0430	[signature]	1/15/22 0430

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2169100
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	01/11/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2169100-01	STORM WATER	WATER	SWANTON, VT	12/10/21 09:50	12/15/21
L2169100-02	MIST SUPPRESSENT	WATER	SWANTON, VT	12/10/21 09:10	12/15/21
L2169100-03	EFFLUENT-12102021	WATER	SWANTON, VT	12/10/21 09:25	12/15/21

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2169100
Project Number: Not Specified **Report Date:** 01/11/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution
L2169100-01RE, -02RE, and -03RE: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2169100-01RE and -03RE: The sample was re-extracted with the method required holding time exceeded due to QC failures in the original extraction. The results of the re-extraction are reported.
L2169100-02RE: The sample was re-extracted with the method required holding time exceeded due to matrix interferences with internal standards in the original extraction. The results of the re-extraction are reported. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
WG1592636-1 and WG1592636-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
WG1592636-3: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range. The sample was extracted with the method required holding time exceeded.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2169100-01 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2169100-01 and -03: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2169100-01 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2169100-01 and -03: The sample was extracted with the method required holding time exceeded.
WG1590799-4: This blank represents the oxidation blank associated with L2169100-01 and -03. Extracted

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Case Narrative (continued)

Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 01/11/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01
Client ID: STORM WATER
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:50
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:43
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	250	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01 Date Collected: 12/10/21 09:50

Client ID: STORM WATER Date Received: 12/15/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**218**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**203**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**183**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01 RE
Client ID: STORM WATER
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:50
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 11:32
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50.0	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	130		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-01 RE Date Collected: 12/10/21 09:50

Client ID: STORM WATER Date Received: 12/15/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-02 RE
Client ID: MIST SUPPRESSENT
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:10
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/11/22 09:03
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/11/22 07:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50000	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50000	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50000	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	539000		ng/l	50000	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50000	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50000	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50000	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50000	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50000	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	22800000	E	ng/l	50000	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50000	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50000	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50000	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50000	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1050000		ng/l	50000	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50000	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50000	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50000	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50000	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50000	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50000	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50000	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50000	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50000	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-02 RE
Client ID: MIST SUPPRESSENT
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:10
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**132**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**130**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	128		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**978**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	101		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:59
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	250	--	1
Perfluoropentanoic Acid (PFPeA)	165		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	55.7		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03 Date Collected: 12/10/21 09:25

Client ID: EFFLUENT-12102021 Date Received: 12/15/21

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**209**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**199**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**178**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03 RE
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 11:49
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	50.0	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	50.0	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	50.0	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	50.0	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	50.0	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	50.0	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	50.0	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	295		ng/l	50.0	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	50.0	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	50.0	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	50.0	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	50.0	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	--	1

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

SAMPLE RESULTS

Lab ID: L2169100-03 RE
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Lab ID: L2169100-01
Client ID: STORM WATER
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:50
Date Received: 12/15/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Lab ID: L2169100-03
Client ID: EFFLUENT-12102021
Sample Location: SWANTON, VT

Date Collected: 12/10/21 09:25
Date Received: 12/15/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	165		ng/l	165		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	55.7		ng/l	55.7		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							221		ng/l

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 10:43
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590792-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 10:43
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590792-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**218**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**212**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**191**	Q	50-150

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/11/22 08:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/11/22 07:22

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1592636-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	500	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	500	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	500	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	500	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	500	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	500	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	500	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	500	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	500	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	500	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	500	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	500	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	500	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	500	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	500	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	500	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	500	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	500	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	500	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	500	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	500	--

Project Name: VT DEC P2 **Lab Number:** L2169100

Project Number: Not Specified **Report Date:** 01/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/11/22 08:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/11/22 07:22

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1592636-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**132**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	119		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	117		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	102		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590792-2								
Perfluorobutanoic Acid (PFBA)	91		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	87		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	97		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	87		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	82		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	94		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	94		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	94		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	80		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	92		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	93		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	80		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	81		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	86		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	95		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	89		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	90		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	97		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	88		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2169100

Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590792-2								
Perfluorotridecanoic Acid (PFTrDA)	100		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	88		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	58				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								
Perfluorobutanoic Acid (PFBA)	98		94		67-148	4		30
Perfluoropentanoic Acid (PFPeA)	101		96		63-161	5		30
Perfluorobutanesulfonic Acid (PFBS)	92		90		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	99		93		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	86		85		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	101		98		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	97		96		69-177	1		30
Perfluorooctanoic Acid (PFOA)	103		98		63-159	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	82		83		61-179	1		30
Perfluorononanoic Acid (PFNA)	95		102		68-171	7		30
Perfluorooctanesulfonic Acid (PFOS)	94		94		52-151	0		30
Perfluorodecanoic Acid (PFDA)	95		89		63-171	7		30
Perfluorononanesulfonic Acid (PFNS)	78		88		48-150	12		30
Perfluoroundecanoic Acid (PFUnA)	94		100		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	96		95		38-156	1		30
Perfluorododecanoic Acid (PFDoA)	105		96		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	113		106		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	102		89		59-182	14		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		93		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		82		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		87		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		102		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		83		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1592636-2								
Perfluorobutanoic Acid (PFBA)	88		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	91		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	88		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	97		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	86		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	88		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	92		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	89		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	112		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	92		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	90		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	98		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	90		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	97		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	111		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	86		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	93		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	86		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	79		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	88		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1592636-2								
Perfluorotridecanoic Acid (PFTrDA)	98		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	84		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	119				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	113				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	105				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87				22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-3 QC Sample: L2171282-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	2.09	40.8	40.2	94		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	2.39	40.8	39.6	91		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	36.2	35.4	93		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	38.1	36.9	97		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	1.99	40.8	39.4	92		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	38.3	33.0	86		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	40.8	39.3	93		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	37.2	38.6	101		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	4.06	40.8	43.8	98		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	35.2	38.8	138	**265**	Q	-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	38.8	33.5	86		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	40.8	39.6	96		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	3.91	37.8	39.6	94		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	40.8	34.8	85		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	39.1	34.5	88		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	39.2	30.5	78		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	40.8	37.7	92		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	40.8	38.1	94		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	39.3	34.1	87		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	40.8	39.8	98		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	40.8	36.6	90		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	40.8	39.6	97		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2169100

Report Date: 01/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-3 QC Sample: L2171282-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	40.8	40.1	98		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	40.8	35.3	87		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**171**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	135				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	81				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-4 QC Sample: L2171282-03 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	8.46	10.3	ng/l	20		30
Perfluoropentanoic Acid (PFPeA)	15.3	16.6	ng/l	8		30
Perfluorobutanesulfonic Acid (PFBS)	2.61	2.83	ng/l	8		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	10.1	11.2	ng/l	10		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	10.5	12.4	ng/l	17		30
Perfluorohexanesulfonic Acid (PFHxS)	7.20	7.09	ng/l	2		30
Perfluorooctanoic Acid (PFOA)	32.3	34.8	ng/l	7		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.22	11.0	ng/l	**89**	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	2.62	2.77	ng/l	6		30
Perfluorononanoic Acid (PFNA)	5.63	5.76	ng/l	2		30
Perfluorooctanesulfonic Acid (PFOS)	143	158	ng/l	10		30
Perfluorodecanoic Acid (PFDA)	3.11	3.59	ng/l	14		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-4 QC Sample: L2171282-03 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		98		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**163**	Q	**162**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		82		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		88		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	113		118		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		73		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		83		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		**9**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		73		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		74		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590792-4 QC Sample: L2171282-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		71		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1592636-3 QC Sample: L2169100-02 Client ID: MIST SUPPRESSENT						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	539000	549000	ng/l	2		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	22800000E	23100000E	ng/l	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1050000	1050000	ng/l	0		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1592636-3 QC Sample: L2169100-02 Client ID: MIST SUPPRESSENT						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132	Q	129		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		103		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	130	Q	128		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	128		126		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		122		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		106		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**978**	Q	**958**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		116		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		105		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		68		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		76		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	101		106		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		80		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		91		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1592636-3 QC Sample: L2169100-02 Client ID: MIST SUPPRESSENT

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		87		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2169100
Report Date: 01/11/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2169100-01A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-01B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-01C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2169100-01D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2169100-02A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-02B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-02C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-02D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-03A	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-03B	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-537-ISOTOPE(14)
L2169100-03C	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2169100-03D	Plastic 250ml unpreserved	A	NA		4.7	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2
Project Number:

Lab Number: L2169100
Report Date: 01/11/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2169100
Project Number:	Not Specified	**Report Date:**	01/11/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 12/16/21

ALPHA Job #: L2169166

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Weston & Sampson
Address: 98 S Main St
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P2
Project Location: Swanton, VT
Project #:
Project Manager: Steve LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client Info PO #:

invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria
VT MDL	

Other Project Specific Requirements/Comments/Detection Limits:

Report to MDL; Report envirodata@wseinc.com AND email Results to LaRosaS@wseinc.com, Reilly-Margaret@wseinc.com

ANALYSIS: CL-PFAS, TOP

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	CL-PFAS	TOP	Sample Specific Comments	TOTAL # BOTTLES
69166-01	Stormwater	12/10/21	0950	WW	MLR	X	X		
-02	Mist Suppressant	12/10/21	0910	W	MLR	X	X		
-03	Effluent12102021	12/10/21	0925	WW	MLR	X	X		

Mist suppressant = 5 grams mist suppressant + PFAS Free water

	CL-PFAS	TOP
Container Type	P	P
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	12/10/21 1200	Fridge	12/10/21 1200
[signature]	12/17/21 1400	B. Lyons	12-17-21 1410
B. Lyons	12-15-21 1420	[signature]	12/16/21 0100
[signature] 12/16/21 0600	Wendy Moran 12/16/21 3:15	[signature]	12/16/21 0445

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

12/16/21 0820

ANALYTICAL REPORT

Lab Number:	L2170827
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC WWTF P2
Project Number:	2190486-B-2
Report Date:	01/12/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2170827-01	GE-3-1270 EFF	WATER	RUTLAND, VT	12/22/21 08:25	12/23/21
L2170827-02	GE-3-1270 SLUDGE	SLUDGE	RUTLAND, VT	12/22/21 08:20	12/23/21
L2170827-03	GE-3-0306 EFFLUENT	WATER	RUTLAND, VT	12/22/21 09:48	12/23/21
L2170827-04	GE-3-0306 SLUDGE	SLUDGE	RUTLAND, VT	12/22/21 09:45	12/23/21

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2170827-01, -02, -03, and -04: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1588942-1: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2170827-01 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2170827-01 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2170827-01 and -03: The sample was extracted with the method required holding time exceeded.

WG1590799-4: This blank represents the oxidation blank associated with L2170827-01 and -03.

WG1590799-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1590799-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 01/12/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01
Client ID: GE-3-1270 EFF
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:25
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 19:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.99	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.99	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.99	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.99	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.99	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.99	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.99	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.99	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.99	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.99	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.99	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.99	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.99	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.99	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.99	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.99	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01 Date Collected: 12/22/21 08:25

Client ID: GE-3-1270 EFF Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**198**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	158		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**119**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01
Client ID: GE-3-1270 EFF
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:25
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 11:16
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	9.67	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.93	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.93	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.93	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.93	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.93	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.93	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.93	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.93	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.93	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.93	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-01 Date Collected: 12/22/21 08:25

Client ID: GE-3-1270 EFF Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	71		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**193**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**173**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**160**	Q	50-150

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-02
Client ID: GE-3-1270 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:20
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 00:31
Analyst: HT
Percent Solids: 42%

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.589	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.589	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.294	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.589	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.294	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.294	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.294	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.589	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.589	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.294	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.294	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.294	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.589	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.18	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.589	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.589	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.589	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.589	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.589	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.589	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.589	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.589	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-02 Date Collected: 12/22/21 08:20

Client ID: GE-3-1270 SLUDGE Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**497**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**337**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**185**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		24-159

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:48
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 20:06
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.97	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.97	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.97	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.97	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.97	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.97	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.97	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.97	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.97	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.97	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.97	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.97	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03 Date Collected: 12/22/21 09:48

Client ID: GE-3-0306 EFFLUENT Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**236**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**159**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	147		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:48
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 11:32
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	9.42	--	1
Perfluoropentanoic Acid (PFPeA)	4.18		ng/l	1.88	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.88	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.88	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.88	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.88	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.88	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-03 Date Collected: 12/22/21 09:48

Client ID: GE-3-0306 EFFLUENT Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	70		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**173**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**167**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	143		50-150

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-04
Client ID: GE-3-0306 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:45
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 00:47
Analyst: HT
Percent Solids: 70%

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.342	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.342	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.171	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.684	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.342	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.684	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.171	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.171	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.171	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.342	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.342	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.171	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.171	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.171	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.342	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.684	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.342	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.342	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.342	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.342	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.342	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.342	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.342	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.342	--	1

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-04 Date Collected: 12/22/21 09:45

Client ID: GE-3-0306 SLUDGE Date Received: 12/23/21

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**173**	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**772**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**62**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**524**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**46**	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**537**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**205**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**165**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**163**	Q	24-159

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Lab ID: L2170827-01
Client ID: GE-3-1270 EFF
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:25
Date Received: 12/23/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Lab ID: L2170827-03
Client ID: GE-3-0306 EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:48
Date Received: 12/23/21
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	4.18		ng/l	4.18		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							4.18		ng/l

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 22:51
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04 Batch: WG1588942-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 22:51
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04 Batch: WG1588942-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**180**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	118		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		24-159

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/09/22 12:34
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 12/29/21 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04 Batch: WG1588942-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62		10-117

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 09:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/07/22 10:26
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/06/22 08:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03 Batch: WG1590799-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**218**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**212**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**191**	Q	50-150

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 17:54
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590953-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/06/22 17:54
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590953-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC WWTF P2 **Lab Number:** L2170827

Project Number: 2190486-B-2 **Report Date:** 01/12/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 01/09/22 11:00
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 01/05/22 18:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1590953-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74		10-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 Batch: WG1588942-2								
Perfluorobutanoic Acid (PFBA)	89		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	87		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	88		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	97		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	91		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	98		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	90		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	98		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	90		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	101		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	85		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	92		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 Batch: WG1588942-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	95		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	136				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93				24-159

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab	Associated sample(s): 02,04		Batch: WG1588942-2					
Perfluorooctanesulfonamide (FOSA)	119		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60				10-117

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								
Perfluorobutanoic Acid (PFBA)	98		94		67-148	4		30
Perfluoropentanoic Acid (PFPeA)	101		96		63-161	5		30
Perfluorobutanesulfonic Acid (PFBS)	92		90		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	99		93		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	86		85		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	101		98		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	97		96		69-177	1		30
Perfluorooctanoic Acid (PFOA)	103		98		63-159	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	82		83		61-179	1		30
Perfluorononanoic Acid (PFNA)	95		102		68-171	7		30
Perfluorooctanesulfonic Acid (PFOS)	94		94		52-151	0		30
Perfluorodecanoic Acid (PFDA)	95		89		63-171	7		30
Perfluorononanesulfonic Acid (PFNS)	78		88		48-150	12		30
Perfluoroundecanoic Acid (PFUnA)	94		100		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	96		95		38-156	1		30
Perfluorododecanoic Acid (PFDoA)	105		96		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	113		106		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	102		89		59-182	14		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590799-2 WG1590799-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		93		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		82		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		91		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		87		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		102		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		83		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590953-2								
Perfluorobutanoic Acid (PFBA)	98		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	105		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	94		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	99		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	106		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	98		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	83		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	98		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	90		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	87		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	109		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	101		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	93		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	99		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	98		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1590953-2								
Perfluorotridecanoic Acid (PFTrDA)	110		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	90		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab	Associated sample(s): 01,03		Batch: WG1590953-2					
Perfluorooctanesulfonamide (FOSA)	121		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	75				10-112

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1588942-3 WG1588942-4 QC Sample: L2169871-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	18.9	16.8	89		16.4	87		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	ND	18.9	16.5	87		16.3	86		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	16.8	14.9	89		14.8	88		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	17.7	18.4	104		17.2	97		62-145	7		30
Perfluorohexanoic Acid (PFHxA)	ND	18.9	16.8	89		16.5	87		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	17.8	16.5	93		16.2	91		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	18.9	16.8	89		16.6	88		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	17.3	16.9	98		16.2	94		67-130	4		30
Perfluorooctanoic Acid (PFOA)	ND	18.9	17.2	91		17.8	94		69-133	3		30
Perfluorononanoic Acid (PFNA)	ND	18.9	17.7	94		17.6	93		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	ND	17.5	17.9	102		18.5	106		68-136	3		30
Perfluorodecanoic Acid (PFDA)	ND	18.9	17.0	90		17.5	93		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	18.1	18.8	104		18.3	101		65-137	3		30
Perfluorononanesulfonic Acid (PFNS)	ND	18.2	17.6	97		16.4	90		69-125	7		30
Perfluoroundecanoic Acid (PFUnA)	ND	18.9	17.7	94		16.8	89		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	ND	18.2	16.1	88		15.7	86		59-134	3		30
Perfluorododecanoic Acid (PFDoA)	ND	18.9	16.8	89		16.6	88		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	18.9	16.4	87		16.7	89		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	ND	18.9	17.0	88		17.2	89		69-133	1		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**214**	Q	**224**	Q	19-175

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2 ***Lab Number:*** L2170827

Project Number: 2190486-B-2 ***Report Date:*** 01/12/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1588942-3 WG1588942-4 QC Sample: L2169871-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**245**	Q	**249**	Q	14-167
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		77		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		80		75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		78		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		86		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		**52**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		60		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		82		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		64		58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		82		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		80		75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		83		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		86		74-139

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-3 QC Sample: L2171157-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.5	35.7	96		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	36.5	36.2	96		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.4	32.2	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.2	33.6	98		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	36.5	35.4	96		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.3	30.2	88		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.5	35.2	96		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33.4	33.8	101		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	36.5	35.0	96		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.8	36.7	106		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.8	28.0	81		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	36.5	39.2	107		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	33.9	29.6	87		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.5	29.4	80		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35	29.7	85		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.1	27.9	79		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.5	36.3	99		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.5	37.2	102		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.2	28.4	81		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.5	37.8F	104		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.5	41.5	114		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.5	36.8	101		-	-		67-153	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-3 QC Sample: L2171157-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.5	38.1	104		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.5	32.6	89		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	356	451F	127		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.5	30.8	89		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.5	34.8	95		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	36.5	25.0	68		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	60				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-3 QC Sample: L2171157-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	67				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	68				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-4 QC Sample: L2171158-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-4 QC Sample: L2171158-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		87		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99		94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		87		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		62		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		44		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1590953-4 QC Sample: L2171158-01 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		60		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		80		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		19		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		72		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		72		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		104		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	67		59		10-206

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-02
Client ID: GE-3-1270 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 08:20
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	42.3		%	0.100	--	1	-	12/29/21 16:43	121,2540G	GF

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

SAMPLE RESULTS

Lab ID: L2170827-04
Client ID: GE-3-0306 SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 12/22/21 09:45
Date Received: 12/23/21
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	70.0		%	0.100	--	1	-	12/29/21 16:43	121,2540G	GF

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC WWTF P2

Project Number: 2190486-B-2

Lab Number: L2170827

Report Date: 01/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1588902-1 QC Sample: L2165574-01 Client ID: DUP Sample						
Solids, Total	84.4	84.6	%	0		10

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2

Lab Number: L2170827
Report Date: 01/12/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2170827-01A	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-01B	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-01C	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-01D	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-02A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2170827-02B	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2170827-03A	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-03B	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)
L2170827-03C	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-03D	Plastic 250ml unpreserved	A	NA		5.6	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2170827-04A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2170827-04B	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC WWTF P2
Project Number: 2190486-B-2
Lab Number: L2170827
Report Date: 01/12/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VT DEC WWTF P2	**Lab Number:**	L2170827
Project Number:	2190486-B-2	**Report Date:**	01/12/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:01122216:30

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/27/21

ALPHA Job #: L2170827

Client Information

Client: Weston + Sampson
Address: 98 South Main St Waterbury VT 05676
Phone: 802 505 8909
Fax:
Email: larosas@wseInc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC WWTF P2
Project Location: Rutland, VT
Project #: 2190486-B-2
Project Manager: S, LaRosa
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
Invoices@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:

ANALYSIS: PFAS TOP; PFAS Isotope Dil

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS TOP	PFAS Isotope Dil	Sample Specific Comments	TOTAL # BOTTLES
70827-01	GE-3-1270 Eff	12/22/21	0825	Water	SJL	X			
-02	GE-3-1270 Sludge	12/22/21	0820	Solid	SJL		X		
-03	GE-3-0306 Effluent	12/22/21	0948	Water	SJL	X			
-04	GE-3-0306 Sludge	12/22/21	0945	Solid	SJL		X		
Container Type						P	P		
Preservative						—	—		

SAMPLE HANDLING
Filtration ____
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

