



Phase 2: Additional PFAS Characterization (2022)

Evaluation of PFAS Sampling Results from Madison Metropolitan Sewerage District's Nine Springs Wastewater Treatment Plant

December 2023
Revision 1

Lydia Auner
Project Geologist

Jeff Ramey
Principal Chemist

Prepared For:

Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, Wisconsin 53713

Prepared By:

TRC
999 Fourier Dr., Suite 101
Madison, Wisconsin 53717

Michael S. Ursin, PG
Senior Project Manager

Elizabeth Denly, ASQ CMQ/OE
Vice President, PFAS Initiative Leader &
Chemistry Director



TABLE OF CONTENTS

ACRONYM LIST	iii
EXECUTIVE SUMMARY	iv
1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Scope and Purpose.....	1
2.0 SAMPLING AND ANALYSIS PROGRAM	2
2.1 Sampling Scope, Schedule, Methods, and Rationale.....	2
2.2 Laboratory Analysis.....	2
2.3 Deviations from Sampling SOP	4
2.4 Modifications to Sampling Plan.....	5
3.0 REGULATORY LANDSCAPE	6
3.1 WDNR Surface Water Standards and Effluent Discharge Limits	6
3.2 WDNR Draft Interim Biosolids Strategy	6
4.0 RESULTS AND DISCUSSION	8
4.1 Data Review.....	8
4.2 Influent	8
4.2.1 Calculated and Composite Influent Results.....	8
4.2.2 Individual Pump Stations	9
4.3 Effluent.....	9
4.3.1 Comparison to WDNR Surface Water Standards.....	10
4.4 Class A Cake	10
4.4.1 Comparison to WDNR Draft Interim Biosolids Strategy.....	10
4.5 Class B Sludge.....	10
4.5.1 Comparison to WDNR Draft Interim Biosolids Strategy.....	11
4.6 Biosolids Process Sampling.....	11
4.7 TOP Assay	11
4.7.1 TOP Assay Data Quality and Usability	12
4.7.2 Influent TOP Assay	12
4.7.3 Effluent TOP Assay.....	12
4.7.4 Class A Cake TOP Assay	13
4.7.5 Class B Sludge TOP Assay	13
4.8 Blank Samples	13
5.0 DISCUSSION OF CONCEPTUAL SITE MODEL	14
5.1 Possible Sources of PFAS.....	14
5.2 Temporal Trends for Influent and Effluent	14
5.3 Transformation and Partitioning.....	14
5.3.1 Influent vs. Effluent	14
5.3.2 Biosolids vs. Effluent.....	15
5.3.3 Class A Cake Pile	15
6.0 CONCLUSIONS	16
7.0 REFERENCES	17

TABLES

Table 1:	2021-2022 PFAS Sampling Overview
Table 2:	Sampling Methods and Rationale
Table 3:	2022 Sampling Scope Details
Table 4:	Influent Flow Rates
Table 5:	Influent Results (Calculated/Composite)
Table 6:	Influent Results (Individual Force Mains)
Table 7:	Effluent Results
Table 8:	Biosolids Results
Table 9:	TOP Assay Results (Influent and Effluent)
Table 10:	TOP Assay Results (Biosolids)
Table 11:	Blank Sample Results

FIGURES

Figure 1:	Calculated Influent & Composite Influent PFAS Results
Figures 2a/b:	Influent PFOA and PFOS Time Series
Figure 3:	Effluent PFAS Results
Figures 4a/b:	Effluent PFOA and PFOS Time Series
Figure 5:	Influent vs. Effluent PFAS Results Comparison
Figure 6:	Biosolids A PFAS Results
Figures 7a/b:	Biosolids PFOA and PFOS Time Series
Figure 8:	Biosolids B PFAS Results
Figure 9:	Biosolids Results Comparison (March 2022)

APPENDICES

Appendix A:	Photographic Log
Appendix B:	Influent Compositing SOP
Appendix C:	Laboratory Reports
Appendix D:	Data Quality and Usability Reviews

ACRONYM LIST

AFFF	aqueous film-forming foam
CSM	conceptual site model
EGLE	Michigan Department of Environment, Great Lakes, and Energy
FTSs	fluorotelomer sulfonic acids
LDPE	low-density polyethylene
MMSD	Madison Metropolitan Sewerage District
NEtFOSAA	N-ethylperfluorooctanesulfonamido acetic acid
NEtFOSE	N-ethylperfluorooctanesulfonamido ethanol
NMeFOSAA	N-methylperfluorooctanesulfonamido acetic acid
ng/L	nanograms per liter
PFAAs	perfluoroalkyl acids
PFAS	per- and polyfluoroalkyl substances
PFBA	perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFCAs	perfluorocarboxylic acids
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFPeA	perfluoropentanoic acid
PFSA s	perfluorosulfonic acids
ppb	parts per billion
ppt	parts per trillion
PVC	polyvinyl chloride
SM	Standard Methods
SOP	standard operating procedure
TOP	total oxidizable precursor
TSS	total suspended solids
ug/kg	micrograms per kilogram
USEPA	United States Environmental Protection Agency
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollution Discharge Elimination System
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

The Madison Metropolitan Sewerage District (MMSD or District) operates the Nine Springs Wastewater Treatment Plant (WWTP), which provides wastewater collection and treatment for over 380,000 people, 19 significant industries, numerous commercial and smaller industrial operations, and several landfills in a 184-square mile service area. Significant industrial sources of per- and polyfluoroalkyl substances (PFAS) have not been identified in the District's service area based on an internal review.

TRC Environmental Corporation (TRC) and the District completed an initial phase of PFAS sampling in May and July 2021, which included sampling of influent, effluent, polymers, biosolids, and struvite. In general, the Phase 1 sampling results indicated that PFAS were present in the WWTP influent, effluent, and biosolids at concentrations similar to those observed in other municipal WWTPs that service urbanized areas without significant industrial sources. Results from the Phase 1 sampling are summarized in the Phase 1: Initial PFAS Characterization report (TRC, 2021).

Following the Phase 1 sampling, the District and TRC performed additional PFAS characterization activities, referred to as the Phase 2 sampling. The Phase 2 sampling began in March 2022, and included 10 monthly sampling events in 2022 between March and December. The March 2022 sampling was performed by TRC and the April through December 2022 sampling was performed by the District. Influent and effluent were sampled monthly and biosolids (Class A and Class B) were sampled quarterly. Additionally, two biosolids process samples (pre-thermophilic digestion and post-thermophilic digestion) were collected in March 2022.

Results from the Phase 2 sampling indicated that PFAS were detected in the WWTP influent, effluent, and biosolids at concentrations generally similar to the Phase 1 sampling results and consistent with a large municipal WWTP that does not receive highly concentrated PFAS from industrial dischargers. All effluent results for perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were below the NR 102 surface water standards that the District may have to comply with in a future wastewater discharge permit renewal. Biosolids results for the sum of PFOS and PFOA were below the threshold for reducing land application rates based on the Wisconsin Department of Natural Resources (WDNR) Interim Strategy for Land Application of Biosolids guidance document, which is advisory only at this time.

1.0 Introduction

1.1 Background

The Madison Metropolitan Sewerage District (MMSD or District) operates the Nine Springs WWTP, which provides wastewater collection and treatment for over 380,000 people, 19 significant industries, numerous commercial and smaller industrial operations, and several landfills in a 184-square mile service area. Significant industrial sources of PFAS have not been identified in the District's service area based on an internal review. A majority (approximately 99%) of the influent to Nine Springs WWTP enters through five force mains (pumping stations), and the remainder arrives as hauled waste. Wastewater received by the District proceeds through an advanced treatment process.

Outputs from the Nine Springs WWTP include liquid effluent, biosolids, and struvite. The majority of the liquid effluent is discharged to Badfish Creek with a smaller portion discharged to Badger Mill Creek. The biosolids include Class A cake, which can be used directly by farmers as fertilizer and soil conditioner and Class B liquid biosolids (Metrogro®), also referred to as Class B sludge, which is recycled to agricultural land in the fall and spring as fertilizer and soil conditioner. Struvite is an inorganic nutrient (magnesium ammonium phosphate) that is harvested from liquid filtrates from the treatment processes and sold as a slow-release fertilizer. Refer to the PFAS Fate and Transport Report (TRC, 2020a) for a more detailed description of the Nine Springs WWTP treatment processes and a discussion of environmental cycling.