AAC AA 12/27/21

Relinquished By:	Date/Time	Received By:	Date/Time
B. Lyons 12/23/21	12/23 1350	B. Lyons 12/23/21	13:50
	16:45		12/24/21 0030
W. Dandali AAC	12/27/21 11:27	AAC AA	12/27/21 11:27

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

12-27-21 9:15 W. Dandali AAC 12/27/21 9:55

ANALYTICAL REPORT

Lab Number:	L2204817
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	02/17/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2204817-01	EFFLUENT-01212022	WATER	BRATTLEBORO, VT	01/21/22 11:20	01/28/22

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2204817
Project Number: Not Specified **Report Date:** 02/17/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution
L2204817-01 and WG1600176-1: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2204817-01: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2204817-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2204817-01 and WG1601071-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
WG1601071-4: This blank represents the oxidation blank associated with L2204817-01.
WG1601071-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 02/17/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01
Client ID: EFFLUENT-01212022
Sample Location: BRATTLEBORO, VT

Date Collected: 01/21/22 11:20
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/02/22 06:30
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 02/01/22 13:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.81	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	2.22	F	ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	21.0	GF	ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	--	1

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01 Date Collected: 01/21/22 11:20

Client ID: EFFLUENT-01212022 Date Received: 01/28/22

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**476**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**377**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**8**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01
Client ID: EFFLUENT-01212022
Sample Location: BRATTLEBORO, VT

Date Collected: 01/21/22 11:20
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/05/22 00:17
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	20.0	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	4.00	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	4.00	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	4.00	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	4.00	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	4.00	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	4.00	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	4.00	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	4.00	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	4.00	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	4.00	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	4.00	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	4.00	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	4.00	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	4.00	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	4.00	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	4.00	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	4.00	--	1

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

SAMPLE RESULTS

Lab ID: L2204817-01 Date Collected: 01/21/22 11:20

Client ID: EFFLUENT-01212022 Date Received: 01/28/22

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	1		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	59		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**206**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**175**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**163**	Q	50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Lab ID: L2204817-01
Client ID: EFFLUENT-01212022
Sample Location: BRATTLEBORO, VT

Date Collected: 01/21/22 11:20
Date Received: 01/28/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	2.22	F	ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	21.0	GF	ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							NA		ng/l

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/02/22 00:26
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 02/01/22 13:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1600176-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/02/22 00:26
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 02/01/22 13:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1600176-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**148**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:11
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:11
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:27
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT DEC P2 **Lab Number:** L2204817

Project Number: Not Specified **Report Date:** 02/17/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 02/04/22 23:27
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 02/03/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1601071-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**223**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**200**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**174**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1600176-2								
Perfluorobutanoic Acid (PFBA)	90		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	92		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	91		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	95		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	89		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	97		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	89		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	96		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	92		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	90		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	100		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	94		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	110		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	97		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	88		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	100		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	87		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1600176-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	109				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1601071-2 WG1601071-3								
Perfluorobutanoic Acid (PFBA)	96		98		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	99		102		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	93		94		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	99		101		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	102		102		52-156	0		30
Perfluoroheptanoic Acid (PFHpA)	102		102		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	115		115		69-177	0		30
Perfluorooctanoic Acid (PFOA)	110		100		63-159	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		97		61-179	2		30
Perfluorononanoic Acid (PFNA)	104		106		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	114		109		52-151	4		30
Perfluorodecanoic Acid (PFDA)	94		100		63-171	6		30
Perfluorononanesulfonic Acid (PFNS)	102		105		48-150	3		30
Perfluoroundecanoic Acid (PFUnA)	99		104		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	105		106		38-156	1		30
Perfluorododecanoic Acid (PFDoA)	102		106		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	106		110		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	100		109		59-182	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1601071-2 WG1601071-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		87		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		98		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		86		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		73		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-3 QC Sample: L2204401-11 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	2.99	40	39.4	91		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	6.09	40	43.9	95		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	35.5	34.5	93		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	37.4	35.4	95		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	7.49	40	44.9	94		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	37.6	36.7	95		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	11.9	40	47.6	89		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	8.08	36.5	43.8	98		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	13.9	40	50.1	91		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	38	36.8	97		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	38	37.6	99		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	2.22	40	38.8	92		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	3.22	37.1	41.4	103		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	40	36.0	89		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	38.4	41.8	109		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	38.4	36.1	94		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	40	41.7	104		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	40	36.7	92		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38.5	38.5	100		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	40	38.4	96		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	40	36.6	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	40	37.2	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2204817

Report Date: 02/17/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-3 QC Sample: L2204401-11 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	40	38.6	97		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	40	39.1	96		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	121				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	77				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-4 QC Sample: L2204401-12 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	3.28	3.05	ng/l	7		30
Perfluoropentanoic Acid (PFPeA)	4.82	5.11	ng/l	6		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	4.18	4.18	ng/l	0		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.87	3.74	ng/l	3		30
Perfluorohexanesulfonic Acid (PFHxS)	3.25	3.34	ng/l	3		30
Perfluorooctanoic Acid (PFOA)	19.3	19.3	ng/l	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.93	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	2.13	2.03	ng/l	5		30
Perfluorooctanesulfonic Acid (PFOS)	16.3	15.3	ng/l	6		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-4 QC Sample: L2204401-12 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		77		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		89		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		107		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**130**		**144**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		76		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		85		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		77		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		68		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		78		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		18		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		62		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		69		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1600176-4 QC Sample: L2204401-12 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		63		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2204817
Report Date: 02/17/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2204817-01A	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(14)
L2204817-01B	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(14)
L2204817-01C	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2204817-01D	Plastic 250ml unpreserved	A	NA		2.0	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VT DEC P2	**Lab Number:**	L2204817
Project Number:	Not Specified	**Report Date:**	02/17/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 1/31/22

ALPHA Job #: L2204817

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Weston & Sampson
Address: 98 S Main St Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com reilly.margaret@wseinc.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC #2
Project Location: Brattleboro, VT
Project #:
Project Manager: Steve LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Billing Information

☐ Same as Client info PO #:

Other Project Specific Requirements/Comments/Detection Limits:
Email results to larosas@wseinc.com AND Reilly.Margaret@wseinc.com

ANALYSIS: 537 PFAS | TOP

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 PFAS	TOP	Sample Specific Comments	TOTAL # BOTTLES
04817-01	Effluent-01212022	1/21/22	1120	WW	MCR	2	2		

Container Type	P	P
Preservative	X	X

MCI AAL 1/31/22 11:25

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilley	1/21/22 1500	Endge	1/21/22 1500
Endge	1/28/2022 10:15	James Gagne	1/28/22 10:15
James Gagne	1/28/2022 12:00	Tony Cruz AAL	1/28/22 12:00
Tony Cruz	1/28/22 16:35	[illegible]	1/28 22:15
		[illegible]	1/31/22 0820

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Sarah Sheppard 01/31/22 10:20
D. Daniel AAL 1/31/22 11:27

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2214714
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDE WWTF P2
Project Number:	Not Specified
Report Date:	04/06/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2214714-01	FILTER CAKE (X2)	SLUDGE	BRATTLEBORO, VT	01/26/22 12:45	01/28/22

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2214714-01: The sample was extracted with the method required holding time exceeded with client authorization. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. Several Extracted Internal Surrogate were impacted by matrix interference and the associated target compounds are not reported.

WG1621837-1: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1621837-2 LCS recovery, associated with L2214714-01, is above the acceptance criteria for and perfluorotetradecanoic acid (pfta) (134%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 04/06/22

ORGANICS

SEMIVOLATILES

Project Name: VTDE WWTF P2 **Lab Number:** L2214714

Project Number: Not Specified **Report Date:** 04/06/22

SAMPLE RESULTS

Lab ID: L2214714-01
Client ID: FILTER CAKE (X2)
Sample Location: BRATTLEBORO, VT

Date Collected: 01/26/22 12:45
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 04/01/22 08:04
Analyst: HT
Percent Solids: 16%

Extraction Method: ALPHA 23528
Extraction Date: 03/31/22 06:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	12.3	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	12.3	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	12.3	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	6.13	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	6.13	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		58-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**436**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**281**	Q	71-129
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		75-130

Project Name: VTDE WWTF P2 **Lab Number:** L2214714

Project Number: Not Specified **Report Date:** 04/06/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 04/01/22 06:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/31/22 06:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1621837-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	--

Project Name: VTDE WWTF P2 **Lab Number:** L2214714

Project Number: Not Specified **Report Date:** 04/06/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 04/01/22 06:25
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/31/22 06:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1621837-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**141**	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	134		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	132		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1621837-2								
Perfluorobutanoic Acid (PFBA)	103		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	103		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	102		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	110		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	107		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	107		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	126		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	109		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	117		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	116		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	122		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	116		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	109		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	107		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	93		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	119		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	110		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	112		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	100		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDE WWTF P2

Project Number: Not Specified

Lab Number: L2214714

Report Date: 04/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1621837-2								
Perfluorotridecanoic Acid (PFTrDA)	139		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	**134**	Q	-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	110				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	115				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	127				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87				24-159

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1621837-3 WG1621837-4 QC Sample: L2214505-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	29.1	14.3	44.2	106		39.0	**67**	Q	71-135	13		30
Perfluoropentanoic Acid (PFPeA)	31.1	14.3	43.9	90		41.6	72		69-132	5		30
Perfluorobutanesulfonic Acid (PFBS)	ND	12.7	12.4	98		13.3	102		72-128	7		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	13.4	15.5	116		16.8	122		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	8.31	14.3	24.1	110		22.7	98		70-132	6		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	13.4	14.3	106		14.6	106		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	4.84	14.3	18.8	98		19.6	100		71-131	4		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	13.1	15.6	119		18.8	**140**	Q	67-130	19		30
Perfluorooctanoic Acid (PFOA)	3.45	14.3	18.1	102		19.3	108		69-133	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	13.6	15.8	116		18.0	129		64-140	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	13.6	15.2	111		15.0	107		70-132	1		30
Perfluorononanoic Acid (PFNA)	1.19	14.3	16.6	108		17.5	111		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	22.1F	13.3	41.1F	**143**	Q	34.4F	90		68-136	18		30
Perfluorodecanoic Acid (PFDA)	ND	14.3	16.0	108		18.0	119		69-133	12		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	7.76	13.7	21.0	97		20.5	90		65-137	2		30
Perfluorononanesulfonic Acid (PFNS)	ND	13.8	14.6	106		15.6	110		69-125	7		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	14.3	16.6F	116		16.4	112		63-144	1		30
Perfluoroundecanoic Acid (PFUnA)	ND	14.3	13.0	89		14.6	98		64-136	12		30
Perfluorodecanesulfonic Acid (PFDS)	ND	13.8	15.0	109		16.1	113		59-134	7		30
Perfluorooctanesulfonamide (FOSA)	ND	14.3	14.5F	101		14.9	101		67-137	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	14.3	21.9	**153**	Q	21.1	**144**	Q	61-139	4		30
Perfluorododecanoic Acid (PFDoA)	ND	14.3	13.8	97		15.4	105		69-135	11		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDE WWTF P2

Project Number: Not Specified

Lab Number: L2214714

Report Date: 04/06/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1621837-3 WG1621837-4 QC Sample: L2214505-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	14.3	19.1	134		19.6	133		66-139	3		30
Perfluorotetradecanoic Acid (PFTA)	ND	14.3	17.9	125		19.4	132		69-133	8		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	139	125F	90		161F	112		41-165	25		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	13.5	11.2	83		12.5	90		68-143	11		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	14.3	16.2	113		17.7	120		18-191	9		30
Perfluorooctadecanoic Acid (PFODA)	ND	14.3	10.1	71		11.6	79		10-123	14		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**536**	Q	**597**	Q	19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**358**	Q	**379**	Q	14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**466**	Q	**559**	Q	20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		103		10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		71		34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	113		129		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		96		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		84		75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**56**	Q	**65**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**70**	Q	75		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		94		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		110		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		79		24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69		83		10-145

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDE WWTF P2

Project Number: Not Specified

Lab Number: L2214714

Report Date: 04/06/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1621837-3 WG1621837-4 QC Sample: L2214505-02 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		89		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	60		66		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		49		10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		92		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		85		75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		82		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		87		74-139

INORGANICS
&
MISCELLANEOUS

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

SAMPLE RESULTS

Lab ID: L2214714-01
Client ID: FILTER CAKE (X2)
Sample Location: BRATTLEBORO, VT

Date Collected: 01/26/22 12:45
Date Received: 01/28/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	16.3		%	0.100	--	1	-	02/02/22 20:07	121,2540G	GF

Project Name: VTDE WWTF P2
Project Number: Not Specified

Lab Number: L2214714
Report Date: 04/06/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
A	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L2214714-01A	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2214714-01B	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VTDE WWTF P2
Project Number:

Lab Number: L2214714
Report Date: 04/06/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

Project Name:	VTDE WWTF P2	**Lab Number:**	L2214714
Project Number:	Not Specified	**Report Date:**	04/06/22

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:04062216:41

L2204803 kb 3/22/22

1/31/22

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd In Lab:

ALPHA Job #: L2214714

Client Information

Client: Weston & Sampson
Address: 98 S Main St Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC WWTF P2
Project Location: Brattleboro, VT
Project #:
Project Manager: S LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☒ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoices@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits: AND send results to larosas@wseinc.com Reilly.Mary@wseinc.com

SAMPLE CONTAINS PFAS.

ANALYSIS: PFAS Isotope Dil

SAMPLE HANDLING
Filtration ________
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS Isotope Dil	Sample Specific Comments	TOTAL # BOTTLES
14714-01 ~~04803-01~~	Filter Cake (x2)	1/26/22	1245	S		X	CONTAINS PFAS	
~~-2A~~	trip blank (x1)							

	PFAS Isotope Dil
Container Type	P
Preservative	X

Relinquished By:	Date/Time	Received By:	Date/Time
MACKINTOSH	1/25/22 12:00	B. Lyons	1-25-22 12:00
B. Lyons	1-28-22 16:05	[signature]	1/28 [illegible]
[signature]	1-31-22 10:20	[signature] AAL	1/31/22 1020

See attached generic CoC

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

J. Damato AAL 1/31/22 11:25

GS Precision

Chain of Custody

GSP Coatings, Inc.
101 John Seitz Dr.
Brattleboro, VT 05301
802.246.5812 (lab)

Date Sent
Po# W25 372800
Report to Rachel Mackintosh
Email rachel.mackintosh@gsprecision.com

Sample Information	Date	Time	Type&Matrix	Preservative?	Analysis Required
Filter-Cake	1/26/22	1245	gels/solid	chilled	
Filter Cake Field Duplicate	"	"	"	"	
Trip Blank	"	"	"	"	

Custody Record

Sampled By: C. Jk	Date & Time Sampled: 1/26/22 12:45
Print Name: Rachel Mackintosh	Relinquished: n/a
Packed By: SAME	Date & Time Packed: 1/26/22 13:00
Print Name:	Relinquished:
Rec'd at Lab By:	Date & Time Received:
Print Name:	Date Analyzed:
Sampler Comments:	Analyst Comments:
Filter cake testing notes: >90% of this is from the Nickel Acetate Seal Destruct. There was residual loose sludge from the Lamella Settler demant still in the piping when the Destruct sludge started coming through. -RCM	

ANALYTICAL REPORT

Lab Number:	L2211036
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2 GE-1
Project Number:	Not Specified
Report Date:	03/18/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211036-01	FIELD BLANK-GE-1	WATER	RUTLAND, VT	02/25/22 10:15	03/02/22
L2211036-02	GE-1-EFFLUENT	WATER	RUTLAND, VT	02/25/22 10:15	03/02/22
L2211036-03	GE-1-SLUDGE	SLUDGE	RUTLAND, VT	02/25/22 10:10	03/02/22

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211036-02 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1612872-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211036-02: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2211036-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211036-02: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1613500-4: This blank represents the oxidation blank associated with L2211036-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 03/18/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-01
Client ID: FIELD BLANK-GE-1
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 13:34
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.86	0.380	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.86	0.369	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	0.222	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.86	0.421	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.86	0.306	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.86	0.228	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.210	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	0.350	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	0.220	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.641	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.291	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.86	0.470	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.283	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.86	1.04	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.604	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.913	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.540	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.749	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.347	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.305	1
Perfluorotetradecanoic Acid (PFTA)	0.775	JF	ng/l	1.86	0.231	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-01 Date Collected: 02/25/22 10:15

Client ID: FIELD BLANK-GE-1 Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	108		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	114		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	116		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		22-136

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02
Client ID: GE-1-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 13:51
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.370	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.409	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.81	0.297	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	1.79	JF	ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	0.225	J	ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	0.739	JF	ng/l	1.81	0.225	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02 Date Collected: 02/25/22 10:15

Client ID: GE-1-EFFLUENT Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**217**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		22-136

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02
Client ID: GE-1-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 23:56
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.67	J	ng/l	9.12	0.372	1
Perfluoropentanoic Acid (PFPeA)	4.87		ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	2.74		ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.224	1
Perfluoroheptanoic Acid (PFHpA)	0.423	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	0.306	J	ng/l	1.82	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.627	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-02 Date Collected: 02/25/22 10:15

Client ID: GE-1-EFFLUENT Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**241**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**197**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**165**	Q	50-150

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-03
Client ID: GE-1-SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:10
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 05:13
Analyst: HT
Percent Solids: 61%

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.064	J	ng/g	0.402	0.018	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.402	0.037	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.201	0.031	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.804	0.052	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.402	0.042	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.804	0.067	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.201	0.036	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.201	0.049	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.201	0.034	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.402	0.144	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.402	0.110	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.201	0.060	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.201	0.104	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.201	0.054	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.402	0.231	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.804	0.240	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.402	0.162	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.402	0.038	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.402	0.123	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.402	0.079	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.402	0.068	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.402	0.056	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.402	0.164	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.402	0.043	1

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-03 Date Collected: 02/25/22 10:10

Client ID: GE-1-SLUDGE Date Received: 03/02/22

Sample Location: RUTLAND, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**149**	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**519**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**44**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	**141**	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**422**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**44**	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**584**	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**231**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	130		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	129		24-159

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Lab ID: L2211036-02
Client ID: GE-1-EFFLUENT
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:15
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Units	Post-Treatment Results	Post-Treatment Qualifier	Units	Difference Results	Difference Qualifier	Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.67	J	ng/l	6.67	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	4.87		ng/l	4.87		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.74		ng/l	2.74		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.423	J	ng/l	0.423	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	1.79	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorooctanoic Acid (PFOA)	0.225	J	ng/l	0.306	J	ng/l	0.081	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	0.739	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							14.8	J	ng/l

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.936	J	ng/l	2.00	0.248

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	74		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		22-136

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1612992-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1612992-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100		24-159

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-4					
Perfluorobutanoic Acid (PFBA)	6.08	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.05	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.540	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: Not Specified **Report Date:** 03/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1613500-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**216**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**189**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	97		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	113		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	98		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	106		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	112		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	102		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	102		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	115		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	104		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	105		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	96		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	103		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	112		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	97		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	112		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	103		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorotridecanoic Acid (PFTrDA)	110		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1612992-2								
Perfluorobutanoic Acid (PFBA)	90		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	95		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	90		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	83		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	89		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	87		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	88		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	96		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	91		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	81		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	108		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1612992-2								
Perfluorotridecanoic Acid (PFTrDA)	108		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	109				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1613500-2 WG1613500-3								
Perfluorobutanoic Acid (PFBA)	90		88		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	91		88		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		88		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	89		90		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	90		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		98		69-177	0		30
Perfluorooctanoic Acid (PFOA)	87		87		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		96		61-179	5		30
Perfluorononanoic Acid (PFNA)	90		91		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	90		97		52-151	7		30
Perfluorodecanoic Acid (PFDA)	87		87		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	92		100		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	94		87		60-153	8		30
Perfluorodecanesulfonic Acid (PFDS)	90		97		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	97		89		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	108		101		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	94		92		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1613500-2 WG1613500-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		93		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		88		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	0.994J	37.2	37.9	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	37.2	38.4	103		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.1	31.9	96		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.8	38.3	110		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	37.2	36.4	98		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	44.3	127		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.222J	37.2	38.0	101		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34	53.8	158		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.402J	37.2	37.7	100		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.4	38.4	108		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.4	34.6	98		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	37.2	36.6	98		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.6	51.0F	146		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.2	37.8	102		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.7	36.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	35.3	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	37.6	101		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	39.7	107		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	24.4	68		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	36.9F	99		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.2	35.1	94		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	37.5	101		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	47.5	128		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	0.874J	37.2	44.3	117		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**276**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**204**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**395**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**16**	Q			27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	26				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**36**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	84				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q			10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	1.28J	15.3	14.1	84		14.3	84		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	0.171J	15.3	13.8	89		13.9	88		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	13.6	12.2	90		12.3	89		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	14.3	13.3	93		13.5	93		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	ND	15.3	13.5	88		13.9	89		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	14.4	12.8	89		13.0	89		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	15.3	14.2	93		14.1	91		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	0.251J	14	13.8	97		13.8	95		67-130	0		30
Perfluorooctanoic Acid (PFOA)	1.83F	15.3	13.6	77		14.7	83		69-133	8		30
Perfluorononanoic Acid (PFNA)	2.39	15.3	14.7	80		15.5	84		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	44.1	14.2	52.7	**61**	Q	52.6	**59**	Q	68-136	0		30
Perfluorodecanoic Acid (PFDA)	1.35	15.3	15.0	89		13.7	80		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	14.7	14.4	98		14.2	95		65-137	1		30
Perfluorononanesulfonic Acid (PFNS)	ND	14.7	15.2	103		14.4	96		69-125	5		30
Perfluoroundecanoic Acid (PFUnA)	0.584J	15.3	14.0	88		13.7	84		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	ND	14.8	14.9	101		14.0	93		59-134	6		30
Perfluorododecanoic Acid (PFDoA)	ND	15.3	14.3	93		14.4	93		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	15.3	16.9	110		17.8	115		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	15.3	14.1	92		14.1	91		69-133	0		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	139		145		19-175