The District previously retained TRC to develop a PFAS Fate and Transport report (TRC, 2020a), conceptual site model (CSM), and PFAS Sampling and Analysis Blueprint (TRC, 2020b) to support their PFAS action plan, all of which were completed in early 2020.

TRC and the District completed an initial phase of PFAS sampling in May and July 2021, which included sampling of influent, effluent, polymers, biosolids, and struvite. In general, the Phase 1 sampling results indicated that PFAS were present in the WWTP influent, effluent, and biosolids at concentrations similar to those observed in other municipal WWTPs that service urbanized areas without significant industrial sources. Results from the Phase 1 sampling are summarized in the Phase 1: Initial PFAS Characterization report (TRC, 2021). Prior to the sampling, TRC prepared a standard operating procedure (SOP) for PFAS Sampling at MMSD's Nine Springs WWTP, which was included as an appendix in the Phase 1 report (TRC, 2021).

1.2 Scope and Purpose

Following the Phase 1 sampling in 2021, the District and TRC performed additional PFAS characterization activities, including the development of a sampling plan, training of District staff on sampling procedures, data review, and interpretation of the sample results. Ten monthly sampling events were completed in 2022 between March and December, which included monthly sampling of influent and effluent and quarterly sampling of biosolids. The purpose of this report is to summarize the results of the 2022 sampling in the context of the current regulatory landscape, the CSM, and the results from the initial Phase 1 PFAS Characterization.

2.0 Sampling and Analysis Program

2.1 Sampling Scope, Schedule, Methods, and Rationale

Ten monthly sampling events were completed between March and December 2022. The March 2022 sampling was performed by TRC and the April through December 2022 sampling was performed by the District. Influent and effluent were sampled monthly and biosolids (Class A and Class B) were sampled quarterly. Additionally, two biosolids process samples (pre-thermophilic digestion and post-thermophilic digestion) were collected in March 2022. A general overview of the 2021-2022 PFAS sampling schedule is provided in Table 1. Sample collection methods and sampling rationale for each type of media are summarized in Table 2, and the detailed sampling scope and schedule is provided in Table 3. A photographic log depicting select sampling points from the March 2022 sampling event is included in Appendix A.

Influent samples were collected separately from the five pumping stations on a monthly basis. The influent sample location codes used for the sample IDs were assigned based on their corresponding pump station number (i.e., the sample from Pump Station 11 is named Influent-11). Additionally, one flow-weighted composite influent sample was collected in December 2022, which is referred to as “Composite Influent.” This composite sample was prepared by District Staff according to their SOP (Appendix B). Influent flow rates were recorded by the District for each of the five pumping stations on each day that influent samples were collected, as summarized on Table 4.

Class A biosolids samples were given location code Biosolids-A, and Class B biosolids samples were given location code Biosolids-B.

The blank samples collected in 2022 included equipment blanks and field blanks. Equipment blanks were collected as rinsate samples of the equipment used for the Class A cake sampling during each Class A cake sampling event. Two field blanks were collected during the April 2022 sampling event. Field blanks were not collected during other sampling events in 2022.

2.2 Laboratory Analysis

Samples were shipped under chain-of-custody to Pace Analytical Services, LLC (Pace) in Minneapolis, Minnesota (Pace – Minneapolis). Analysis for the standard list of Wisconsin’s 33 PFAS, total suspended solids (TSS), and total solids was performed by Pace – Minneapolis. Total oxidizable precursor (TOP) assay was performed by Pace Analytical – Gulf Coast in Baton Rouge, Louisiana (Pace – Gulf Coast).

Samples were analyzed using the following analytical methods:

- Influent, effluent, and biosolids samples were analyzed for the 33 PFAS compounds included in the Wisconsin Method Criteria established by the WDNR (EA-19-0001). Pace used their NR 149 certified SOP to analyze the samples.
- Influent and effluent samples were analyzed for TSS using Standard Methods (SM) 2540D.
- Biosolids samples were analyzed for total solids using ASTM method D2974. Biosolids PFAS results are reported on a dry weight basis, meaning that the results represent a concentration that has been corrected for percent solids.

- Select samples were analyzed for PFAS TOP assay using the laboratory's proprietary SOP and included reporting of the 33 PFAS compounds in the Wisconsin Method Criteria.

The WDNR 33 PFAS list includes the following groupings of PFAS; the full list of compounds is detailed in the table below:

- 19 perfluoroalkyl acids (PFAAs), including 11 perfluorocarboxylic acids (PFCAs) and 8 perfluorosulfonic acids (PFSAs), which are terminal PFAS, meaning they do not further transform or degrade under typical environmental conditions;
- 3 fluorotelomer sulfonic acids (FTSs), which have the potential to undergo transformation and/or degradation to form other PFAS including PFCAs;
- 7 perfluorooctane sulfonamido moieties (sulfonamides, sulfonamidoacetic acids, and sulfonamidoethanols), which have the potential to transform to other PFAS such as PFOS; and
- 4 modern replacement chemicals such as hexafluoropropylene oxide-dimer acid (HFPO-DA or GenX).

WDNR 33 PFAS List

CAS RN	Analyte	Analyte Acronym
Carboxylic Acids		
375-22-4	Perfluorobutanoic acid	PFBA
2706-90-3	Perfluoropentanoic acid	PFPeA
307-24-4	Perfluorohexanoic acid	PFHxA
375-85-9	Perfluoroheptanoic acid	PFHpA
335-67-1	Perfluorooctanoic acid	PFOA
375-95-1	Perfluorononanoic acid	PFNA
335-76-2	Perfluorodecanoic acid	PFDA
2058-94-8	Perfluoroundecanoic acid	PFUnA
307-55-1	Perfluorododecanoic acid	PFDoA
72629-94-8	Perfluorotridecanoic acid	PFTTrDA
376-06-7	Perfluorotetradecanoic acid	PFTA
Sulfonic Acids		
375-73-5	Perfluorobutane sulfonic acid	PFBS
2706-91-4	Perfluoropentane sulfonic acid	PFPeS
355-46-4	Perfluorohexane sulfonic acid	PFHxS
375-92-8	Perfluoroheptane sulfonic acid	PFHpS
1763-23-1	Perfluorooctane sulfonic acid	PFOS
68259-12-1	Perfluorononane sulfonic acid	PFNS
335-77-3	Perfluorodecane sulfonic acid	PFDS
79780-39-5	Perfluorododecane sulfonic acid	PFDoS
757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS

WDNR 33 PFAS List

CAS RN	Analyte	Analyte Acronym
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols		
754-91-6	Perfluorooctane sulfonamide	PFOSA
31506-32-8	N-Methylperfluorooctane sulfonamide	NMeFOSA
4151-50-2	N-Ethylperfluorooctane sulfonamide	NEtFOSA
2355-31-9	N-Methyl perfluorooctane sulfonamido acetic acid	NMeFOSAA
2991-50-6	N-Ethyl perfluorooctane sulfonamido acetic acid	NEtFOSAA
24448-09-7	N-Methyl perfluorooctane sulfonamidoethanol	NMeFOSE
1691-99-2	N-Ethyl perfluorooctane sulfonamidoethanol	NEtFOSE
Replacement Chemicals		
13252-13-6	Hexafluoropropylene oxide-dimer acid	HFPO-DA (GenX)
919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	DONA
756426-58-1	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS
763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS

2.3 Deviations from Sampling SOP

A copy of the SOP for PFAS Sampling at MMSD Wastewater Treatment Facility was included as an appendix in the Phase 1 report (TRC, 2021). Notable deviations from the SOP included:

- June, September, and December 2022 (Class A cake): A shovel was used for each of the four Class A cake sampling events that had an unidentified coating and had not been known or confirmed to be PFAS-free.
- April, May, and June 2022 (Influent and Effluent): The equipment decontamination procedures used for the influent and effluent carboys included a double rinse with PFAS-free water rather than a triple rinse. Equipment blanks for the carboys were not included in the sampling scope.
- May 2022 (Influent-18): The carboy for the Influent-18 sample was not decontaminated with PFAS-free water due to insufficient supply of PFAS-free water. Reverse osmosis water was used instead. Equipment blanks for the carboys were not included in the sampling scope. Additionally, effluent was sampled two days after influent sampling (rather than one day) because the effluent container had not been properly decontaminated the first time.
- June 2022 (Class A cake): A ceramic dish and metal spoon were used for the homogenization of the Class A cake. These supplies had not been known or confirmed to be PFAS-free. Additionally, the equipment decontamination procedures used included a double rinse with PFAS-free water rather than a triple rinse. Due to detections of PFAS in the equipment blank, select PFAS results for the Class A cake sample were qualified as nondetect, as discussed in Section 4.8.
- December 2022 (Class A cake): The metal bowl and spoon used for homogenizing the Class A cake sample were not decontaminated as specified in the SOP. They were rinsed with tap water and then deionized water, rather than being washed first with a solution of Alconox or Liquinox, rinsed with potable water, and triple rinsed with PFAS-free water. One PFAS compound was detected in the equipment blank; however, no qualification of results was required.

As previously included in the Phase 1 report (TRC, 2021), the following deviations from the Sampling SOP also pertain to the 2022 PFAS sampling:

- The SOP states that the sample containers in the dedicated composite samplers should be evaluated to ensure that they are PFAS-free and should be replaced with PFAS-free containers if they are not. It also states certain materials including low-density polyethylene (LDPE) should not be in contact with samples unless known to be PFAS-free. The composite sampler carboys are made of LDPE. An equipment blank was collected as a rinsate sample of one of the carboys during the 2021 Phase 1 sampling to assess the potential for contamination of the sample from the LDPE carboy. PFAS were not detected in the equipment blank.
- The SOP states that specific components of the dedicated composite samplers should be decontaminated or replaced prior to sampling in order to prevent potential contamination from the dedicated samplers, as follows: the strainer should be decontaminated or replaced between each sampling event and the suction line, distribution nozzle and sample bottle should be replaced between each sampling event. The composite sampler suction line tubing, strainers, and distribution nozzles were not decontaminated or replaced prior to PFAS sample collection. The suction line tubing used within the composite samplers was confirmed to be polyvinyl chloride (PVC) and silicone, which are approved materials for PFAS sampling.

2.4 Modifications to Sampling Plan

Modifications to the sampling plan included the following:

- March 2022: Collected pre- and post-thermophilic biosolids samples less than the planned 42 hours apart but ensured that the thermophilic digestion period was completed between the sample times.
- April 2022: Two field blanks were collected during this event instead of one.
- September 2022: TOP assay was not included for this event due to anomalously high influent flow rates.
- December 2022: Added a flow-weighted composite influent sample.

3.0 Regulatory Landscape

3.1 WDNR Surface Water Standards and Effluent Discharge Limits

Revisions to several chapters in Wisconsin's Administrative Code (WAC) related to the regulation of PFOA and PFOS in surface water and effluent were made effective August 1, 2022. These revisions included the addition of surface water quality criteria for PFOA and PFOS and the revision of the Wisconsin Pollution Discharge Elimination System (WPDES) permitting program to include PFOA and PFOS.

The surface water criteria for PFOA and PFOS per WAC ch. NR 102.04(8)(d) are summarized as follows:

- PFOS: 8 nanograms per liter (ng/L) for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.
- PFOA: 20 ng/L in waters classified as public water supplies under WAC ch. NR 104, and 95 ng/L for other surface waters.

Permit requirements for PFOS and PFOA wastewater effluent discharges to surface water are outlined under NR 106 Subchapter VIII, which include “procedures for determining when a permitted discharge has the reasonable potential to cause or contribute to an exceedance of the PFOS or PFOA” surface water standards and determination of the need for a PFOS and PFOA minimization plan.