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		131		14-167
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		76		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**62**	Q	**55**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**63**	Q	**53**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		98		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		82		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		90		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		71		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		69		58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		96		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**72**	Q	**57**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		**62**	Q	72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		94		74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: GE-1-EFFLUENT						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.79JF	1.88JF	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.225J	0.272J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: GE-1-EFFLUENT						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.739JF	0.863JF	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**217**	Q	**199**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	**150**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		76		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		97		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		90		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		94		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		27		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		108		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: GE-1-EFFLUENT

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		87		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

SAMPLE RESULTS

Lab ID: L2211036-03
Client ID: GE-1-SLUDGE
Sample Location: RUTLAND, VT

Date Collected: 02/25/22 10:10
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	61.0		%	0.100	0.100	1	-	03/03/22 17:56	121,2540G	AT

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-1

Project Number: Not Specified

Lab Number: L2211036

Report Date: 03/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1611426-1 QC Sample: L2210901-21 Client ID: DUP Sample						
Solids, Total	88.8	88.3	%	1		10

Project Name: VT DEC P2 GE-1
Project Number: Not Specified

Lab Number: L2211036
Report Date: 03/18/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211036-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211036-02A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211036-02B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211036-02C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211036-02D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211036-03A	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2 GE-1 **Lab Number:** L2211036

Project Number: **Report Date:** 03/18/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-1	**Lab Number:**	L2211036
Project Number:	Not Specified	**Report Date:**	03/18/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211036 ~~L2211030~~

Client Information

Client: Weston & Sampson
Address: 485 Main St Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com esnyder

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P2 GE-1
Project Location: Rutland, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Please report to MDL and send results to larosas@wseinc.com and Reilly.Margaret@wseinc.com

ANALYSIS: 537.1 Stripped TOP

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments	TOTAL # BOTTLES
~~H030~~ 01	Field Blank GE-1	2/25/2022	1015	WW	MLR	X	
11036-02	GE-1-Effluent	2/25/2022	1015	WW	MLR	X	X
03	GE-1-Sludge	2/25/2022	1010	S	MLR	X	

Container Type		
Preservative	/	/

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilly Fedex	2/25/22 1600	Fedex	3/2/22 1458

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2211030
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2 GE-2
Project Number:	Not Specified
Report Date:	03/28/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211030-01	GE-2-EFFLUENT	WATER	CLARENDON, VT	02/25/22 09:40	03/02/22
L2211030-02	GE-2-SLUDGE	SLUDGE	CLARENDON, VT	02/25/22 09:45	03/02/22
L2211030-03	FIELD BLANK-GE-2	WATER	CLARENDON, VT	02/25/22 09:40	03/02/22

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030
Project Number: Not Specified **Report Date:** 03/28/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211030-01: The sample has elevated detection limits for PFHxS and PFOS due to the dilution required by the sample matrix.

L2211030-01, -02, -03, WG1612075-1, WG1612075-2, and WG1612075-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211030-02: The Extracted Internal Surrogate recovery was less than 2% for perfluoro[13c8]octanesulfonamide (m8fosa) (1%). The associated target compounds are not reported due to the insufficient recovery of this surrogate.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211030-01: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2211030-01 and WG1613500-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211030-01 and WG1613500-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: This blank represents the oxidation blank associated with L2211030-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Alycia Mogayzel

Title: Technical Director/Representative Date: 03/28/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01
Client ID: GE-2-EFFLUENT
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 21:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	0.964	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	0.516	JF	ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	0.388	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	8.90	0.334	1
Perfluorooctanoic Acid (PFOA)	0.320	J	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.20	J	ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	0.288	J	ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	8.90	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01 Date Collected: 02/25/22 09:40

Client ID: GE-2-EFFLUENT Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**165**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**288**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**263**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**173**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**142**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	123		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	121		22-136

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01
Client ID: GE-2-EFFLUENT
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 23:23
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.70	J	ng/l	9.07	0.370	1
Perfluoropentanoic Acid (PFPeA)	3.02		ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216	1
Perfluorohexanoic Acid (PFHxA)	2.15		ng/l	1.81	0.298	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222	1
Perfluoroheptanoic Acid (PFHpA)	0.552	J	ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.341	1
Perfluorooctanoic Acid (PFOA)	0.457	J	ng/l	1.81	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.624	1
Perfluorononanoic Acid (PFNA)	0.370	J	ng/l	1.81	0.283	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.457	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.276	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.889	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.338	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.297	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.225	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-01 Date Collected: 02/25/22 09:40

Client ID: GE-2-EFFLUENT Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**228**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**171**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**156**	Q	50-150

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-02
Client ID: GE-2-SLUDGE
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:45
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 04:40
Analyst: HT
Percent Solids: 26%

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.904	0.041	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.904	0.083	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.452	0.071	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.81	0.117	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.904	0.095	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.81	0.151	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.452	0.082	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.452	0.109	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.452	0.076	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.904	0.325	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.904	0.247	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.452	0.136	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.452	0.235	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.452	0.121	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.904	0.519	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.81	0.541	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.904	0.364	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.904	0.085	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.904	0.277	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.904	0.153	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.904	0.126	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.904	0.370	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.904	0.098	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-02 Date Collected: 02/25/22 09:45

Client ID: GE-2-SLUDGE Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**168**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**61**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**190**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	133		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**1**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		24-159

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-03
Client ID: FIELD BLANK-GE-2
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 21:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 11:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.96	0.401	1
Perfluoropentanoic Acid (PFPeA)	0.436	J	ng/l	1.96	0.389	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.96	0.234	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.96	0.444	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.96	0.322	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.96	0.241	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.96	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.369	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.96	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.676	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.96	0.306	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.96	0.495	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.19	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.96	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.636	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.255	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.963	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.570	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.790	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.365	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.321	1
Perfluorotetradecanoic Acid (PFTA)	0.346	J	ng/l	1.96	0.244	1

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-03 Date Collected: 02/25/22 09:40

Client ID: FIELD BLANK-GE-2 Date Received: 03/02/22

Sample Location: CLARENDON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	54		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	121		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**134**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Lab ID: L2211030-01
Client ID: GE-2-EFFLUENT
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:40
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	6.70	J	ng/l	6.70	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.964	J	ng/l	3.02		ng/l	2.06		ng/l
Perfluorobutanesulfonic Acid (PFBS)	0.516	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluorohexanoic Acid (PFHxA)	0.388	J	ng/l	2.15		ng/l	1.76		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.552	J	ng/l	0.552	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.320	J	ng/l	0.457	J	ng/l	0.137	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	0.288	J	ng/l	0.370	J	ng/l	0.082	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							11.3	J	ng/l

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 17:13
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 09:42

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1612075-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.368	J	ng/l	2.00	0.248

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/06/22 17:13
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/05/22 09:42

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1612075-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	109		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	123		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**134**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**141**	Q	22-136

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1612992-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/14/22 02:44
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 10:44

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1612992-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100		24-159

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					
Perfluorobutanoic Acid (PFBA)	6.08	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.05	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.540	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GE-2 **Lab Number:** L2211030

Project Number: Not Specified **Report Date:** 03/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**216**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**189**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1612075-2								
Perfluorobutanoic Acid (PFBA)	95		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	99		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	110		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	96		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	99		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	111		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	100		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	94		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	106		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	105		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	95		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	93		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1612075-2								
Perfluorotridecanoic Acid (PFTrDA)	103		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	98		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	112				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	123				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**137**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	136				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1612992-2								
Perfluorobutanoic Acid (PFBA)	90		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	95		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	90		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	83		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	89		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	87		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	88		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	96		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	91		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	81		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	108		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		69-135	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1612992-2								
Perfluorotridecanoic Acid (PFTrDA)	108		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	109				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								
Perfluorobutanoic Acid (PFBA)	90		88		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	91		88		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		88		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	89		90		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	90		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		98		69-177	0		30
Perfluorooctanoic Acid (PFOA)	87		87		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		96		61-179	5		30
Perfluorononanoic Acid (PFNA)	90		91		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	90		97		52-151	7		30
Perfluorodecanoic Acid (PFDA)	87		87		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	92		100		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	94		87		60-153	8		30
Perfluorodecanesulfonic Acid (PFDS)	90		97		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	97		89		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	108		101		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	94		92		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		93		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		88		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-3 QC Sample: L2211030-01 Client ID: GE-2-EFFLUENT												
Perfluorobutanoic Acid (PFBA)	ND	36.8	37.3	101		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.964J	36.8	36.8	97		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.516JF	32.7	32.6	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.5	37.6	109		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	0.388J	36.8	35.9	96		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.6	36.9	107		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.8	37.8	103		-	-		58-159	-		30
Perfluorooctanoic Acid (PFOA)	0.320J	36.8	38.3	103		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.20J	35.1	38.4	106		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.1	37.3	106		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.288J	36.8	36.7	99		-	-		68-171	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.8	39.2	106		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.4	36.3	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.4	35.4	100		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.8	33.6	91		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.8	41.3	112		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.5	38.6	109		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.8	35.3	96		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.8	39.6F	107		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.8	36.9	100		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	36.8	38.3	104		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.8	36.8	100		-	-		59-182	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-3 QC Sample: L2211030-01 Client ID: GE-2-EFFLUENT												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**253**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**180**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**272**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**149**	Q			27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**168**	Q			24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	125				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	129				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	89				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	1.28J	15.3	14.1	84		14.3	84		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	0.171J	15.3	13.8	89		13.9	88		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	13.6	12.2	90		12.3	89		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	14.3	13.3	93		13.5	93		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	ND	15.3	13.5	88		13.9	89		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	14.4	12.8	89		13.0	89		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	15.3	14.2	93		14.1	91		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	0.251J	14	13.8	97		13.8	95		67-130	0		30
Perfluorooctanoic Acid (PFOA)	1.83F	15.3	13.6	77		14.7	83		69-133	8		30
Perfluorononanoic Acid (PFNA)	2.39	15.3	14.7	80		15.5	84		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	44.1	14.2	52.7	**61**	Q	52.6	**59**	Q	68-136	0		30
Perfluorodecanoic Acid (PFDA)	1.35	15.3	15.0	89		13.7	80		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	14.7	14.4	98		14.2	95		65-137	1		30
Perfluorononanesulfonic Acid (PFNS)	ND	14.7	15.2	103		14.4	96		69-125	5		30
Perfluoroundecanoic Acid (PFUnA)	0.584J	15.3	14.0	88		13.7	84		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	ND	14.8	14.9	101		14.0	93		59-134	6		30
Perfluorododecanoic Acid (PFDoA)	ND	15.3	14.3	93		14.4	93		69-135	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	15.3	16.9	110		17.8	115		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	15.3	14.1	92		14.1	91		69-133	0		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	139		145		19-175

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2 ***Lab Number:*** L2211030

Project Number: Not Specified ***Report Date:*** 03/28/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1612992-3 WG1612992-4 QC Sample: L2211198-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		131		14-167
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		76		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**62**	Q	**55**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**63**	Q	**53**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		98		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		82		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		90		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		71		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		69		58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		96		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**72**	Q	**57**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		**62**	Q	72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		94		74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-4 QC Sample: L2210142-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	5.21	5.08	ng/l	3		30
Perfluoropentanoic Acid (PFPeA)	3.26	3.07	ng/l	6		30
Perfluorobutanesulfonic Acid (PFBS)	4.94	4.63	ng/l	6		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.43	2.15	ng/l	12		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	2.80	2.81	ng/l	0		30
Perfluorohexanesulfonic Acid (PFHxS)	1.54J	1.63JF	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	11.1	10.6	ng/l	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.650J	0.655J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	4.02	4.01	ng/l	0		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-4 QC Sample: L2210142-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.546JF	0.410JF	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		81		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**159**	Q	**160**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		66		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		74		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**225**	Q	**220**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	140		125		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		29		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		98		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		105		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1612075-4 QC Sample: L2210142-01 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95		104		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

SAMPLE RESULTS

Lab ID: L2211030-02
Client ID: GE-2-SLUDGE
Sample Location: CLARENDON, VT

Date Collected: 02/25/22 09:45
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	26.3		%	0.100	0.100	1	-	03/03/22 17:56	121,2540G	AT

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC P2 GE-2

Project Number: Not Specified

Lab Number: L2211030

Report Date: 03/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1611426-1 QC Sample: L2210901-21 Client ID: DUP Sample						
Solids, Total	88.8	88.3	%	1		10

Project Name: VT DEC P2 GE-2
Project Number: Not Specified

Lab Number: L2211030
Report Date: 03/28/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211030-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211030-01B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211030-01C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211030-01D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211030-02A	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2211030-03A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2 GE-2
Project Number:

Lab Number: L2211030
Report Date: 03/28/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GE-2	**Lab Number:**	L2211030
Project Number:	Not Specified	**Report Date:**	03/28/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211030

Client Information

Client: Weston + Sampson
Address: 98 S Main St, Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P26E-2
Project Location: Clarendon, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report to MDL
Please email results to larosas@wseinc.com AND Reilly-Margaret@wseinc.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: 537.1 Isotope EASTOP	TOTAL # BOTTLES	Sample Specific Comments
11030-01	GE-2-Effluent	2/25/2022	0940	WW	MLR	X	X	
02	GE-2-Sludge	2/25/2022	0945	S	MLR	X		
03	FieldBlank-GE-2	2/25/2022	0940	WW	MLR	X		

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Container Type	4	2
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilly Fedex	2/25/2022 1000	Fedex	3/2/22 1453

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2211032
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2 GSP
Project Number:	Not Specified
Report Date:	03/24/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211032-01	GSP-EFFLUENT	WATER	BRATTLEBORO, VT	02/25/22 13:30	03/02/22
L2211032-02	FIELD BLANK-GSP	WATER	BRATTLEBORO, VT	02/25/22 13:30	03/02/22
L2211032-03	GSP-SLUDGE	SLUDGE	BRATTLEBORO, VT	02/25/22 13:40	03/02/22

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211032-01: The sample has elevated detection limits for PFOS due to matrix interference. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211032-03RE\R: The sample was re-extracted with the method required holding time exceeded due to matrix interferences with internal standards in the original extraction. The results of the re-extraction are reported. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported. The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

WG1612872-3, WG1616123-3R, and WG1616123-4R: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1616123-1R, WG1616123-2R, WG1616123-3R, and WG1616123-4R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

The WG1616123-3R-4R MS/MSD recoveries, performed on L2211032-03, are outside the acceptance criteria for perfluorononanesulfonic acid (pfns) (25%/19%), perfluorodecanesulfonic acid (pfds) (34%/33%) and perfluorotridecanoic acid (pftrda) (168%/170%).

The WG1616123-3R/-4R MS/MSD RPDs, performed on L2211032-03, are outside the acceptance criteria for perfluorononanesulfonic acid (pfns) (35%) and n-methyl perfluorooctanesulfonamidoacetic acid (nmefosaa) (31%).

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211032-01: The sample was centrifuged and decanted prior to extraction due to sample matrix. The sample

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

Case Narrative (continued)

has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix. Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1613500-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1613500-4: This blank represents the oxidation blank associated with L2211032-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 03/24/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 12:44
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.994	J	ng/l	1.76	0.360	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.76	0.349	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.76	0.398	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.76	0.289	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	0.222	J	ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	0.402	J	ng/l	1.76	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	17.6	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.07	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.987	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.571	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.864	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.511	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.709	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.328	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	0.874	J	ng/l	1.76	0.218	1

Project Name: VT DEC P2 GSP
Lab Number: L2211032
Project Number: Not Specified
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**226**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**358**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	132		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**302**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**19**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**30**	Q	55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**5**	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**13**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 23:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	13.8	J	ng/l	20.0	0.816	1
Perfluoropentanoic Acid (PFPeA)	3.15	J	ng/l	4.00	0.792	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	4.00	0.476	1
Perfluorohexanoic Acid (PFHxA)	1.72	J	ng/l	4.00	0.656	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	4.00	0.490	1
Perfluoroheptanoic Acid (PFHpA)	0.464	J	ng/l	4.00	0.450	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	4.00	0.752	1
Perfluorooctanoic Acid (PFOA)	0.592	J	ng/l	4.00	0.472	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	4.00	1.38	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	4.00	0.624	1
Perfluorooctanesulfonic Acid (PFOS)	1.02	J	ng/l	4.00	1.01	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	4.00	0.608	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	4.00	2.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	4.00	0.520	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	4.00	1.96	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	4.00	0.744	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	4.00	0.654	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	4.00	0.496	1

Project Name: VT DEC P2 GSP
Lab Number: L2211032
Project Number: Not Specified
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT
Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	2		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**233**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**196**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-02
Client ID: FIELD BLANK-GSP
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 13:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.92	0.392	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.92	0.381	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.229	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.435	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.315	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.236	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.92	0.216	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.362	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.92	0.227	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.662	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.92	0.485	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.292	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.16	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.623	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.942	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.558	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.773	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.358	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.315	1
Perfluorotetradecanoic Acid (PFTA)	0.912	J	ng/l	1.92	0.238	1

Project Name: VT DEC P2 GSP
Lab Number: L2211032
Project Number: Not Specified
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-02
Client ID: FIELD BLANK-GSP
Sample Location: BRATTLEBORO, VT
Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-03 RE\R
Client ID: GSP-SLUDGE
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 12:29
Analyst: RS
Percent Solids: 13%

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	14.8	0.670	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	14.8	1.36	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	7.38	1.15	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	29.5	1.90	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	14.8	1.55	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	29.5	2.46	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	7.38	1.33	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	7.38	1.79	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	7.38	1.24	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	14.8	5.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	14.8	4.03	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	7.38	2.21	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	73.8	3.84	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	7.38	1.98	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	14.8	8.48	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	29.5	8.83	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	14.8	5.95	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	14.8	1.38	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	14.8	4.52	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	14.8	2.89	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	14.8	2.50	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	14.8	2.07	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	14.8	6.04	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	14.8	1.59	1

Project Name: VT DEC P2 GSP **Lab Number:** L2211032

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-03 RE\R Date Collected: 02/25/22 13:40

Client ID: GSP-SLUDGE Date Received: 03/02/22

Sample Location: BRATTLEBORO, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**224**	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**324**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**74**	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	32		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**207**	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**162**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**877**	Q	24-159

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Lab ID: L2211032-01
Client ID: GSP-EFFLUENT
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:30
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.994	J	ng/l	13.8	J	ng/l	12.8	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	3.15	J	ng/l	3.15	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.72	J	ng/l	1.72	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.222	J	ng/l	0.464	J	ng/l	0.242	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.402	J	ng/l	0.592	J	ng/l	0.190	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.02	J	ng/l	1.02	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	0.874	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							19.1	J	ng/l

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.936	J	ng/l	2.00	0.248

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/09/22 07:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/08/22 04:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1612872-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	74		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 17:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					
Perfluorobutanoic Acid (PFBA)	6.08	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	1.05	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.540	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/16/22 18:19
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 04:23

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1613500-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**216**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**189**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**164**	Q	50-150

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1616123-1 R					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	0.027

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1616123-1 R					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	111		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	97		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	113		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	98		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	106		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	112		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	102		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	102		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	115		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	104		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	105		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	96		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	103		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	112		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	97		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	112		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	103		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1612872-2								
Perfluorotridecanoic Acid (PFTrDA)	110		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								
Perfluorobutanoic Acid (PFBA)	90		88		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	91		88		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		88		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	89		90		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	90		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		98		69-177	0		30
Perfluorooctanoic Acid (PFOA)	87		87		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		96		61-179	5		30
Perfluorononanoic Acid (PFNA)	90		91		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	90		97		52-151	7		30
Perfluorodecanoic Acid (PFDA)	87		87		63-171	0		30
Perfluorononanesulfonic Acid (PFNS)	92		100		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	94		87		60-153	8		30
Perfluorodecanesulfonic Acid (PFDS)	90		97		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	97		89		67-153	9		30
Perfluorotridecanoic Acid (PFTrDA)	108		101		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	94		92		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1613500-2 WG1613500-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		93		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		88		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1616123-2								
Perfluorobutanoic Acid (PFBA)	87		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	87		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	86		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	93		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	87		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	85		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	82		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	91		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	88		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	84		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	90		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	82		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	85		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	90		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1616123-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	89		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	65				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94				24-159

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: GSP-EFFLUENT												
Perfluorobutanoic Acid (PFBA)	0.994J	37.2	37.9	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	37.2	38.4	103		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.1	31.9	96		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.8	38.3	110		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	37.2	36.4	98		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	44.3	127		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.222J	37.2	38.0	101		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34	53.8	158		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.402J	37.2	37.7	100		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.4	38.4	108		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.4	34.6	98		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	37.2	36.6	98		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.6	51.0F	146		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.2	37.8	102		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.7	36.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	35.3	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	37.6	101		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	39.7	107		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	24.4	68		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	36.9F	99		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.2	35.1	94		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	37.5	101		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-3 QC Sample: L2211032-01 Client ID: GSP-EFFLUENT												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	47.5	128		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	0.874J	37.2	44.3	117		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**276**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**204**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**395**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**16**	Q			27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	26				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**36**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	84				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**6**	Q			10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified
Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: GSP-SLUDGE												
Perfluorobutanoic Acid (PFBA)	ND	145	134	93		123	90		71-135	9		30
Perfluoropentanoic Acid (PFPeA)	ND	145	135	93		126	93		69-132	7		30
Perfluorobutanesulfonic Acid (PFBS)	ND	129	122	95		108	89		72-128	12		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	136	136	100		126	99		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	ND	145	136	94		124	91		70-132	9		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	136	134	98		121	95		73-123	10		30
Perfluoroheptanoic Acid (PFHpA)	ND	145	140	97		126	93		71-131	11		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	132	140	106		132	106		67-130	6		30
Perfluorooctanoic Acid (PFOA)	ND	145	130	90		126	93		69-133	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	138	146	106		133	103		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	138	140	101		126	97		70-132	11		30
Perfluorononanoic Acid (PFNA)	ND	145	137	95		125	92		72-129	9		30
Perfluorooctanesulfonic Acid (PFOS)	ND	134	148	110		132	105		68-136	11		30
Perfluorodecanoic Acid (PFDA)	ND	145	147	101		131	96		69-133	12		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	139	159	114		131	100		65-137	19		30
Perfluorononanesulfonic Acid (PFNS)	ND	139	35.0	**25**	Q	24.6J	**19**	Q	69-125	**35**	Q	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	145	155	107		113	83		63-144	**31**	Q	30
Perfluoroundecanoic Acid (PFUnA)	ND	145	135	93		127	93		64-136	6		30
Perfluorodecanesulfonic Acid (PFDS)	ND	140	47.4	**34**	Q	43.1	**33**	Q	59-134	10		30
Perfluorooctanesulfonamide (FOSA)	ND	145	126F	87		97.1	71		67-137	26		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	145	127	88		131	96		61-139	3		30
Perfluorododecanoic Acid (PFDoA)	ND	145	145	100		115	85		69-135	23		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: GSP-SLUDGE												
Perfluorotridecanoic Acid (PFTrDA)	ND	145	244	**168**	Q	231	**170**	Q	66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	145	140	97		131	96		69-133	7		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		30		19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**229**	Q	**230**	Q	14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**319**	Q	**282**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**211**	Q	**172**	Q	34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		107		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		**160**	Q	61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**73**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		72		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**66**	Q	**65**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		111		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**151**	Q	**194**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**866**	Q	**1087**	Q	24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		68		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		61		10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		103		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**74**	Q	**73**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		113		74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.79JF	1.88JF	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.225J	0.272J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.739JF	0.863JF	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**217**	Q	**199**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**176**	Q	**150**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		76		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		97		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		90		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		94		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		27		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		108		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		93		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1612872-4 QC Sample: L2211036-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		87		22-136

INORGANICS
&
MISCELLANEOUS

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

SAMPLE RESULTS

Lab ID: L2211032-03
Client ID: GSP-SLUDGE
Sample Location: BRATTLEBORO, VT

Date Collected: 02/25/22 13:40
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	12.9		%	0.100	0.100	1	-	03/03/22 17:56	121,2540G	AT

Lab Duplicate Analysis

Batch Quality Control

Project Name: VT DEC P2 GSP

Project Number: Not Specified

Lab Number: L2211032

Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1611426-1 QC Sample: L2210901-21 Client ID: DUP Sample						
Solids, Total	88.8	88.3	%	1		10

Project Name: VT DEC P2 GSP
Project Number: Not Specified

Lab Number: L2211032
Report Date: 03/24/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211032-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211032-01B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211032-01C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211032-01D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211032-02A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211032-03A	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2 GSP	**Lab Number:**	L2211032
Project Number:	Not Specified	**Report Date:**	03/24/22

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211032

Client Information

Client: Weston + Sampson
Address: 65 Main St, Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC P2 GSP
Project Location: Brattleboro, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report to MDL.
Send results to larosas@wseinc.com AND Reilly.Margaret@wseinc.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: 537.1 Isotope 537 PFAS TOP	SAMPLE HANDLING	TOTAL # BOTTLES
11032-01	GSP Effluent	2/25/2022	1330	WW	MLR	X	X	
02	Field Blank-GSP	2/25/2022	1330	WW	MLR	X		
03	GSP-Sludge	2/25/2022	1340	S	MLR	X		

Container Type: 4 2
Preservative: X X

SAMPLE HANDLING: Filtration ☐ Done ☐ Not needed ☐ Lab to do; Preservation ☐ Lab to do (Please specify below)

Sample Specific Comments

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly Fedex	2/25/2022 1600	Fedex	2/25/2022 1600
			3/4/22 1458

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2212981
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	COLLINS AERO
Project Number:	Not Specified
Report Date:	04/04/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2212981-01	SLUDGE-03082022	SLUDGE	VERGENNES, VT	03/08/22 09:35	03/11/22
L2212981-02	EFFLUENT-03082022	WATER	VERGENNES, VT	03/08/22 09:30	03/11/22
L2212981-03	DI RINSE 03082022	WATER	VERGENNES, VT	03/08/22 09:50	03/11/22

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2212981-01R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

L2212981-01R and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1616123-1R and WG1616123-2R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2212981-02 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2212981-02 and -03: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1618396-4: This blank represents the oxidation blank associated with L2212981-02 and -03.

WG1618396-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1618396-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 04/04/22

ORGANICS

SEMIVOLATILES

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-01 R
Client ID: SLUDGE-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:35
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 13:19
Analyst: RS
Percent Solids: 32%

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.758	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.758	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.379	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.52	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.758	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.52	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.379	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.379	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.379	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.881		ng/g	0.758	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.758	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.379	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.379	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.379	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.758	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.52	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.758	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.758	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.758	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.758	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.758	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.758	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.758	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.758	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-01 R
Client ID: SLUDGE-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:35
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	68		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**60**	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**68**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**200**	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**8**	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	108		24-159

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02
Client ID: EFFLUENT-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:30
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 21:25
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.75		ng/l	1.94	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.94	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.94	--	1
Perfluorohexanoic Acid (PFHxA)	2.45		ng/l	1.94	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.94	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.94	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.94	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.64		ng/l	1.94	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.94	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.94	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02 Date Collected: 03/08/22 09:30

Client ID: EFFLUENT-03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	32		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**29**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**228**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**167**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	96		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**133**	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02
Client ID: EFFLUENT-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:30
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 00:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.1	--	1
Perfluoropentanoic Acid (PFPeA)	6.51		ng/l	2.02	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.02	--	1
Perfluorohexanoic Acid (PFHxA)	5.95		ng/l	2.02	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.02	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.02	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.02	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.02	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.02	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.02	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.02	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.02	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.02	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.02	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.02	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.02	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.02	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.02	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-02 Date Collected: 03/08/22 09:30

Client ID: EFFLUENT-03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**178**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**196**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**193**	Q	50-150

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03
Client ID: DI RINSE 03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:50
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 21:42
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.44	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.44	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.44	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.44	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.44	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.44	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.44	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.44	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.44	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.22		ng/l	2.44	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.44	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.44	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.44	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.44	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.44	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.44	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.44	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.44	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.44	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.44	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.44	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.44	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.44	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.44	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03 Date Collected: 03/08/22 09:50

Client ID: DI RINSE 03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	113		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		22-136

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03
Client ID: DI RINSE 03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:50
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 01:01
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	12.3	--	1
Perfluoropentanoic Acid (PFPeA)	2.50		ng/l	2.46	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.46	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.46	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.46	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.46	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.46	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.46	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.46	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.46	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.46	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.46	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.46	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.46	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.46	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.46	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.46	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.46	--	1

Project Name: COLLINS AERO **Lab Number:** L2212981

Project Number: Not Specified **Report Date:** 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-03 Date Collected: 03/08/22 09:50

Client ID: DI RINSE 03082022 Date Received: 03/11/22

Sample Location: VERGENNES, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**191**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**210**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**210**	Q	50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Lab ID: L2212981-02
Client ID: EFFLUENT-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:30
Date Received: 03/11/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	2.75		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	6.51		ng/l	6.51		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	2.45		ng/l	5.95		ng/l	3.50		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							10		ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Lab ID: L2212981-03
Client ID: DI RINSE 03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:50
Date Received: 03/11/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.50		ng/l	2.50		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							2.5		ng/l

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1616123-1 R					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.250	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.250	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.250	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.125	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.125	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.250	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.250	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.125	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.125	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.125	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.250	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.250	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.250	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.250	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.250	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.250	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.250	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.250	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.250	--

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/21/22 11:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 06:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1616123-1 R					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	111		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		24-159

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 20:52
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03 Batch: WG1618248-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/22/22 20:52
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/22/22 06:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03 Batch: WG1618248-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	114		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98		22-136

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/29/22 23:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/29/22 23:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	120		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		22-136

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 01:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/30/22 01:18
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/23/22 06:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02-03 Batch: WG1618396-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**176**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**203**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**192**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1616123-2								
Perfluorobutanoic Acid (PFBA)	87		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	87		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	86		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	93		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	85		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	87		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	85		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	82		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	91		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	88		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	84		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	90		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	82		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	85		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	90		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: COLLINS AERO

Project Number: Not Specified

Lab Number: L2212981

Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1616123-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	89		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	65				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94				24-159

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618248-2								
Perfluorobutanoic Acid (PFBA)	90		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	97		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	91		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	94		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	100		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	84		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	90		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	93		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	86		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	98		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	84		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	85		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	98		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	88		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: COLLINS AERO

Project Number: Not Specified

Lab Number: L2212981

Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618248-2								
Perfluorotridecanoic Acid (PFTrDA)	112		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	97		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	110				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	114				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	58				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618396-2 WG1618396-3								
Perfluorobutanoic Acid (PFBA)	99		100		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	102		102		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	93		94		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	108		108		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	112		114		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	102		106		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	117		119		69-177	2		30
Perfluorooctanoic Acid (PFOA)	104		108		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	90		91		61-179	1		30
Perfluorononanoic Acid (PFNA)	99		99		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	107		112		52-151	5		30
Perfluorodecanoic Acid (PFDA)	103		100		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	85		92		48-150	8		30
Perfluoroundecanoic Acid (PFUnA)	124		122		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	85		90		38-156	6		30
Perfluorododecanoic Acid (PFDoA)	107		100		67-153	7		30
Perfluorotridecanoic Acid (PFTrDA)	98		105		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	100		101		59-182	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02-03 Batch: WG1618396-2 WG1618396-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	122		123		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		118		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		107		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		103		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	116		119		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		112		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		104		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		93		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	145	134	93		123	90		71-135	9		30
Perfluoropentanoic Acid (PFPeA)	ND	145	135	93		126	93		69-132	7		30
Perfluorobutanesulfonic Acid (PFBS)	ND	129	122	95		108	89		72-128	12		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	136	136	100		126	99		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	ND	145	136	94		124	91		70-132	9		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	136	134	98		121	95		73-123	10		30
Perfluoroheptanoic Acid (PFHpA)	ND	145	140	97		126	93		71-131	11		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	132	140	106		132	106		67-130	6		30
Perfluorooctanoic Acid (PFOA)	ND	145	130	90		126	93		69-133	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	138	146	106		133	103		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	138	140	101		126	97		70-132	11		30
Perfluorononanoic Acid (PFNA)	ND	145	137	95		125	92		72-129	9		30
Perfluorooctanesulfonic Acid (PFOS)	ND	134	148	110		132	105		68-136	11		30
Perfluorodecanoic Acid (PFDA)	ND	145	147	101		131	96		69-133	12		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	139	159	114		131	100		65-137	19		30
Perfluorononanesulfonic Acid (PFNS)	ND	139	35.0	**25**	Q	ND	**19**	Q	69-125	NC	Q	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	145	155	107		113	83		63-144	**31**	Q	30
Perfluoroundecanoic Acid (PFUnA)	ND	145	135	93		127	93		64-136	6		30
Perfluorodecanesulfonic Acid (PFDS)	ND	140	47.4	**34**	Q	43.1	**33**	Q	59-134	10		30
Perfluorooctanesulfonamide (FOSA)	ND	145	126F	87		97.1	71		67-137	26		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	145	127	88		131	96		61-139	3		30
Perfluorododecanoic Acid (PFDoA)	ND	145	145	100		115	85		69-135	23		30

Matrix Spike Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1616123-3 WG1616123-4 QC Sample: L2211032-03 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	145	244	**168**	Q	231	**170**	Q	66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	ND	145	140	97		131	96		69-133	7		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		30		19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**229**	Q	**230**	Q	14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**319**	Q	**282**	Q	20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**211**	Q	**172**	Q	34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		107		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		**160**	Q	61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**73**	Q	**67**	Q	75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		72		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**66**	Q	**65**	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		111		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**151**	Q	**194**	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**866**	Q	**1087**	Q	24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		68		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		61		10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		103		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	**74**	Q	**73**	Q	75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		72		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		113		74-139

Matrix Spike Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-3 QC Sample: L2213286-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	38.2	33.6	88		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	38.2	34.1	89		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.9	29.9	88		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.8	32.9	92		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	38.2	33.8	88		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36	32.1	89		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	38.2	34.7	91		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34.9	33.7	97		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	38.2	30.5	80		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	36.3	37.4	103		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.4	34.6	95		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.2	33.0	86		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.4	32.0	90		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.2	33.5	88		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.6	39.2	107		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.7	37.4	102		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.2	35.9	94		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.2	30.6	80		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.9	37.7	102		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.2	31.6	83		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	38.2	32.9	86		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.2	34.5	90		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified
Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-3 QC Sample: L2213286-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	38.2	39.3	103		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.2	34.9	91		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	372	378	102		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36.1	30.0	83		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	38.2	39.2	103		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	38.2	10.7	28		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	110				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	122				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	116				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	109				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: COLLINS AERO

Project Number: Not Specified

Lab Number: L2212981

Report Date: 04/04/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-3 QC Sample: L2213286-02 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	108				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	51				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	119				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-4 QC Sample: L2213286-03 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-4 QC Sample: L2213286-03 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		111		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		132		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**116**		**132**	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82		91		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		101		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		110		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		132		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		122		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	97		106		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114		121		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		126		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		121		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		114		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 QC Batch ID: WG1618248-4 QC Sample: L2213286-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		99		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	116		124		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101		107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		111		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		108		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		94		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	76		88		10-206

INORGANICS
&
MISCELLANEOUS

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

SAMPLE RESULTS

Lab ID: L2212981-01
Client ID: SLUDGE-03082022
Sample Location: VERGENNES, VT

Date Collected: 03/08/22 09:35
Date Received: 03/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	31.8		%	0.100	--	1	-	03/13/22 13:11	121,2540G	AT

Lab Duplicate Analysis
Batch Quality Control

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1615024-1 QC Sample: L2212150-01 Client ID: DUP Sample						
Solids, Total	41.9	42.5	%	1		10

Project Name: COLLINS AERO
Project Number: Not Specified

Lab Number: L2212981
Report Date: 04/04/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2212981-01A	Plastic 8oz unpreserved	A	NA		4.8	Y	Absent		A2-TS(7),A2-537-ISOTOPE(14)
L2212981-02A	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-02B	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-02C	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2212981-02D	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2212981-03A	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-03B	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-537-ISOTOPE(14)
L2212981-03C	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2212981-03D	Plastic 250ml unpreserved	A	NA		4.8	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: COLLINS AERO
Project Number:

Lab Number: L2212981
Report Date: 04/04/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	COLLINS AERO	**Lab Number:**	L2212981
Project Number:	Not Specified	**Report Date:**	04/04/22

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

REFERENCES

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:04042217:30

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 3/12/22

ALPHA Job #: L2212981

Client Information

Client: Weston+Sampson
Address: 98 S Main St Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com [illegible]

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Collins Aero
Project Location: Vergennes, VT
Project #:
Project Manager: Steven LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:
invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Report to MDL
Send Results to larosas@wseinc.com AND Reilly.Margaret@wseinc.com.

ANALYSIS: 537 Isotope; PFAS TOP

SAMPLE HANDLING
Filtration ________
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 Isotope	PFAS TOP	Sample Specific Comments	TOTAL # BOTTLES
12981-01	Sludge-03082022	3/8/22	0935	S	MLR	X			1
-02	Effluent-03082022	3/8/22	0930	WW	MLR	X	X		4
-03	DI Rinse-03082022	3/8/22	0950	WW	MLR	X	X		4

	537 Isotope	PFAS TOP
Container Type	P	P
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	3/11/22 1100	Lobby	3/11/22 1100
B. Lyons AAL	3/11/22 1451	[illegible]	3/12/22 0010
B. Lyons	3/11/22 19:17	[illegible] AAL	3/12/22 0200

AAL 3/12/22 0500
[illegible] 3/12/22 2:00

MCR AAL 3/12/22 0500

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions.
See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2211028
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC PFAS P2
Project Number:	Not Specified
Report Date:	03/24/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2211028-01	BLACK EFFLUENT-03012022	WATER	SWANTON, VT	03/01/22 10:25	03/02/22
L2211028-02	FIELD BLANK-03012022	WATER	SWANTON, VT	03/01/22 10:30	03/02/22

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028
Project Number: Not Specified **Report Date:** 03/24/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2211028-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2211028-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2211028-01: The sample was extracted with the method required holding time exceeded.