Permit requirements for monitoring and reporting PFOS and PFOA will be included upon first reissuance of a WPDES permit after October 1, 2022, according to the WDNR webpage on PFAS Water Quality Initiatives (<https://dnr.wisconsin.gov/topic/PFAS/WaterQuality.html>). The District's WPDES permit (WI-0024597-09-2) was renewed May 1, 2020 and expires March 31, 2025. As such, the WPDES permit does not include monitoring requirements for PFOS or PFOA at this time. For the purpose of this report, effluent results are compared directly to the surface water standards. The effluent from MMSD is discharged into waters that are not classified as public water supply; therefore, the relevant PFOA surface water criteria is 95 ng/L.

3.2 WDNR Draft Interim Biosolids Strategy

The WDNR published an Interim Strategy for Land Application of Biosolids Containing PFAS (WDNR, 2021), which is intended to provide guidance to permitted land spreaders as the WDNR awaits finalization of United States Environmental Protection Agency's (USEPA's) risk assessment for PFOS and PFOA in biosolids and “prevent further land application of municipal biosolids that have been industrially impacted.” The WDNR guidance was developed using the Michigan Department of Environment, Great Lakes, and Energy (EGLE's) PFAS Interim Strategy for Land Application of Biosolids (EGLE, 2022) finalized in March 2021 and updated in April of 2022. The EGLE guidance establishes recommendations for actions based on statistically derived, non-risk-based tiers of PFOS biosolids concentrations. The WDNR Interim Strategy adopted this tiered approach using the combined sum of PFOS and PFOA generally detected in biosolids as summarized below:

-
- >150 micrograms per kilogram (ug/kg) PFOS + PFOA: Biosolids are considered industrially-impacted and may not be approved for new or transfer land application sites. Notify WDNR staff immediately. Sample effluent and investigate potential PFAS sources to develop a source reduction program. Arrange alternative treatment or disposal of biosolids besides land application.
 - >50 ug/kg but <150 ug/kg PFOS + PFOA: Reduce land application rates to no more than 1.5 dry tons per acre (or get WDNR approval of an alternative strategy). Notify WDNR staff immediately. Sample effluent and investigate potential PFAS sources to develop a source reduction program. Notify landowner/farmer of PFAS results prior to initial land application and track application rates for each site.
 - <50 ug/kg PFOS + PFOA and median concentration >20 ug/kg PFOS + PFOA: Implement PFAS source investigation and reduction efforts as well as effluent sampling. Notify landowner/farmer of PFAS results prior to initial land application and track application rates for each site.
 - <20 ug/kg PFOS + PFOA: Land apply per normal approach consistent with WAC ch. NR 204.

Note, at the time of this report, the WDNR is actively considering making changes to their Interim Strategy.

4.0 Results and Discussion

Sample results are summarized in Tables 5 through 11 and laboratory reports are included in Appendix C. Graphs for select results are included as Figures 1 through 9. The results tables and graphs include data from the 2021 Phase 1 sampling for the purpose of comparison.

Results for influent and effluent are reported in ng/L, which are equivalent to parts per trillion (ppt). Results for biosolids are reported in ug/kg, which are equivalent to parts per billion (ppb). Biosolids PFAS results are reported on a dry weight basis, meaning that the results represent a concentration that has been corrected for percent solids.

Graphs include column charts and time series graphs of concentration vs. time data. On the column charts, sample results are labeled using shortened IDs based on the sample type (INF = influent, INF-CALC = calculated influent, INF-COMP = composite influent, EFF = effluent, BIO-A = Class A cake, BIO-B = Class B sludge, etc.) and the sampling event date (formatted as YYYY-MM). Graphs show only detected concentrations of PFAS; nondetect results are not included. The color coding for the column charts uses blue for PFCAs and orange for PFASs, where increasing chain lengths are depicted using increasingly darker shades, as shown in the graph legends.

4.1 Data Review

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document #EA 19 0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. Data quality and usability review summaries and Qualified Form 1s for each monthly sampling event are provided in Appendix D.

4.2 Influent

Influent sampling included monthly collection of influent samples from the five individual pumping stations between March and December 2022. Additionally, in December 2022, a flow-weighted composite sample was prepared by the District using the samples from the five pumping stations and submitted for laboratory analysis. That composite sample is referred to here as “Composite Influent.”

At this time, there are no regulatory criteria for PFAS that apply to the District influent.