L2211028-01 and WG1615723-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2211028-01 and WG1615723-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

WG1615723-4: This blank represents the oxidation blank associated with L2211028-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 03/24/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01
Client ID: BLACK EFFLUENT-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:25
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 18:03
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 16:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.62		ng/l	1.92	0.393	1
Perfluoropentanoic Acid (PFPeA)	2.26		ng/l	1.92	0.381	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.229	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.435	1
Perfluorohexanoic Acid (PFHxA)	0.531	J	ng/l	1.92	0.316	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.236	1
Perfluoroheptanoic Acid (PFHpA)	0.762	J	ng/l	1.92	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.362	1
Perfluorooctanoic Acid (PFOA)	0.951	JF	ng/l	1.92	0.227	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.662	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	0.720	J	ng/l	1.92	0.485	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.293	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.17	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.624	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.943	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.558	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.774	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.358	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.315	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.239	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01 Date Collected: 03/01/22 10:25

Client ID: BLACK EFFLUENT-03012022 Date Received: 03/02/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**146**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**180**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	41		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	50		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	121		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**303**	Q	22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01
Client ID: BLACK EFFLUENT-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:25
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 06:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	31.7	J	ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	5.70	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	1.80	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	1.24	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-01 Date Collected: 03/01/22 10:25

Client ID: BLACK EFFLUENT-03012022 Date Received: 03/02/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**221**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**176**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**154**	Q	50-150

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-02
Client ID: FIELD BLANK-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:30
Date Received: 03/02/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 18:20
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 16:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.369	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	0.358	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.215	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.409	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.81	0.297	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.586	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.887	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.224	1

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

SAMPLE RESULTS

Lab ID: L2211028-02 Date Collected: 03/01/22 10:30

Client ID: FIELD BLANK-03012022 Date Received: 03/02/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Lab ID: L2211028-01
Client ID: BLACK EFFLUENT-03012022
Sample Location: SWANTON, VT

Date Collected: 03/01/22 10:25
Date Received: 03/02/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	3.62		ng/l	31.7	J	ng/l	28.1		ng/l
Perfluoropentanoic Acid (PFPeA)	2.26		ng/l	5.70	J	ng/l	3.44		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.531	J	ng/l	1.80	J	ng/l	1.27	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.762	J	ng/l	1.24	J	ng/l	0.478	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.951	JF	ng/l	ND		ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	0.720	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							33.3	J	ng/l

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 13:35
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1614271-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/11/22 13:35
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1614271-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/13/22 11:12
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/10/22 15:59

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1614271-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	98		10-112

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 05:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 05:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		22-136

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 06:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-4					
Perfluorobutanoic Acid (PFBA)	5.48	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.588	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC PFAS P2 **Lab Number:** L2211028

Project Number: Not Specified **Report Date:** 03/24/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 03/20/22 06:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 03/16/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1615723-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**207**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	**168**	Q	50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	148		50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1614271-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	99		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	99		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	96		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	108		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	92		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	96		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	98		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	102		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	110		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	90		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	110		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	91		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	94		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2211028

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1614271-2								
Perfluorotridecanoic Acid (PFTrDA)	112		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	98		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	123				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	115				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2211028

Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab	Associated sample(s): 01-02		Batch: WG1614271-2					
Perfluorooctanesulfonamide (FOSA)	122		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	100				10-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1615723-2 WG1615723-3								
Perfluorobutanoic Acid (PFBA)	88		86		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	89		87		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	84		84		65-157	0		30
Perfluorohexanoic Acid (PFHxA)	88		88		69-168	0		30
Perfluoropentanesulfonic Acid (PFPeS)	89		87		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	90		89		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		96		69-177	2		30
Perfluorooctanoic Acid (PFOA)	94		92		63-159	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	97		98		61-179	1		30
Perfluorononanoic Acid (PFNA)	91		89		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	98		99		52-151	1		30
Perfluorodecanoic Acid (PFDA)	90		93		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	104		101		48-150	3		30
Perfluoroundecanoic Acid (PFUnA)	92		91		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	91		91		38-156	0		30
Perfluorododecanoic Acid (PFDoA)	96		92		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	111		108		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	97		95		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1615723-2 WG1615723-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		107		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		108		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		90		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		89		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		93		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		89		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		79		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-3 QC Sample: L2211572-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	1.99	39.1	37.6	91		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	1.61J	39.1	36.9	90		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	34.7	32.8	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.6	36.0	98		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	1.85J	39.1	37.6	92		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36.8	35.2	96		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	1.28J	39.1	37.9	94		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	35.7	37.4	105		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	2.15	39.1	38.6	93		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.62J	37.2	40.9	106		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	37.3	37.6	101		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	39.1	36.3	93		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	36.2	34.2	94		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	39.1	36.3	93		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.5	43.7	117		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.6	37.3	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.1	36.2	93		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.1	33.2	85		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.7	37.1	98		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.1	34.6	89		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	39.1	35.6	91		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.1	36.4	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC PFAS P2

Project Number: Not Specified

Lab Number: L2211028

Report Date: 03/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-3 QC Sample: L2211572-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	39.1	43.0	110		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.1	35.8	92		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	84				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-4 QC Sample: L2211572-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	0.433J	0.437J	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.637J	0.707J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	0.512JF	0.510J	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.592J	0.537J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.946J	0.916J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-4 QC Sample: L2211572-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		78		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		93		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62		59		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		69		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		76		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		70		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		72		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		71		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		107		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		19		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		96		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1614271-4 QC Sample: L2211572-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		93		22-136

Project Name: VT DEC PFAS P2
Project Number: Not Specified

Lab Number: L2211028
Report Date: 03/24/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2211028-01A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211028-01B	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)
L2211028-01C	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211028-01D	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2211028-02A	Plastic 250ml unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC PFAS P2	**Lab Number:**	L2211028
Project Number:	Not Specified	**Report Date:**	03/24/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:03242213:07

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/2/22

ALPHA Job #: L2211028

Client Information

Client: Weston & Sampson
Address: 183 Main St
Waterbury, VT
Phone:
Fax:
Email: laresas@wseinc.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: VTDEC PFAS P2
Project Location: Swanton, VT
Project #:
Project Manager: Steve LaRosa
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

VTDEC EQUIS

Billing Information

☐ Same as Client info PO #:

invoice@wseinc.com

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:
email results to laresas@wseinc.com AND
reilly.margaret@wseinc.com.
Report to MDL

ANALYSIS: 537.1 Isotope DIL; PFAS TOP

SAMPLE HANDLING
Filtration ____
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537.1 Isotope DIL	PFAS TOP	Sample Specific Comments	TOTAL # BOTTLES
11028-01	BackEffluent-030322	3/1/22	1025	WW	MLR	X	X		
02	FieldBlank-030122	3/1/22	1030	WW	MLR	X			

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Margaret Reilly	3/1/22 1240	Pack + Send	3/1/22 1240
Fedex			3/2/22 1458

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2232459
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT PRECISION TOOLS
Project Number:	Not Specified
Report Date:	07/11/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2232459-01	POND	WATER	SWANTON, VT	06/13/22 09:55	06/17/22
L2232459-02	DRAIN	WATER	SWANTON, VT	06/13/22 09:40	06/17/22

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2232459-02: The sample was centrifuged and decanted prior to extraction due to sample matrix.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2232459-02 and WG1655833-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2232459-02: The sample was centrifuged and decanted prior to extraction due to sample matrix.

WG1655833-4: This blank represents the oxidation blank associated with L2232459-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Alycia Mogayzel

Title: Technical Director/Representative Date: 07/11/22

ORGANICS

SEMIVOLATILES

Project Name: VT PRECISION TOOLS
Lab Number: L2232459
Project Number: Not Specified
Report Date: 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02
Client ID: DRAIN
Sample Location: SWANTON, VT

Date Collected: 06/13/22 09:40
Date Received: 06/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/08/22 04:07
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 06/26/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.80		ng/l	1.78	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.78	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.84		ng/l	1.78	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.42		ng/l	1.78	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	--	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	--	1

Project Name: VT PRECISION TOOLS **Lab Number:** L2232459

Project Number: Not Specified **Report Date:** 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02 Date Collected: 06/13/22 09:40

Client ID: DRAIN Date Received: 06/17/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		22-136

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02
Client ID: DRAIN
Sample Location: SWANTON, VT

Date Collected: 06/13/22 09:40
Date Received: 06/17/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 11:02
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	8.98	--	1
Perfluoropentanoic Acid (PFPeA)	3.40		ng/l	1.80	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	--	1
Perfluorohexanoic Acid (PFHxA)	3.20		ng/l	1.80	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.80	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	--	1

Project Name: VT PRECISION TOOLS **Lab Number:** L2232459

Project Number: Not Specified **Report Date:** 07/11/22

SAMPLE RESULTS

Lab ID: L2232459-02 Date Collected: 06/13/22 09:40

Client ID: DRAIN Date Received: 06/17/22

Sample Location: SWANTON, VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	60		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	99		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	83		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	87		50-150

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Lab ID: L2232459-02
Client ID: DRAIN
Sample Location: SWANTON, VT

Date Collected: 06/13/22 09:40
Date Received: 06/17/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	1.80		ng/l	ND		ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	3.40		ng/l	3.40		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	3.20		ng/l	3.20		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	2.42		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6.6		ng/l

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/30/22 18:09
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 06/26/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1655507-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/30/22 18:09
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 06/26/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1655507-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	84		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 09:56
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 09:56
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		22-136

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 10:46
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-4					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 07/10/22 10:46
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 06/27/22 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 02 Batch: WG1655833-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	75		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	56		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	96		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	84		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	86		50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1655507-2								
Perfluorobutanoic Acid (PFBA)	102		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	101		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	119		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	101		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	103		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	114		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	106		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	116		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	116		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	126		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	110		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	118		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	89		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	127		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	106		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	104		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT PRECISION TOOLS

Project Number: Not Specified

Lab Number: L2232459

Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1655507-2								
Perfluorotridecanoic Acid (PFTrDA)	140		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	138		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	110				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1655833-2 WG1655833-3								
Perfluorobutanoic Acid (PFBA)	101		103		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	98		102		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	99		101		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	99		101		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	102		107		52-156	5		30
Perfluoroheptanoic Acid (PFHpA)	98		98		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	117		122		69-177	4		30
Perfluorooctanoic Acid (PFOA)	106		104		63-159	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	101		112		61-179	10		30
Perfluorononanoic Acid (PFNA)	98		99		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	109		116		52-151	6		30
Perfluorodecanoic Acid (PFDA)	101		107		63-171	6		30
Perfluorononanesulfonic Acid (PFNS)	101		122		48-150	19		30
Perfluoroundecanoic Acid (PFUnA)	108		115		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	100		97		38-156	3		30
Perfluorododecanoic Acid (PFDoA)	109		106		67-153	3		30
Perfluorotridecanoic Acid (PFTrDA)	114		123		48-158	8		30
Perfluorotetradecanoic Acid (PFTA)	94		96		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 02 Batch: WG1655833-2 WG1655833-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		86		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		89		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		81		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		77		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		73		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified
Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-3 QC Sample: L2233499-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.7	36.8	98		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	36.7	37.8	101		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.6	32.5	100		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.4	39.8	115		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	36.7	36.6	100		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.6	35.0	101		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.7	37.2	100		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33.6	38.7	115		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	36.7	38.6	104		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35	39.0	112		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35	42.1	120		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	36.7	42.4	115		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.1	41.7	122		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.7	39.9	109		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.3	38.4	109		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.3	37.4	106		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.7	39.1	106		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.7	33.4	91		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.5	34.2	96		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.7	41.0	112		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.7	32.0	87		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.7	40.2	109		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT PRECISION TOOLS

Project Number: Not Specified

Lab Number: L2232459

Report Date: 07/11/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-3 QC Sample: L2233499-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.7	51.4	140		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.7	52.4	143		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	358	393F	110		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.8	35.7	103		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.7	38.5	105		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	36.7	12.3	34		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**155**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	80				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	80				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: VT PRECISION TOOLS

Project Number: Not Specified

Lab Number: L2232459

Report Date: 07/11/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-3 QC Sample: L2233499-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	67				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-4 QC Sample: L2233499-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-4 QC Sample: L2233499-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		84		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**186**	Q	**187**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**184**	Q	**180**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		83		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		89		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115		119		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1655507-4 QC Sample: L2233499-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		66		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		19		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		67		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		53		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		111		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	76		78		10-206

Project Name: VT PRECISION TOOLS
Project Number: Not Specified

Lab Number: L2232459
Report Date: 07/11/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2232459-01A	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-01B	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-01C	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-01D	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		CANCELLED()
L2232459-02A	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-537-ISOTOPE(14)
L2232459-02B	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-537-ISOTOPE(14)
L2232459-02C	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2232459-02D	Plastic 250ml unpreserved	A	NA		3.1	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT PRECISION TOOLS
Project Number:

Lab Number: L2232459
Report Date: 07/11/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

Data Qualifiers

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

Project Name:	VT PRECISION TOOLS	**Lab Number:**	L2232459
Project Number:	Not Specified	**Report Date:**	07/11/22

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

6/18/22 L2232459 Serial_No:07112215:43

con-test ANALYTICAL LABORATORY Alpha

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

http://www.contestlabs.com Doc # 381 Rev 1_03242017

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Company Name: Weston + Sampson
Address: 98 S. Main Waterbury, VT
Phone:
Project Name: VT Precision Tools
Project Location: Swanton, VT
Project Number:
Project Manager: Steven LaRosa
Con-Test Quote Name/Number:
Invoice Recipient: invoice@wseinc.com
Sampled By: Maggie Reilly

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☒
Other: envirodata8
CLP Like Data Pkg Required: ☐
Email To: larosas@wseinc.com
Fax To #: reilly.margaret@wse...

ANALYSIS REQUESTED: PFAS, PFAS TOP

# of Containers
2 Preservation Code
3 Container Code

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	PFAS	PFAS TOP
32459 -01	Pond	6/13/22	0955		X	WW	U	2	2
-02	Drain	6/13/22	0940		X	WW	U	2	2

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Comments: Report to MDL

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

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

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

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

Relinquished by: (signature) Maggie Reilly	Date/Time: 6/13/22 1200
Received by: (signature) [signature]	Date/Time: 6/13/22 1200
Relinquished by: (signature) [signature]	Date/Time: 6/18/22 0400
Received by: (signature) B. Lyons AAL	Date/Time: 6/17/22 14:25
Relinquished by: (signature) B. Lyons	Date/Time: 6/17/22 16:20
Received by: (signature) [signature]	Date/Time: 6/18/22 0030

[signature] 6/18/22 ... 6/18/22 0535 AAL - AAL 6/18/22 0055

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☐ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

con-test® ANALYTICAL LABORATORY www.contestlabs.com

NELAC and AIHA-LAP, LLC Accredited

Project Entity
☐ Government ☐ Municipality ☐ MWRA ☐ WRTA
☐ Federal ☐ 21 J ☐ School
☐ City ☐ Brownfield ☐ MBTA

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

ANALYTICAL REPORT

Lab Number:	L2243719
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDECP2
Project Number:	Not Specified
Report Date:	09/19/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2243719-01	VTPF-WW TANK	WATER	VT	08/03/22 13:00	08/12/22
L2243719-02	EDLUND-WW TANK	WATER	VT	08/03/22 09:40	08/12/22
L2243719-03	BODY COTE-WW TANK	WATER	VT	08/04/22 11:40	08/12/22
L2243719-04	VISHAY-TREATMENT TANK	WATER	VT	08/04/22 09:35	08/12/22

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VTDECP2 **Lab Number:** L2243719
Project Number: Not Specified **Report Date:** 09/19/22

Case Narrative (continued)

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

Perfluorinated Alkyl Acids by Isotope Dilution
L2243719-01D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.
L2243719-01D, -02, -02RE, -03, -04 and WG1680581-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
L2243719-02/RE: The sample was centrifuged and decanted prior to extraction due to sample matrix.
The WG1675760-1 Method Blank, associated with L2243719-02, -03 and -04, has concentrations above the reporting limits for 6:2FTS. The sample was re-extracted with the method required holding time exceeded. The results of both extractions are reported and the original sample results are reported with a "B" qualifier.
The WG1675760-1 Method Blank, associated with L2243719-01D, has a concentration above the reporting limit for 6:2 FTS . The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2243719-01D and -02: The sample was centrifuged and decanted prior to extraction due to sample matrix.
L2243719-01D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.
L2243719-01D, -02, -03, -04 and WG1676075-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
L2243719-03 and WG1676075-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative (continued)

WG1676075-4: This blank represents the oxidation blank associated with L2243719-01D, -02, -03, and -04.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Alycia Mogayzel

Title: Technical Director/Representative Date: 09/19/22

ORGANICS

SEMIVOLATILES

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/28/22 18:06
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	88.5	18.0	50
Perfluoropentanoic Acid (PFPeA)	63.4	J	ng/l	88.5	17.5	50
Perfluorobutanesulfonic Acid (PFBS)	61.6	J	ng/l	88.5	10.5	50
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	88.5	20.0	50
Perfluorohexanoic Acid (PFHxA)	248		ng/l	88.5	14.5	50
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	88.5	10.8	50
Perfluoroheptanoic Acid (PFHpA)	162		ng/l	88.5	9.96	50
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	88.5	16.6	50
Perfluorooctanoic Acid (PFOA)	63.7	J	ng/l	88.5	10.4	50
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	14500		ng/l	88.5	58.9	50
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	88.5	30.4	50
Perfluorononanoic Acid (PFNA)	ND		ng/l	88.5	13.8	50
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	88.5	22.3	50
Perfluorodecanoic Acid (PFDA)	ND		ng/l	88.5	13.4	50
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	88.5	53.6	50
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	88.5	49.6	50
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	118		ng/l	88.5	28.7	50
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	88.5	11.5	50
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	88.5	43.4	50
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	88.5	25.7	50
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	122		ng/l	88.5	35.6	50
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	88.5	16.5	50
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	88.5	14.5	50
Perfluorotetradecanoic Acid (PFTA)	17.3	J	ng/l	88.5	11.0	50

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D Date Collected: 08/03/22 13:00

Client ID: VTPF-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**294**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	84		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/14/22 09:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	391		ng/l	44.3	1.81	5
Perfluoropentanoic Acid (PFPeA)	778		ng/l	8.86	1.75	5
Perfluorobutanesulfonic Acid (PFBS)	37.5		ng/l	8.86	1.05	5
Perfluorohexanoic Acid (PFHxA)	1170		ng/l	8.86	1.45	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	8.86	1.09	5
Perfluoroheptanoic Acid (PFHpA)	277		ng/l	8.86	0.998	5
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	8.86	1.67	5
Perfluorooctanoic Acid (PFOA)	51.2		ng/l	8.86	1.04	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	8.86	3.05	5
Perfluorononanoic Acid (PFNA)	2.13	JF	ng/l	8.86	1.38	5
Perfluorooctanesulfonic Acid (PFOS)	290		ng/l	8.86	2.23	5
Perfluorodecanoic Acid (PFDA)	4.41	JF	ng/l	8.86	1.35	5
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	8.86	4.96	5
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	8.86	1.15	5
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	8.86	4.34	5
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	8.86	1.65	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	8.86	1.45	5
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	8.86	1.10	5

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	4		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	120		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	122		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	122		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	82		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	54		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	71		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 04:10
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	13.4		ng/l	2.13	0.434	1
Perfluoropentanoic Acid (PFPeA)	6.98		ng/l	2.13	0.421	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.13	0.253	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.13	0.481	1
Perfluorohexanoic Acid (PFHxA)	2.41		ng/l	2.13	0.349	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.13	0.261	1
Perfluoroheptanoic Acid (PFHpA)	1.38	J	ng/l	2.13	0.240	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.13	0.400	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.13	0.251	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8.06	B	ng/l	2.13	1.42	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.13	0.732	1
Perfluorononanoic Acid (PFNA)	0.400	JF	ng/l	2.13	0.332	1
Perfluorooctanesulfonic Acid (PFOS)	5.16	F	ng/l	2.13	0.536	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.13	0.323	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.13	1.29	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.13	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.13	0.690	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.13	0.277	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.13	1.04	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.13	0.617	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.24		ng/l	2.13	0.856	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.13	0.396	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.13	0.348	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.13	0.264	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02 Date Collected: 08/03/22 09:40

Client ID: EDLUND-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**17**	Q	62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	71		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**382**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**1180**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**1050**	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**527**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	**1120**	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**729**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**122**	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 18:12
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.05	J	ng/l	9.66	0.394	1
Perfluoropentanoic Acid (PFPeA)	2.54		ng/l	1.93	0.382	1
Perfluorobutanesulfonic Acid (PFBS)	1.02	J	ng/l	1.93	0.230	1
Perfluorohexanoic Acid (PFHxA)	3.63		ng/l	1.93	0.317	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.93	0.237	1
Perfluoroheptanoic Acid (PFHpA)	1.31	J	ng/l	1.93	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	0.386	J	ng/l	1.93	0.363	1
Perfluorooctanoic Acid (PFOA)	3.16		ng/l	1.93	0.228	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	0.664	1
Perfluorononanoic Acid (PFNA)	0.452	J	ng/l	1.93	0.301	1
Perfluorooctanesulfonic Acid (PFOS)	1.50	J	ng/l	1.93	0.487	1
Perfluorodecanoic Acid (PFDA)	0.313	J	ng/l	1.93	0.294	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.93	1.08	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	0.251	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	0.946	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	0.359	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	0.316	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	0.239	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02 Date Collected: 08/03/22 09:40

Client ID: EDLUND-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	18		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	72		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	63		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	66		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-02 RE
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 15:23
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.83		ng/l	1.93	1.28	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**312**	Q	14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		69-131

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 04:27
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.439	J	ng/l	1.98	0.403	1
Perfluoropentanoic Acid (PFPeA)	0.870	J	ng/l	1.98	0.392	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.235	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.98	0.447	1
Perfluorohexanoic Acid (PFHxA)	0.945	J	ng/l	1.98	0.324	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.242	1
Perfluoroheptanoic Acid (PFHpA)	0.308	J	ng/l	1.98	0.223	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	0.546	J	ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.86	B	ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.680	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.98	0.308	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.98	0.498	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.300	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.641	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.969	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.574	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.795	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.324	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03 Date Collected: 08/04/22 11:40

Client ID: BODY COTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**157**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**189**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**45**	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 18:29
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.58	J	ng/l	10.0	0.408	1
Perfluoropentanoic Acid (PFPeA)	1.60	J	ng/l	2.00	0.396	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238	1
Perfluorohexanoic Acid (PFHxA)	3.39		ng/l	2.00	0.328	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245	1
Perfluoroheptanoic Acid (PFHpA)	0.628	J	ng/l	2.00	0.225	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376	1
Perfluorooctanoic Acid (PFOA)	0.692	J	ng/l	2.00	0.236	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504	1
Perfluorodecanoic Acid (PFDA)	0.312	J	ng/l	2.00	0.304	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03 Date Collected: 08/04/22 11:40

Client ID: BODY COTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**67**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	71		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	64		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	69		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-03 RE
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 15:40
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 04:44
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	44.1		ng/l	1.83	0.373	1
Perfluoropentanoic Acid (PFPeA)	1.19	J	ng/l	1.83	0.362	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	0.218	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	0.413	1
Perfluorohexanoic Acid (PFHxA)	0.845	J	ng/l	1.83	0.300	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	0.224	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	0.206	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	0.344	1
Perfluorooctanoic Acid (PFOA)	1.25	JF	ng/l	1.83	0.216	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.80	B	ng/l	1.83	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	0.629	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.83	0.461	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	0.278	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	1.11	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.83	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.83	0.593	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	0.238	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.83	0.896	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	0.530	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.83	0.735	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	0.340	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.83	0.299	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.83	0.227	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04 Date Collected: 08/04/22 09:35

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**235**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	145		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	61		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	40		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 18:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	59.6		ng/l	9.10	0.372	1
Perfluoropentanoic Acid (PFPeA)	2.05		ng/l	1.82	0.360	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	1.04	J	ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.223	1
Perfluoroheptanoic Acid (PFHpA)	0.561	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.342	1
Perfluorooctanoic Acid (PFOA)	1.08	J	ng/l	1.82	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.626	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.459	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.892	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04 Date Collected: 08/04/22 09:35

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	72		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	67		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	55		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	63		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243719-04 RE
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 15:56
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-01
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/03/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	391		ng/l	391		ng/l
Perfluoropentanoic Acid (PFPeA)	63.4	J	ng/l	778		ng/l	715		ng/l
Perfluorobutanesulfonic Acid (PFBS)	61.6	J	ng/l	37.5		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	248		ng/l	1170		ng/l	922		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	162		ng/l	277		ng/l	115		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	63.7	J	ng/l	51.2		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.13	JF	ng/l	2.13	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	290		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	4.41	JF	ng/l	4.41	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	17.3	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							2150	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-02
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 08/03/22 09:40
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	13.4		ng/l	7.05	J	ng/l	0		ng/l
Perfluoropentanoic Acid (PFPeA)	6.98		ng/l	2.54		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.02	J	ng/l	1.02	J	ng/l
Perfluorohexanoic Acid (PFHxA)	2.41		ng/l	3.63		ng/l	1.22		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	1.38	J	ng/l	1.31	J	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	0.386	J	ng/l	0.386	J	ng/l
Perfluorooctanoic Acid (PFOA)	ND		ng/l	3.16		ng/l	3.16		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	0.400	JF	ng/l	0.452	J	ng/l	0.052	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	5.16	F	ng/l	1.50	J	ng/l	0	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	0.313	J	ng/l	0.313	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6.15	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-03
Client ID: BODY COTE-WW TANK
Sample Location: VT

Date Collected: 08/04/22 11:40
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.439	J	ng/l	6.58	J	ng/l	6.14	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.870	J	ng/l	1.60	J	ng/l	0.730	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.945	J	ng/l	3.39		ng/l	2.45		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.308	J	ng/l	0.628	J	ng/l	0.320	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.546	J	ng/l	0.692	J	ng/l	0.146	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	0.312	J	ng/l	0.312	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							10.1	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Lab ID: L2243719-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/04/22 09:35
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	44.1		ng/l	59.6		ng/l	15.5		ng/l
Perfluoropentanoic Acid (PFPeA)	1.19	J	ng/l	2.05		ng/l	0.860		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.845	J	ng/l	1.04	J	ng/l	0.195	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.561	J	ng/l	0.561	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.25	JF	ng/l	1.08	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							17.1	J	ng/l

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.82		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	110		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	120		22-136

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-4					
Perfluorobutanoic Acid (PFBA)	5.07	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.460	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.516	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL

Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-4

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	70		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	72		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	57		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	62		50-150

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	124		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	114		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	134		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorobutanoic Acid (PFBA)	101		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	100		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	95		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	108		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	104		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	106		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	91		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	83		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	96		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	100		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	101		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-04 Batch: WG1676075-2 WG1676075-3								
Perfluorobutanoic Acid (PFBA)	94		92		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	90		90		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		91		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	105		102		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	92		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	110		107		69-177	3		30
Perfluorooctanoic Acid (PFOA)	96		96		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		115		61-179	18		30
Perfluorononanoic Acid (PFNA)	94		104		68-171	10		30
Perfluorooctanesulfonic Acid (PFOS)	104		121		52-151	15		30
Perfluorodecanoic Acid (PFDA)	98		109		63-171	11		30
Perfluorononanesulfonic Acid (PFNS)	104		116		48-150	11		30
Perfluoroundecanoic Acid (PFUnA)	95		81		60-153	16		30
Perfluorodecanesulfonic Acid (PFDS)	104		119		38-156	13		30
Perfluorododecanoic Acid (PFDoA)	95		94		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	102		105		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	83		98		59-182	17		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-04 Batch: WG1676075-2 WG1676075-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	131		127		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		120		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		**134**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		120		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		105		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		108		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		112		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	94		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	99		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	111		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	93		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	89		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	88		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	94		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	91		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	138		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	122				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	125				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	127				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**148**	Q			22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	10.5	37.2	49.4	105		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	12.4	37.2	53.0	109		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	4.49	33	38.6	103		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.9	42.1	121		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	15.2	37.2	56.1	110		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	37.3	106		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	3.77	37.2	43.1	106		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	3.68	34	47.6	129		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	9.79	37.2	53.1	116		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.38B	35.4	45.9	109		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.5	37.2	105		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	2.19F	37.2	45.3	116		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	9.95F	34.5	50.5	117		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	1.29JF	37.2	46.5	122		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.19J	35.7	37.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	31.1	87		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	46.3	124		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	47.8	129		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	17.5F	49		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	40.2F	108		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.18JF	37.2	48.9	128		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	43.0	116		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	46.6	125		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.2	48.7	131		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**358**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**190**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**348**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	34				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**34**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**34**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	85				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.50	36.5	40.6	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	5.48	36.5	42.3	101		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.19	32.4	36.8	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.3	35.8	104		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	5.74	36.5	43.2	102		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.4	34.2	99		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	5.27	36.5	40.0	95		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.987J	33.4	38.7	113		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	10.0F	36.5	43.1	91		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.8	38.9	112		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.9	36.1	104		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	1.97F	36.5	34.8	90		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	71.7	33.9	99.7	83		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	2.21F	36.5	34.1	87		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.1	34.2	98		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.2	35.6	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.5	36.5	100		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	0.621JF	36.5	32.6	88		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.70JF	35.3	52.6	144		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	3.57	36.5	40.1F	100		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.865J	36.5	34.4	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.5	33.9	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243719

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.5	36.2F	99		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.5	28.8	79		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	125				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	115				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**166**	Q			22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	1.35J	1.20J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	5.14	3.86	ng/l	28		30
Perfluoropentanesulfonic Acid (PFPeS)	1.17J	0.786J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.51	2.84	ng/l	21		30
Perfluorohexanesulfonic Acid (PFHxS)	2.19	1.81J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	15.2	11.8	ng/l	25		30
Perfluorononanoic Acid (PFNA)	1.62J	1.35J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	5.38	5.24	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	1.73J	1.55J	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	12.1	6.30	ng/l	**63**	Q	30
Perfluoroundecanoic Acid (PFUnA)	0.297JF	0.608JF	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**192**	Q	**216**	Q	12-142

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		86		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		73		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	78		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		66		62-124
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		63		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56		**54**	Q	55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51		59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		51		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.651J	0.564J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.866J	0.828J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	0.316JF	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	0.271J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.495J	0.613J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.262J	0.468JF	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		85		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		82		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		111		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		63		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		93		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		100		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		108		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		11		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	120		89		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**168**	Q	**147**	Q	22-136

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243719
Report Date: 09/19/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2243719-01A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-01B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-01C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-01D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-02D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-03D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243719-04D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VTDECP2 **Lab Number:** L2243719

Project Number: **Report Date:** 09/19/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243719
Project Number:	Not Specified	**Report Date:**	09/19/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:09192212:46

ALPHA ANALYTICAL

NEW YORK CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 8/13/22

ALPHA Job #: L2243719

Westborough, MA 01581, 8 Walkup Dr., TEL: 508-898-9220, FAX: 508-898-9193

Mansfield, MA 02048, 320 Forbes Blvd, TEL: 508-822-9300, FAX: 508-822-3288

Project Information

Project Name: VTDECP2
Project Location: VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Client Information

Client: Weston + Sampson
Address: 98 S Main St, Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information

☐ Same as Client Info
PO #: invoice@wseinc.com

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Vishay-Treatment tank pH=3.9 Report Enviradata 8
Report to MDL

Please specify Metals or TAL.

ANALYSIS: 537-TOP; 537 ISOTOPE

Sample Filtration: ☐ Done ☐ Lab to do
Preservation: ☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537-TOP	537 ISOTOPE	Sample Specific Comments
43719-01	VTPF - WW Tank	8/13/22	1300	WW	MLR	X	X	May contain high
-02	Edlund - WW Tank	8/3/22	0940	WW	MLR	X	X	levels of PFAS
-03	Body Cote - WW Tank	8/4/22	1140	WW	MLR	X	X	for all samples!
-04	Vishay - Treatment tank	8/4/22	0935	WW	MLR	X	X	3.9 pH!

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, K/E = Zn Ac/NaOH, O = Other

Container Code: P = Plastic, A = Amber Glass, V = Vial, G = Glass, B = Bacteria Cup, C = Cube, O = Other, E = Encore, D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

	537-TOP	537 ISOTOPE
Container Type	P	P
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/4/22 1430	[signature]	8/4/22 1430
[signature]	8/12/22 1430	[signature]	8/12/22 1430
[signature]	8/13/22	[signature]	8/13/22 0030

Wendy Marin 8/13/22 1:30 AAL 8/13/22 0130
AAL 8/13/22 0235 AAL 8/13/22 0255

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2243727
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VTDECP2
Project Number:	Not Specified
Report Date:	09/19/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2243727-01	VTPF-WW TANK	WATER	VT	08/10/22 13:00	08/12/22
L2243727-02	EDLUND-WW TANK	WATER	VT	08/10/22 06:30	08/12/22
L2243727-03	BODYCOTE-WW TANK	WATER	VT	08/10/22 08:45	08/12/22
L2243727-04	VISHAY-TREATMENT TANK	WATER	VT	08/10/22 10:45	08/12/22

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2243727-02: Results for this sample cannot be reported.

L2243727-01D: The sample was centrifuged and decanted prior to extraction due to sample matrix. The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L2243727-01D, -03 and -04: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1675760-1 Method Blank, associated with L2243727-01D, has a concentration above the reporting limit for 6:2 FTS. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

The WG1675760-1 Method Blank, associated with L2243727-03 and -04, has concentrations above the reporting limits for 6:2fts. The sample was re-extracted with the method required holding time exceeded. The results of both extractions are reported and the original sample results are reported with a "B" qualifier.

WG1680581-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2243727-02: Results for this sample cannot be reported.

L2243727-01D: The sample was centrifuged and decanted prior to extraction due to sample matrix. The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L2243727-01D, -03, and -04: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Case Narrative (continued)

different PFAS constituent (Limit 0-25%).

L2243727-03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1676075-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1676075-4: This blank represents the oxidation blank associated with L2243727-01D, -03, and -04.

WG1676075-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 09/19/22

ORGANICS

SEMIVOLATILES

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/28/22 18:23
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	87.9	17.9	50
Perfluoropentanoic Acid (PFPeA)	81.2	J	ng/l	87.9	17.4	50
Perfluorobutanesulfonic Acid (PFBS)	54.3	J	ng/l	87.9	10.5	50
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	21.4	J	ng/l	87.9	19.9	50
Perfluorohexanoic Acid (PFHxA)	309		ng/l	87.9	14.4	50
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	87.9	10.8	50
Perfluoroheptanoic Acid (PFHpA)	164		ng/l	87.9	9.90	50
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	87.9	16.5	50
Perfluorooctanoic Acid (PFOA)	82.3	JF	ng/l	87.9	10.4	50
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	14400		ng/l	87.9	58.6	50
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	87.9	30.2	50
Perfluorononanoic Acid (PFNA)	ND		ng/l	87.9	13.7	50
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	87.9	22.2	50
Perfluorodecanoic Acid (PFDA)	22.0	J	ng/l	87.9	13.4	50
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	87.9	53.3	50
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	87.9	49.2	50
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	64.0	J	ng/l	87.9	28.5	50
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	87.9	11.4	50
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	87.9	43.1	50
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	87.9	25.5	50
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	81.6	J	ng/l	87.9	35.3	50
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	87.9	16.4	50
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	87.9	14.4	50
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	87.9	10.9	50

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D Date Collected: 08/10/22 13:00

Client ID: VTPF-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	117		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**275**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	91		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/14/22 10:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	365		ng/l	48.8	1.99	5
Perfluoropentanoic Acid (PFPeA)	870		ng/l	9.77	1.93	5
Perfluorobutanesulfonic Acid (PFBS)	41.8		ng/l	9.77	1.16	5
Perfluorohexanoic Acid (PFHxA)	1570		ng/l	9.77	1.60	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	9.77	1.20	5
Perfluoroheptanoic Acid (PFHpA)	299		ng/l	9.77	1.10	5
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	9.77	1.84	5
Perfluorooctanoic Acid (PFOA)	78.7		ng/l	9.77	1.15	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	9.77	3.36	5
Perfluorononanoic Acid (PFNA)	3.38	JF	ng/l	9.77	1.52	5
Perfluorooctanesulfonic Acid (PFOS)	328		ng/l	9.77	2.46	5
Perfluorodecanoic Acid (PFDA)	6.43	J	ng/l	9.77	1.48	5
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	9.77	5.47	5
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	9.77	1.27	5
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	9.77	4.79	5
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	9.77	1.82	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	9.77	1.60	5
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	9.77	1.21	5

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-01 D
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	112		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	81		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	66		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	70		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 05:33
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.23	J	ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	1.38	J	ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	0.265	J	ng/l	1.84	0.219	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	0.417	1
Perfluorohexanoic Acid (PFHxA)	1.15	J	ng/l	1.84	0.302	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	0.226	1
Perfluoroheptanoic Acid (PFHpA)	0.490	JF	ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	0.346	1
Perfluorooctanoic Acid (PFOA)	0.682	JF	ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.51	B	ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.634	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.464	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.84	1.03	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.597	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.903	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.534	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.741	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.228	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03 Date Collected: 08/10/22 08:45

Client ID: BODYCOTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**244**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**174**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**171**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	51		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 19:35
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.52	J	ng/l	9.93	0.405	1
Perfluoropentanoic Acid (PFPeA)	1.91	J	ng/l	1.98	0.393	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.236	1
Perfluorohexanoic Acid (PFHxA)	1.33	J	ng/l	1.98	0.326	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.243	1
Perfluoroheptanoic Acid (PFHpA)	0.632	J	ng/l	1.98	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.373	1
Perfluorooctanoic Acid (PFOA)	0.711	J	ng/l	1.98	0.234	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.683	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.98	0.310	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.98	0.500	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.302	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.258	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.973	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.369	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.325	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.246	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03 Date Collected: 08/10/22 08:45

Client ID: BODYCOTE-WW TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	66		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	64		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	64		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-03 RE
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 16:29
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		69-131

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/24/22 05:50
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	17.4		ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	0.679	J	ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	0.754	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	1.34	J	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.33	B	ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.277	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	1.12	J	ng/l	1.78	0.871	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.220	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04 Date Collected: 08/10/22 10:45

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**236**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 19:51
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	20.2		ng/l	9.10	0.371	1
Perfluoropentanoic Acid (PFPeA)	1.51	J	ng/l	1.82	0.360	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	0.979	J	ng/l	1.82	0.298	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.223	1
Perfluoroheptanoic Acid (PFHpA)	0.452	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.342	1
Perfluorooctanoic Acid (PFOA)	1.30	J	ng/l	1.82	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.626	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	0.513	J	ng/l	1.82	0.459	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	0.990	J	ng/l	1.82	0.892	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04 Date Collected: 08/10/22 10:45

Client ID: VISHAY-TREATMENT TANK Date Received: 08/12/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	74		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	72		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	72		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

SAMPLE RESULTS

Lab ID: L2243727-04 RE
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 16:46
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.19	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		14-147
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	75		69-131

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Lab ID: L2243727-01
Client ID: VTPF-WW TANK
Sample Location: VT

Date Collected: 08/10/22 13:00
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	365		ng/l	365		ng/l
Perfluoropentanoic Acid (PFPeA)	81.2	J	ng/l	870		ng/l	789		ng/l
Perfluorobutanesulfonic Acid (PFBS)	54.3	J	ng/l	41.8		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	309		ng/l	1570		ng/l	1260		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	164		ng/l	299		ng/l	135		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	82.3	JF	ng/l	78.7		ng/l	0		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	3.38	JF	ng/l	3.38	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	1900	F	ng/l	328		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	22.0	J	ng/l	6.43	J	ng/l	0	J	ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							2550	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Lab ID: L2243727-03
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/10/22 08:45
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	1.23	J	ng/l	7.52	J	ng/l	6.29	J	ng/l
Perfluoropentanoic Acid (PFPeA)	1.38	J	ng/l	1.91	J	ng/l	0.530	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	0.265	J	ng/l	ND		ng/l	0	J	ng/l
Perfluorohexanoic Acid (PFHxA)	1.15	J	ng/l	1.33	J	ng/l	0.180	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.490	JF	ng/l	0.632	J	ng/l	0.142	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.682	JF	ng/l	0.711	J	ng/l	0.029	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							7.17	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Lab ID: L2243727-04
Client ID: VISHAY-TREATMENT TANK
Sample Location: VT

Date Collected: 08/10/22 10:45
Date Received: 08/12/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	17.4		ng/l	20.2		ng/l	2.80		ng/l
Perfluoropentanoic Acid (PFPeA)	0.679	J	ng/l	1.51	J	ng/l	0.831	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.754	J	ng/l	0.979	J	ng/l	0.225	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.452	J	ng/l	0.452	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.34	J	ng/l	1.30	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	0.513	J	ng/l	0.513	J	ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	1.12	J	ng/l	0.990	J	ng/l	0	J	ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							4.82	J	ng/l

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.82		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 08/26/22 16:04
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 08/16/22 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1675760-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	110		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 16:49
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1676075-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	120		22-136

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03-04 Batch: WG1676075-4					
Perfluorobutanoic Acid (PFBA)	5.07	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	0.460	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.516	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/11/22 17:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/17/22 16:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01,03-04 Batch: WG1676075-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	70		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	72		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	57		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	62		50-150

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: Not Specified **Report Date:** 09/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/10/22 14:50
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/28/22 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1680581-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	124		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	114		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	134		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorobutanoic Acid (PFBA)	101		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	100		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	95		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	108		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	104		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	106		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	91		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	83		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	96		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	100		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	101		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1675760-2								
Perfluorotridecanoic Acid (PFTrDA)	102		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1676075-2 WG1676075-3								
Perfluorobutanoic Acid (PFBA)	94		92		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	90		90		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	88		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	93		91		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	105		102		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	92		91		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	110		107		69-177	3		30
Perfluorooctanoic Acid (PFOA)	96		96		63-159	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		115		61-179	18		30
Perfluorononanoic Acid (PFNA)	94		104		68-171	10		30
Perfluorooctanesulfonic Acid (PFOS)	104		121		52-151	15		30
Perfluorodecanoic Acid (PFDA)	98		109		63-171	11		30
Perfluorononanesulfonic Acid (PFNS)	104		116		48-150	11		30
Perfluoroundecanoic Acid (PFUnA)	95		81		60-153	16		30
Perfluorodecanesulfonic Acid (PFDS)	104		119		38-156	13		30
Perfluorododecanoic Acid (PFDoA)	95		94		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	102		105		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	83		98		59-182	17		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1676075-2 WG1676075-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	131		127		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		120		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		**134**	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		120		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		100		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		87		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		105		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		108		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	127		112		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	94		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	99		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	96		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	111		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	93		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	89		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	88		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	94		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	91		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	138		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	92		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1680581-2								
Perfluorotridecanoic Acid (PFTrDA)	91		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	122				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	125				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	127				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**148**	Q			22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	10.5	37.2	49.4	105		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	12.4	37.2	53.0	109		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	4.49	33	38.6	103		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.9	42.1	121		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	15.2	37.2	56.1	110		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35	37.3	106		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	3.77	37.2	43.1	106		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	3.68	34	47.6	129		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	9.79	37.2	53.1	116		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.38B	35.4	45.9	109		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.5	37.2	105		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	2.19F	37.2	45.3	116		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	9.95F	34.5	50.5	117		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	1.29JF	37.2	46.5	122		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.19J	35.7	37.9	103		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.8	31.1	87		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	46.3	124		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	47.8	129		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	17.5F	49		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	40.2F	108		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.18JF	37.2	48.9	128		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	43.0	116		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-3 QC Sample: L2242946-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	46.6	125		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.2	48.7	131		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**358**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**190**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**348**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	34				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**34**	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**34**	Q			48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	85				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	4.50	36.5	40.6	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	5.48	36.5	42.3	101		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.19	32.4	36.8	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.3	35.8	104		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	5.74	36.5	43.2	102		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.4	34.2	99		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	5.27	36.5	40.0	95		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.987J	33.4	38.7	113		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	10.0F	36.5	43.1	91		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.8	38.9	112		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.9	36.1	104		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	1.97F	36.5	34.8	90		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	71.7	33.9	99.7	83		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	2.21F	36.5	34.1	87		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.1	34.2	98		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.2	35.6	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.5	36.5	100		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	0.621JF	36.5	32.6	88		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.70JF	35.3	52.6	144		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	3.57	36.5	40.1F	100		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.865J	36.5	34.4	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.5	33.9	93		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VTDECP2

Project Number: Not Specified

Lab Number: L2243727

Report Date: 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-3 QC Sample: L2245976-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	36.5	36.2F	99		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.5	28.8	79		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	125				14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	115				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**166**	Q			22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	1.35J	1.20J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	5.14	3.86	ng/l	28		30
Perfluoropentanesulfonic Acid (PFPeS)	1.17J	0.786J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.51	2.84	ng/l	21		30
Perfluorohexanesulfonic Acid (PFHxS)	2.19	1.81J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	15.2	11.8	ng/l	25		30
Perfluorononanoic Acid (PFNA)	1.62J	1.35J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	5.38	5.24	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	1.73J	1.55J	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	12.1	6.30	ng/l	**63**	Q	30
Perfluoroundecanoic Acid (PFUnA)	0.297JF	0.608JF	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		90		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**192**	Q	**216**	Q	12-142

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1675760-4 QC Sample: L2242985-03 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		90		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		86		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		73		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	78		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		66		62-124
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		63		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56		**54**	Q	55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51		59		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		51		22-136

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.651J	0.564J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.866J	0.828J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	0.316JF	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	0.271J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.495J	0.613J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.262J	0.468JF	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		85		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		82		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		111		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		63		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		93		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		100		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		108		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		11		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	120		89		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1680581-4 QC Sample: L2245976-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**168**	Q	**147**	Q	22-136

Project Name: VTDECP2
Project Number: Not Specified

Lab Number: L2243727
Report Date: 09/19/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2243727-01A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-01B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-01C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-01D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-02A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-02B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-02C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-02D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		-
L2243727-03A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-03B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-03C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-03D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04A	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04B	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04C	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)
L2243727-04D	Plastic 250ml unpreserved	A	NA		4.4	Y	Absent		A2-537-ISOTOPE(14),A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VTDECP2 **Lab Number:** L2243727

Project Number: **Report Date:** 09/19/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VTDECP2	**Lab Number:**	L2243727
Project Number:	Not Specified	**Report Date:**	09/19/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA
Westborough, MA 01581, 8 Walkup Dr., TEL: 508-898-9220, FAX: 508-898-9193
Mansfield, MA 02048, 320 Forbes Blvd, TEL: 508-822-9300, FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 8/13/22

ALPHA Job #: L2243727

Project Information
Project Name: VTDEC P2
Project Location: VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Client Information
Client: Weston Sampson
Address: 98 S Main St, Waterbury VT
Phone:
Fax:
Email: larosas@wseinc.com

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☐ Same as Client Info
PO # invoice@wseinc.com

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Report to MDL

Please specify Metals or TAL.

ANALYSIS: 537 Isotope; 537 TOP

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 Isotope	537 TOP	Sample Specific Comments
43727 -01	VTPF-WW Tank	8/10	1300	WW	MLR	X	X	All samples
-02	Edlund-WW Tank	8/10	0630	WW	MLR	X	X	may contain
-03	Bodycote-WW Tank	8/10	0845	WW	MLR	X	X	high levels
-04	Vishay-Treatment Tank	8/10	1045	WW	MLR	X	X	of PFAS!

	537 Isotope	537 TOP
Container Type	P	P
Preservative	X	X

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, K/E = Zn Ac/NaOH, O = Other

Container Code: P = Plastic, A = Amber Glass, V = Vial, G = Glass, B = Bacteria Cup, C = Cube, O = Other, E = Encore, D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/10/22 1530	[signature]	8/10/22 1530
Fridge	8/12/22 1430	RC Kanable	8/12/22 1430
RC Kanable	8/12/22 -	[signature]	8/13/22 0030
[signature]	8/13/22 1:30	GL AAL	8/13/22 0130

GLAAL 8/13/22 0255 [signature] AAL 8/13/22 0255

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2245047
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	09/27/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2245047-01	EDLUND WW TANK	WATER	VT	08/17/22 06:30	08/19/22
L2245047-02	BODYCOTE-WW TANK	WATER	VT	08/17/22 09:00	08/19/22
L2245047-03	VISHAY-WW TANK	WATER	VT	08/17/22 10:45	08/19/22
L2245047-04	VT PF-WW TANK	WATER	VT	08/17/22 12:35	08/19/22

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Case Narrative (continued)

Report Submission

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

Perfluorinated Alkyl Acids by Isotope Dilution

L2245047-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix

L2245047-01, -02, -03, WG1679735-1, WG1679735-2, WG1679735-3, and WG1679735-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2245047-04D: The sample was centrifuged and decanted prior to extraction due to sample matrix.

L2245047-04D: The sample has elevated detection limits due to the dilution required by the sample matrix.

The WG1679735-3 MS recoveries, performed on L2245047-02, are outside the acceptance criteria for perfluoroundecanoic acid (pfuna) (156%).

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)

L2245047-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2245047-01, -02, -03, -04RE and WG1680745-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).

L2245047-01,-02, -03, WG1680745-4 and WG1691701-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2245047-04RE: The sample was re-extracted at lesser volume with the method required holding time exceeded due to matrix interference in the original extraction. The results of the re-extraction are reported.

WG1680745-4: This blank represents the oxidation blank associated with L2245047-01 through -03.

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Case Narrative (continued)

WG1691701-4: This blank represents the oxidation blank associated with L2245047-04RE.

The WG1680745-2/-3 LCS/LCSD RPD(s), associated with L2245047-01 through -03, are above the acceptance criteria for perfluorodecanesulfonic acid (pfds) (31%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Alycia Mogayzel

Title: Technical Director/Representative Date: 09/27/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01
Client ID: EDLUND WW TANK
Sample Location: VT

Date Collected: 08/17/22 06:30
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/20/22 23:53
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.90	J	ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	10.0	2.26	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	1.18	J	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01 Date Collected: 08/17/22 06:30

Client ID: EDLUND WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**160**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	125		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01
Client ID: EDLUND WW TANK
Sample Location: VT

Date Collected: 08/17/22 06:30
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:22
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	27.5	J	ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	2.30	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-01 Date Collected: 08/17/22 06:30

Client ID: EDLUND WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	65		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	64		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	6		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**54**	Q	62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	50		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	67		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	69		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	60		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/17/22 09:00
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 17:03
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.378	J	ng/l	1.75	0.357	1
Perfluoropentanoic Acid (PFPeA)	0.438	J	ng/l	1.75	0.347	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.75	0.396	1
Perfluorohexanoic Acid (PFHxA)	0.627	J	ng/l	1.75	0.287	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.75	0.215	1
Perfluoroheptanoic Acid (PFHpA)	0.312	J	ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.329	1
Perfluorooctanoic Acid (PFOA)	0.469	J	ng/l	1.75	0.207	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.75	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.602	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.273	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.75	0.441	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.266	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.75	0.980	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.567	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.228	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.858	1
Perfluorooctanesulfonamide (FOSA)	0.609	JF	ng/l	1.75	0.508	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.704	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.326	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.75	0.217	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02 Date Collected: 08/17/22 09:00

Client ID: BODYCOTE-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**261**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**215**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**187**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**151**	Q	22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/17/22 09:00
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:38
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.73	J	ng/l	8.84	0.361	1
Perfluoropentanoic Acid (PFPeA)	1.25	J	ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.210	1
Perfluorohexanoic Acid (PFHxA)	1.22	J	ng/l	1.77	0.290	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	0.217	1
Perfluoroheptanoic Acid (PFHpA)	0.453	J	ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	0.410	J	ng/l	1.77	0.209	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.446	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.269	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.77	0.991	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.867	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.329	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-02 Date Collected: 08/17/22 09:00

Client ID: BODYCOTE-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	81		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	76		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	66		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03
Client ID: VISHAY-WW TANK
Sample Location: VT

Date Collected: 08/17/22 10:45
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 17:36
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	19.9		ng/l	1.92	0.392	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.92	0.381	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.229	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.435	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.316	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.236	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.92	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.362	1
Perfluorooctanoic Acid (PFOA)	1.03	J	ng/l	1.92	0.227	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.662	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.92	0.485	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.292	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.17	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.623	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.943	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.558	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.774	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.358	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.315	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.238	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03 Date Collected: 08/17/22 10:45

Client ID: VISHAY-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	140		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**183**	Q	22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03
Client ID: VISHAY-WW TANK
Sample Location: VT

Date Collected: 08/17/22 10:45
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:55
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	24.0		ng/l	8.81	0.360	1
Perfluoropentanoic Acid (PFPeA)	0.769	J	ng/l	1.76	0.349	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210	1
Perfluorohexanoic Acid (PFHxA)	0.631	J	ng/l	1.76	0.289	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	0.300	J	ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	0.550	J	ng/l	1.76	0.208	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.76	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.987	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.864	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.328	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.76	0.218	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-03 Date Collected: 08/17/22 10:45

Client ID: VISHAY-WW TANK Date Received: 08/19/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	79		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	77		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	66		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 RE
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 17:45
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1140		ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	2350		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	48.7		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	2870		ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	392		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	132		ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	8.76	J	ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	708		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	20.3		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	1.46	J	ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	4.26	J	ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 RE
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	148		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	139		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	139		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 D
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/22/22 08:57
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	377	77.0	200
Perfluoropentanoic Acid (PFPeA)	76.2	J	ng/l	377	74.7	200
Perfluorobutanesulfonic Acid (PFBS)	45.3	J	ng/l	377	44.9	200
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	377	85.2	200
Perfluorohexanoic Acid (PFHxA)	259	J	ng/l	377	61.9	200
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	377	46.2	200
Perfluoroheptanoic Acid (PFHpA)	144	J	ng/l	377	42.5	200
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	377	70.9	200
Perfluorooctanoic Acid (PFOA)	77.7	J	ng/l	377	44.5	200
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	11200		ng/l	377	251.	200
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	377	130.	200
Perfluorononanoic Acid (PFNA)	ND		ng/l	377	58.8	200
Perfluorooctanesulfonic Acid (PFOS)	987	F	ng/l	377	95.0	200
Perfluorodecanoic Acid (PFDA)	ND		ng/l	377	57.3	200
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	377	228.	200
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	377	211.	200
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	377	122.	200
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	377	49.0	200
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	377	185.	200
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	377	109.	200
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	377	152.	200
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	377	70.2	200
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	377	61.7	200
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	377	46.8	200

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

SAMPLE RESULTS

Lab ID: L2245047-04 D
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	108		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	89		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		22-136

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-01
Client ID: EDLUND WW TANK
Sample Location: VT

Date Collected: 08/17/22 06:30
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	2.90	J	ng/l	27.5	J	ng/l	24.6	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.30	J	ng/l	2.30	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.18	J	ng/l	ND		ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							26.9	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-02
Client ID: BODYCOTE-WW TANK
Sample Location: VT

Date Collected: 08/17/22 09:00
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	0.378	J	ng/l	6.73	J	ng/l	6.35	J	ng/l
Perfluoropentanoic Acid (PFPeA)	0.438	J	ng/l	1.25	J	ng/l	0.812	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	0.627	J	ng/l	1.22	J	ng/l	0.593	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	0.312	J	ng/l	0.453	J	ng/l	0.141	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	0.469	J	ng/l	0.410	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							7.9	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-03
Client ID: VISHAY-WW TANK
Sample Location: VT

Date Collected: 08/17/22 10:45
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	19.9		ng/l	24.0		ng/l	4.10		ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	0.769	J	ng/l	0.769	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	0.631	J	ng/l	0.631	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	0.300	J	ng/l	0.300	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	1.03	J	ng/l	0.550	J	ng/l	0	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							5.8	J	ng/l

TOTAL OXIDIZABLE PRECURSOR ASSAY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Lab ID: L2245047-04
Client ID: VT PF-WW TANK
Sample Location: VT

Date Collected: 08/17/22 12:35
Date Received: 08/19/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1140		ng/l	1140		ng/l
Perfluoropentanoic Acid (PFPeA)	76.2	J	ng/l	2350		ng/l	2270		ng/l
Perfluorobutanesulfonic Acid (PFBS)	45.3	J	ng/l	48.7		ng/l	3.40		ng/l
Perfluorohexanoic Acid (PFHxA)	259	J	ng/l	2870		ng/l	2610		ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	144	J	ng/l	392		ng/l	248		ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	77.7	J	ng/l	132		ng/l	54.3		ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	8.76	J	ng/l	8.76	J	ng/l
Perfluorooctanesulfonic Acid (PFOS)	987	F	ng/l	708		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.3		ng/l	20.3		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.46	J	ng/l	1.46	J	ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	4.26	J	ng/l	4.26	J	ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							6370	J	ng/l

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 16:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1679735-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/08/22 16:30
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 08/25/22 16:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1679735-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**144**	Q	22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 08:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1680745-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 08:15
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-04 Batch: WG1680745-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	121		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-03 Batch: WG1680745-4					
Perfluorobutanoic Acid (PFBA)	5.11	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/21/22 09:05
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 08/29/22 15:50

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01-03 Batch: WG1680745-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**68**	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**58**	Q	62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	52		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	78		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	81		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	67		50-150

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 16:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 16:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	116		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		22-136

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 17:28
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-4					
Perfluorobutanoic Acid (PFBA)	5.72	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2245047

Project Number: Not Specified **Report Date:** 09/27/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/26/22 17:28
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 09/26/22 06:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 04 Batch: WG1691701-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	**163**	Q	50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	146		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	**155**	Q	50-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1679735-2								
Perfluorobutanoic Acid (PFBA)	112		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	111		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	111		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	121		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	112		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	116		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	112		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	130		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	107		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	121		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	97		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	108		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	105		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	140		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	93		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	118		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	144		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	96		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	110		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	118		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	118		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2245047

Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1679735-2								
Perfluorotridecanoic Acid (PFTrDA)	117		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	71		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	108				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**157**	Q			22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-03 Batch: WG1680745-2 WG1680745-3								
Perfluorobutanoic Acid (PFBA)	87		88		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	83		85		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	84		86		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	84		82		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	83		93		52-156	11		30
Perfluoroheptanoic Acid (PFHpA)	78		82		58-159	5		30
Perfluorohexanesulfonic Acid (PFHxS)	98		110		69-177	12		30
Perfluorooctanoic Acid (PFOA)	74		84		63-159	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	97		100		61-179	3		30
Perfluorononanoic Acid (PFNA)	87		81		68-171	7		30
Perfluorooctanesulfonic Acid (PFOS)	98		98		52-151	0		30
Perfluorodecanoic Acid (PFDA)	92		95		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	100		106		48-150	6		30
Perfluoroundecanoic Acid (PFUnA)	94		93		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	84		115		38-156	**31**	Q	30
Perfluorododecanoic Acid (PFDoA)	106		94		67-153	12		30
Perfluorotridecanoic Acid (PFTrDA)	91		80		48-158	13		30
Perfluorotetradecanoic Acid (PFTA)	90		68		59-182	28		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01-03 Batch: WG1680745-2 WG1680745-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		111		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		90		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		101		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	117		99		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		94		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		108		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		63		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 04 Batch: WG1691701-2 WG1691701-3								
Perfluorobutanoic Acid (PFBA)	96		106		67-148	10		30
Perfluoropentanoic Acid (PFPeA)	95		105		63-161	10		30
Perfluorobutanesulfonic Acid (PFBS)	91		100		65-157	9		30
Perfluorohexanoic Acid (PFHxA)	96		107		69-168	11		30
Perfluoropentanesulfonic Acid (PFPeS)	96		108		52-156	12		30
Perfluoroheptanoic Acid (PFHpA)	93		102		58-159	9		30
Perfluorohexanesulfonic Acid (PFHxS)	106		118		69-177	11		30
Perfluorooctanoic Acid (PFOA)	87		95		63-159	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	83		92		61-179	10		30
Perfluorononanoic Acid (PFNA)	88		95		68-171	8		30
Perfluorooctanesulfonic Acid (PFOS)	95		106		52-151	11		30
Perfluorodecanoic Acid (PFDA)	93		104		63-171	11		30
Perfluorononanesulfonic Acid (PFNS)	84		94		48-150	11		30
Perfluoroundecanoic Acid (PFUnA)	108		116		60-153	7		30
Perfluorodecanesulfonic Acid (PFDS)	85		91		38-156	7		30
Perfluorododecanoic Acid (PFDoA)	95		109		67-153	14		30
Perfluorotridecanoic Acid (PFTrDA)	87		100		48-158	14		30
Perfluorotetradecanoic Acid (PFTA)	98		107		59-182	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 04 Batch: WG1691701-2 WG1691701-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		123		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		108		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117		117		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		119		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		113		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		124		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		109		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		104		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	2		2		0-25
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		95		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		87		22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-3 QC Sample: L2245047-02 Client ID: BODYCOTE-WW TANK												
Perfluorobutanoic Acid (PFBA)	0.378J	35.4	40.6	114		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.438J	35.4	39.9	112		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	31.4	35.5	113		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	33.2	41.7	126		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	0.627J	35.4	40.4	112		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	33.3	38.7	116		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.312J	35.4	40.4	113		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	32.3	41.9	130		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	0.469J	35.4	38.8	108		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	33.7	41.0	122		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	33.8	35.2	104		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	35.4	35.8	101		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	32.8	35.6	108		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	35.4	37.2	105		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	34	44.6	131		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	34	33.6	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	35.4	44.6	126		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	35.4	55.3	**156**	Q	-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	34.2	31.9	93		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	0.609JF	35.4	40.0	111		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	35.4	45.6	129		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	35.4	44.4	125		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2245047

Report Date: 09/27/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-3 QC Sample: L2245047-02 Client ID: BODYCOTE-WW TANK												
Perfluorotridecanoic Acid (PFTrDA)	ND	35.4	46.0	130		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	35.4	28.1	79		-	-		59-182	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**187**	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**240**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**209**	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	121				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	99				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-4 QC Sample: L2245047-03 Client ID: VISHAY-WW TANK						
Perfluorobutanoic Acid (PFBA)	19.9	19.6	ng/l	2		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	1.03J	0.967J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-4 QC Sample: L2245047-03 Client ID: VISHAY-WW TANK						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		87		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		86		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	140		133		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		83		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		102		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		95		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		95		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		110		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		24		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112		106		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		100		48-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1679735-4 QC Sample: L2245047-03 Client ID: VISHAY-WW TANK

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**183**	Q	**173**	Q	22-136

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2245047
Report Date: 09/27/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2245047-01A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-01B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-01C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-01D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-02A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-02B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-02C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-02D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-03A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-03B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-03C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-03D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-04A	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-04B	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-537-ISOTOPE(14)
L2245047-04C	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2245047-04D	Plastic 250ml unpreserved	A	NA		3.4	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: VT DEC P2
Project Number:

Lab Number: L2245047
Report Date: 09/27/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2245047
Project Number:	Not Specified	**Report Date:**	09/27/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL
Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 8/20/22

ALPHA Job #: L2245047

Client Information
Client: Weston & Sampson
Address: 98 Main St
Waterbury, VT
Phone:
Fax:
Email: larosa@wse.inc.com

Project Information
Project Name: VTDEC P2
Project Location: VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO # invoice@wse.inc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Report to MDL

Please specify Metals or TAL.

ANALYSIS
537 PFAS
PFAS TOP

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 PFAS	PFAS TOP	Sample Specific Comments	Total Bottle
45047.01	Edlund WW tank	8/17/22	0630	WW	MLR	X	X		4
-02	Bodycote-WW tank	8/17/22	0905	WW	MLR	X	X		4
-03	Vishay-WW tank	8/17/22	1045	WW	MLR	X	X		4
-04	VTDF - WW Tank	8/17/22	1235	WW	MLR	X	X		4

Container Type: P P
Preservative: A A

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	8/18/22 0800	Bridge	8/18/22 0800
	8/19/22 2130		8/19/22 1410
	8/19/22 1815		8/20/22 0020
ELAD	8/20/22 0145	ELAD	8/20/22 0145
ELAD	8/20/22 0245		8/20/22 0245

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2254154
Client:	Weston & Sampson 98 South Main Street Suite 2 Waterbury, VT 05676
ATTN:	Steven LaRosa
Phone:	(802) 244-5051
Project Name:	VT DEC P2
Project Number:	Not Specified
Report Date:	11/02/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2254154-01	EDLUND-WW TANK	WATER	VT	09/27/22 07:00	09/30/22

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: VT DEC P2 **Lab Number:** L2254154
Project Number: Not Specified **Report Date:** 11/02/22

Case Narrative (continued)

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

Perfluorinated Alkyl Acids by Isotope Dilution
L2254154-01 and -01RE: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2254154-01 and -01RE: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
The WG1697897-1 Method Blank, associated with L2254154-01, has concentrations above the reporting limits for 6:2FTS. The sample was re-extracted with the method required holding time exceeded. The results of both extractions are reported and the original sample results are reported with a "B" qualifier.

Perfluorinated Alkyl Acids by Isotope Dil. (Post-Treatment)
L2254154-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.
L2254154-01 and WG1697787-4: The following surrogate is a negative control for the TOP Assay: M2-4:2FTS. Low recoveries of this surrogate demonstrate that the associated compounds have been converted to a different PFAS constituent (Limit 0-25%).
WG1697787-4: This blank represents the oxidation blank associated with L2254154-01.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Alycia Mogayzel

Title: Technical Director/Representative Date: 11/02/22

ORGANICS

SEMIVOLATILES

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 20:35
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	24.6	J	ng/l	50.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	3.26	J	ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	3.52	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	1.52	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	3.88	J	ng/l	10.0	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01 Date Collected: 09/27/22 07:00

Client ID: EDLUND-WW TANK Date Received: 09/30/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	5		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	83		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	70		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	64		50-150

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/22 22:39
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	35.1	G	ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	10.0	1.19	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	10.0	2.26	1
Perfluorohexanoic Acid (PFHxA)	2.28	J	ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	1.80	J	ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	2.88	JF	ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	25.5	B	ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01 Date Collected: 09/27/22 07:00

Client ID: EDLUND-WW TANK Date Received: 09/30/22

Sample Location: VT Field Prep: Not Specified

Sample Depth:

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

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**59**	Q	62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**238**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**198**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**179**	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

SAMPLE RESULTS

Lab ID: L2254154-01 RE
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 04:30
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	10.0	6.66	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**186**	Q	14-147

TOTAL OXIDIZABLE PRECURSOR ASSAY

RESULTS SUMMARY

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Lab ID: L2254154-01
Client ID: EDLUND-WW TANK
Sample Location: VT

Date Collected: 09/27/22 07:00
Date Received: 09/30/22
Field Prep: Not Specified

Parameter	Pre-Treatment Results	Pre-Treatment Qualifier	Pre-Treatment Units	Post-Treatment Results	Post-Treatment Qualifier	Post-Treatment Units	Difference Results	Difference Qualifier	Difference Units
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab									
Perfluorobutanoic Acid (PFBA)	35.1	G	ng/l	24.6	J	ng/l	0	J	ng/l
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	3.26	J	ng/l	3.26	J	ng/l
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorohexanoic Acid (PFHxA)	2.28	J	ng/l	3.52	J	ng/l	1.24	J	ng/l
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroheptanoic Acid (PFHpA)	1.80	J	ng/l	1.52	J	ng/l	0	J	ng/l
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanoic Acid (PFOA)	2.88	JF	ng/l	3.88	J	ng/l	1.00	J	ng/l
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanoic Acid (PFNA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanoic Acid (PFDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	ND		ng/l	0		ng/l
Perfluorinated Carboxylic Acids (PFCA), Total							5.5	J	ng/l

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:12
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	114		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	142		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	129		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	112		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	119		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:29
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-4					
Perfluorobutanoic Acid (PFBA)	4.58	J	ng/l	10.0	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/12/22 19:29
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab for sample(s): 01 Batch: WG1697787-4					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	0		0-25
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136
Perfluoro[13C3]Pentanoic Acid (M3PFPEA)	83		50-150
Perfluoro[1,2,3,4-13C4]Octanoic Acid (M4PFOA)	79		50-150
Perfluoro[1,2-13C2]Hexanoic Acid (M2PFHXA)	65		50-150

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/22 16:01
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1697897-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	6.61		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/23/22 16:01
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/11/22 10:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1697897-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	72		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	111		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 02:33
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1704177-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 02:33
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1704177-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	120		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		22-136

Project Name: VT DEC P2 **Lab Number:** L2254154

Project Number: Not Specified **Report Date:** 11/02/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 10/27/22 17:09
Analyst: LV

Extraction Method: ALPHA 23528
Extraction Date: 10/26/22 05:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1704177-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	64		5-112

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1697787-2 WG1697787-3								
Perfluorobutanoic Acid (PFBA)	102		100		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	102		99		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	98		96		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	101		99		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	102		97		52-156	5		30
Perfluoroheptanoic Acid (PFHpA)	99		96		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	114		112		69-177	2		30
Perfluorooctanoic Acid (PFOA)	98		102		63-159	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	117		107		61-179	9		30
Perfluorononanoic Acid (PFNA)	104		102		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	115		105		52-151	9		30
Perfluorodecanoic Acid (PFDA)	105		102		63-171	3		30
Perfluorononanesulfonic Acid (PFNS)	109		94		48-150	15		30
Perfluoroundecanoic Acid (PFUnA)	100		103		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	98		94		38-156	4		30
Perfluorododecanoic Acid (PFDoA)	108		104		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	114		113		48-158	1		30
Perfluorotetradecanoic Acid (PFTA)	106		102		59-182	4		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution (Post-Treatment) - Mansfield Lab Associated sample(s): 01 Batch: WG1697787-2 WG1697787-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	111		111		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		136		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		127		70-131
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		109		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		134		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	116		109		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		126		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		106		62-124
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		115		55-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		105		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		105		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1697897-2								
Perfluorobutanoic Acid (PFBA)	112		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	111		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	112		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	115		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	114		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	105		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	107		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	128		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	113		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	135		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	126		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	115		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	126		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	124		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	144		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	105		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	124		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	120		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	94		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	112		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	104		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	119		-		67-153	-		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1697897-2								
Perfluorotridecanoic Acid (PFTrDA)	118		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	130		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	55				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56				22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1704177-2								
Perfluorobutanoic Acid (PFBA)	100		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	103		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	102		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	108		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	99		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	113		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	99		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	106		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	113		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	105		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	120		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	109		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	108		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	109		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	116		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	102		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	105		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2254154

Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1704177-2								
Perfluorotridecanoic Acid (PFTrDA)	117		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	105		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93				22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2254154

Report Date: 11/02/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1704177-2								
Perfluorooctanesulfonamide (FOSA)	107		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63				5-112

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-3 QC Sample: L2253632-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	38.1	42.9	113		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.482J	38.1	43.7	113		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.8	37.7	111		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.7	41.7	117		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	0.584JF	38.1	43.8	113		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35.9	36.6	102		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.657J	38.1	41.4	107		-	-		58-159	-		30
Perfluorohexanesulfonic Acid-Branched (br-PFHxS)	ND	7.24	8.10	112		-	-		69-177	-		30
Perfluorohexanesulfonic Acid-Linear (L-PFHxS)	ND	30.8	34.0	110		-	-		69-177	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34.8	42.2	121		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	1.78J	38.1	45.9	116		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.24B	36.3	48.0	118		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.3	43.8	121		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.1	45.1	118		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	1.33J	35.3	43.6	120		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.1	45.1	118		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.6	54.9	150		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.6	32.2	88		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.1	45.3	119		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.1	43.2	113		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.8	32.8	89		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.1	48.0F	126		-	-		46-170	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified
Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-3 QC Sample: L2253632-01 Client ID: MS Sample												
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.09	38.1	35.0	84		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.1	51.0	134		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	38.1	47.7	125		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.1	47.7	125		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	371	569	153		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36	36.4	101		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	38.1	47.5	125		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	38.1	10.0	26		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	60				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114				71-134

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 ***Lab Number:*** L2254154

Project Number: Not Specified ***Report Date:*** 11/02/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-3 QC Sample: L2253632-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69				10-206
Perfluoro[13C4]Butanoic Acid (MPFBA)	81				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	68				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				70-131

Matrix Spike Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-3 QC Sample: L2257791-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	9.24	39.4	45.0	91		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	18.0	39.4	58.3	102		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.728J	35	34.9	98		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.9	41.4	112		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	18.2	39.4	57.9	101		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.294J	37.1	37.8	101		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	5.03	39.4	45.6	103		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	2.37	36	44.8	118		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	10.0	39.4	53.7	111		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.99	37.5	39.9	101		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	37.6	43.0	114		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.928J	39.4	40.9	102		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	8.10	36.5	52.2	121		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	1.43J	39.4	44.2	109		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.8	41.3	109		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.9	37.1	98		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.16	39.4	43.9	103		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.4	33.4	85		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38	30.8	81		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.4	38.9	99		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.35F	39.4	40.6	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.4	35.2	89		-	-		67-153	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2

Project Number: Not Specified

Lab Number: L2254154

Report Date: 11/02/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-3 QC Sample: L2257791-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	39.4	38.3	97		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.4	37.9	96		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	384	357	93		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	37.2	32.9	88		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	39.4	42.5	108		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	39.4	34.6	88		-	-		10-119	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**208**	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**202**	Q			14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	51				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	29				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	16				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: VT DEC P2 ***Lab Number:*** L2254154

Project Number: Not Specified ***Report Date:*** 11/02/22

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-3 QC Sample: L2257791-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22				5-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-4 QC Sample: L2253632-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	229	234	ng/l	2		30
Perfluoropentanoic Acid (PFPeA)	697	707	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	23.4	23.7	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	3.62	3.58	ng/l	1		30
Perfluorohexanoic Acid (PFHxA)	804	828	ng/l	3		30
Perfluoropentanesulfonic Acid (PFPeS)	12.3	12.8	ng/l	4		30
Perfluoroheptanoic Acid (PFHpA)	810	816	ng/l	1		30
Perfluorohexanesulfonic Acid (PFHxS)	42.6	43.8	ng/l	3		30
Perfluorooctanoic Acid (PFOA)	1170E	1370E	ng/l	16		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97.0	101	ng/l	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	4.59	4.65	ng/l	1		30
Perfluorononanoic Acid (PFNA)	55.7	56.0	ng/l	1		30
Perfluorooctanesulfonic Acid (PFOS)	93.3	101	ng/l	8		30
Perfluorodecanoic Acid (PFDA)	1.50JF	2.08	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.85	2.26	ng/l	23		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-4 QC Sample: L2253632-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.46J	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		74		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		81		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	118		116		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		62		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		75		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**163**	Q	**159**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		65		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		94		10-162

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1697897-4 QC Sample: L2253632-02 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		49		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		70		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	51		40		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	41		39		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65		58		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		51		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		83		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	60		61		10-206

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-4 QC Sample: L2258293-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	7.53	6.64	ng/l	13		30
Perfluoropentanoic Acid (PFPeA)	16.1	15.8	ng/l	2		30
Perfluorobutanesulfonic Acid (PFBS)	5.35	5.15	ng/l	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	15.8	15.0	ng/l	5		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.18	3.17	ng/l	0		30
Perfluorohexanesulfonic Acid (PFHxS)	1.34J	1.20J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	6.15	6.40	ng/l	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.98	1.73J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.631J	0.755J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.18	3.28	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	0.396J	0.540J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-4 QC Sample: L2258293-01 Client ID: DUP Sample						
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30
Perfluorododecane Sulfonic Acid (PFDoDS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluoropropane Sulfonic Acid (PFPrS)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	9.33	9.68	ng/l	4		30
PFAS, Total (5)	14.5J	14.8J	ng/l	NC		30
PFAS, Total (6)	14.9J	15.3J	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1704177-4 QC Sample: L2258293-01 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		82		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**184**	Q	**181**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		111		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**175**	Q	**173**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		86		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		88		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	159		136		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		86		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		59		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		82		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	83		84		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44		48		10-206
1H,1H,2H,2H-Perfluorododecane Sulfonate (M2D4-10:2FTS)	139		122		50-150

Project Name: VT DEC P2
Project Number: Not Specified

Lab Number: L2254154
Report Date: 11/02/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2254154-01A	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(14)
L2254154-01B	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(14)
L2254154-01C	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-TOP-537-ISOTOPE(14)
L2254154-01D	Plastic 250ml unpreserved	A	NA		4.1	Y	Absent		A2-TOP-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: VT DEC P2
Project Number:

Lab Number: L2254154
Report Date: 11/02/22

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	VT DEC P2	**Lab Number:**	L2254154
Project Number:	Not Specified	**Report Date:**	11/02/22

Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA

NEW YORK CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 10/1/22

ALPHA Job #: L2254154

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Project Information
Project Name: VT DEC P2
Project Location: VT
Project #
(Use Project name as Project #) ☐
Project Manager: Steven LaRosa
ALPHAQuote #:

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: Weston+ Sampson
Address: 98 S Main St
Waterbury, VT
Phone:
Fax:
Email: larosas@wseinc.com

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO # invoice@wseinc.com

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Report to MDC Report envirodata 8

Please specify Metals or TAL.

ANALYSIS: 537 TOP; 537 Isotope

Sample Filtration: ☐ Done ☐ Lab to do
Preservation: ☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	537 TOP	537 Isotope							Sample Specific Comments	Total Bottles
4154-01	Edlund-WW Tank	9/27/22	0700	WW	MLR	X	X							May contain high levels of PFAS!	

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

	537 TOP	537 Isotope
Container Type	P	P
Preservative	X	X

Relinquished By:	Date/Time	Received By:	Date/Time
Maggie Reilly	9/27/22 0800	Fridge 9/27/22	0800
[illegible]	9/30/22 13:10	B. Lyons 9/30/22 AAL	13:10
B. Lyons	9/30/22 15:00	R. Manda	10/1/22 0000
[illegible]	10/1/22 6:00		

R. Manda
Sam Aldrich 10/1/22 07:10

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

APPENDIX B

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2155560	L2155560-01, -02, and WG1559893-4 Pre-TOP	10/6/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2155560	L2155560-01, -02, and Pre-TOP	10/6/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 4:2FTS, 6:2FTS and 8:2FTS
L2155560	WG1559893-4 Post-TOP	10/6/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q,	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2156904	L2156904-01	10/15/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 6:2FTS and 8:2FTS
L2156904	L2156904-02RE	10/15/2021	Wastewater	Sample re-extracted within hold time due to QC failure in original extraction. Results of re-extraction reported. Sample has elevated detection limits due to limited sample volume for re-extraction.	None	None	None Required	No
L2156904	L2156904-02 Post TOP	10/15/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q,	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2156904	WG1564148-3 and -4	10/15/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2156904	WG1564148-3 and -4	10/15/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 6:2FTS and 8:2FTS
L2158553	L2158553-01	10/26/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2158553	WG1568346-1, -2	10/26/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2158553	WG1568346-3 Matrix Spike	10/26/2021	Solid Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for nearly all compounds. These could result in low bias respectively on reported results.	Spike recoveries for nearly all compounds were below the lower acceptable criteria. Most compound recoveries were within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project. However, However, 6:2FTS, 8:2FTS, NMeFOSAA, PFNS and PFDS had 0% recovery. This may effect the data usability for these compounds.	Potential low bias to 6:2FTS, 8:2FTS, NMeFOSAA, PFNS and PFDS in L2158553-01
L2161202	L2161202-01 Pre-TOP	11/2/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 4:2FTS, 6:2FTS and 8:2FTS
L2161202	L2161202-01 RE Post-TOP	11/2/2021	Wastewater	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) M3PFPeA, M4PFOA, M2PFHxA
L2161202	WG1571085-4 Post-TOP	11/2/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for M3PFPeA, M4PFOA, M2PFHxA
L2161537	L2161537-01	11/5/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2161537	WG1572518-1, -2	11/5/2021	Lab QA	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2161537	WG1572518-3	11/5/2021	Lab QA Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA, MPFDOA, M2PFTEDA
L2161537	WG1572518-4	11/5/2021	Lab QA Lab Dup	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2162582	L2162582-01	11/10/2021	Wastewater PreTOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)
L2162582	L2162582-01; WG1573037-4	11/10/2021	Wastewater Method Blank Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2162582	WG153357-3	11/10/2021	Lab QA Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) d5-NEtFOSAA,
L2202626	L2202626-01, -03	1/15/2022	Wastewater Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2202626	L2202626-02	1/15/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2202626	L2202626-03	1/15/2022	Wastewater Pre TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2202626	WG1597792-4	1/15/2022	Lab QA Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q, F	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2169100	L2169100-01	12/10/2021	Storm Water Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2169100	L2169100-02	12/10/2021	Mist Suppresent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2169100	L2169100-02	12/10/2021	Mist Suppresent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2169100	L2169100-02	12/10/2021	Mist Suppresent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	E	Extracted compounds exceeded the calibration range	Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument	Potential high bias of all compounds
L2169100	L2169100-03	12/10/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2170827	L2170827-01	12/22/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2170827	L2170827-01	12/22/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2170827	L2170827-01	12/22/2021	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2170827	L2170827-02	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2170827	L2170827-02	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2170827	L2170827-03	12/22/2021	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper and below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2170827	L2170827-03	12/22/2021	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA
L2170827	L2170827-04	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d5NetFOSAA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFNA,1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NetFOSAA, PFOA
L2170827	L2170827-04	12/22/2021	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	G	The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated	Surrogate recoveries may be biased high due to interference for PFOS	Potential high bias for PFOS
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	F	The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration	Surrogate recoveries may be reported as maximum concentrations for PFHxS, PFOS	Potential low bias for PFHxS, PFOS
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M3PFPeA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) M3PFPeA
L2204817	L2204817-01	1/21/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2204817	L2204817-01	1/21/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2204817	L2204817 - Method Blank	1/21/2022	Method Blank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2214714	L2214714-01	1/26/2022	Filter Cake	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M5PFHxA, M4PFHpA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFHxA, PFHpA
L2214714	L2214714	1/26/2022	Matrix Spike	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d5NetFOSAA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFNA,1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NetFOSAA, PFOA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2211036	L2211036-02	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2211036	L2211036-02	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2211036	L2211036-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), M5PFHxA, M3PFHxS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d5-NetFOSAA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), PFHxA, PFHxS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), NetFOSAA
L2211036	L2211036-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030-01	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d3-NMeFOSAA, d5NetFOSAA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NMeFOSAA, NetFOSAA
L2211030	L2211030-01	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA
L2211030	L2211030-01	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030-01	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2211030	L2211030-01	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the below acceptable criteria for M8FOSAThis significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for FOSA
L2211030	L2211030-01	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030-03	2/25/2022	Field Blank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211030	L2211030	2/25/2022	Method Blank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2211032	L2211032-01	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)
L2211032	L2211032-01	2/25/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the below acceptable criteria for d3-NMeFOSAA, M7-PFUDA, M8FOSA, d5-NetFOSAA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for NMeFOSAA, PFUDA, FOSA, NEtMeFOSAA
L2211032	L2211032-01	2/25/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2211032	L2211032-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS, d5NetFOSAA, MPFDOA, M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFBS, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), NetFOSAA, PFDOA, PFTeDA
L2211032	L2211032-03	2/25/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2212981	L2212981-01	3/8/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2212981	L2212981-01	3/8/2022	Sludge	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2212981	L2212981-02	3/8/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2212981	L2212981-02	3/8/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the lower acceptable criteria for M5PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential low bias for PFHxA
L2212981	L2212981-02	3/8/2022	Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2212981	L2212981-02	3/8/2022	Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2212981	L2212981-03	3/8/2022	DI Rinse Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA, M2PFHxA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA, PFHxA
L2211028	L2211028-01	3/1/2022	Black Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M2PFTeDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFTeDA
L2211028	L2211028-01	3/1/2022	Black Effluent	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2211028	L2211028-01	3/1/2022	Black Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M3PFPeA, M4PFOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPEA, PFOA
L2211028	L2211028-01	3/1/2022	Black Effluent Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2243719	L2243719-01	8/3/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2243719	L2243719-02	8/3/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for MPFBA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), M5PFHXA, M4PFHpA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), M9PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), d3-NMeFOSAA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFPeA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), PFHxA, PFHpA 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), PFNA, 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), NMeFOSAA
L2243719	L2243719-03	8/4/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), MPFDOA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), PFDOA
L2243719	L2243719-03	8/4/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2243719	L2243719-04	8/4/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)
L2243727	L2243727-01	8/10/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2243727	L2243727-03	8/10/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential h+I126igh bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)
L2243727	L2243727-03	8/10/2022	WW Tank Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries for several compounds quantified above the detection limit were generally within 10% of the upper and/or lower acceptable criteria. Considering the complex matrix being analyzed, this low degree of variance from the acceptance criteria is not considered sufficient to warrant resolution and does not effect data uasbility for the DQOs of the project.	No
L2243727	L2243727-03	8/10/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)
L2245047	L2245047-01	8/17/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)
L2245047	L2245047-01	8/17/2022	WW Tank Post TOP	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) below lower control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% below the lower acceptable criteria for M6PFDA This significant diversion from the recovery criteria has the potetnial to effect data uasbility for the DQOs of the project.	Potential low bias for PFDA
L2245047	L2245047-02	8/17/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS), PFTDEA
L2245047	L2245047-03	8/17/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for M2PFTEDA This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for PFTDEA

Laboratory Data Package QA/QC Summary Table

Lab Number	Lab and Sample ID	Date Collected	Sample Type	Analyte(s) Qualified	Lab Flag/Qualifier ID	Data Bias	Resolution	Data Usability Issue
L2254154	L2254154-01	9/27/2022	WW Tank	Extracted Internal Standard recoveries were outside the acceptance criteria for several individual analytes	Q	Surrogate recovery(ies) above upper control limits reported for several compounds. These could result in high or low bias respectively on reported results.	Surrogate recoveries were much greater than 10% above the upper acceptable criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) This significant diversion from the recovery criteria has the potetnial to effect data usability for the DQOs of the project.	Potential high bias for 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)