4.2.1 Calculated and Composite Influent Results

For each sampling event from March through December 2022, average influent PFAS results were calculated using the results from the five influent pumping stations weighted by their respective flow rates. The flow-weighted averages are referred to as “Calculated Influent.” These Calculated Influent values were used to assess changes in the influent PFAS concentrations over time and to compare PFAS results for the influent and effluent. For the purpose of the calculation, nondetect results were represented by concentrations of zero.

Results for the Calculated Influent (March through December 2022) and Composite Influent sample (December 2022) are provided in Table 5 and shown as column charts on Figure 1 and Figure 5. The Calculated Influent results indicated generally consistent individual PFAS concentrations throughout the March-December 2022 sampling events, with the exception of anomalously high perfluoropentanoic acid (PFPeA) results in December 2022 (Figure 1). The individual PFAS compounds that consistently had the highest concentrations based on the Calculated Influent included several PFCAs (perfluorobutanoic acid [PFBA], PFPeA, perfluorohexanoic acid [PFHxA], PFOA) and PFSA (perfluorobutanesulfonic acid [PFBS], perfluorohexanesulfonic acid [PFHxS], PFOS), which were generally detected at concentrations up to approximately 15 ng/L (Figure 5). The anomalously high PFPeA result in December 2022 was 120 ng/L for the Calculated Influent and 128 ng/L in the Composite Influent.

The PFPeA results from the December 2022 sampling event were anomalously high for each of the five influent pumping stations, but not for the effluent sample collected during the same event. The reason for the elevated PFPeA is unknown but could be due to laboratory or sampling contamination; it is considered to be unlikely that elevated PFPeA concentrations were present in each of the five influent force mains. PFPeA is widely used and present in clothing and leather coatings, cosmetics, floor coverings, carpet treatment chemicals, nonstick food wrappers, textiles, upholstery, and other products (Glüge, 2020) and is a potential breakdown product of fluorotelomers, including modern fluorotelomer AFFFs referred to as “C6 foams” (ITRC, 2021).

Based on results from March through December 2022, the Calculated Influent concentrations for PFOS ranged from 2.9 to 12 ng/L and concentrations for PFOA ranged from 3.7 to 8.4 ng/L (Figures 2a and 2b).

Results for the December 2022 Composite Influent sample were generally consistent with the December 2022 Calculated Influent values (Table 5 and Figure 1).

4.2.2 Individual Pump Stations

Influent results from the individual pump stations are included in Table 6. Time series graphs of PFOS and PFOA for influent from individual pump stations are shown on Figures 2a and 2b. Concentrations of PFOS and PFOA in samples collected from individual pump stations ranged from below 2 ng/L to approximately 16 ng/L. In general, PFOS and PFOA concentrations were higher in Influent-07 and Influent-18 relative to the other pump stations. Trends in influent concentrations over time are discussed in Section 5.2.

4.3 Effluent

Effluent samples were collected monthly from March through December 2022. Effluent sample results are provided in Table 7. Results for detected PFAS are shown as column charts in Figure 3 and Figure 5. Time series graphs for PFOA and PFOS are shown on Figure 4.

The effluent PFAS results indicated generally consistent individual PFAS concentrations over time, with some variation month-to-month. The individual PFAS regularly detected at the highest concentrations in the effluent samples were generally the same as those detected at the highest concentrations in the influent samples, which included several PFCAs (PFBA, PFPeA, PFHxA, PFOA) and PFSA (PFBS, PFHxS, and PFOS). Replacement PFAS were not detected in the 2022 effluent samples.

4.3.1 Comparison to WDNR Surface Water Standards

Effluent results from 2022 indicate PFOS concentrations ranging from 3 ng/L to 5.9 ng/L and PFOA concentrations ranging from 6.5 ng/L to 11 ng/L (Figures 4a and 4b). These concentrations are less than the WDNR's applicable surface water criteria for PFOS (8 ng/L) and PFOA (95 ng/L).

4.4 Class A Cake

Class A cake was sampled quarterly, during the March, June, September, and December 2022 sampling events. The March 2022 sample was collected from freshly-produced cake material. The cake material being generated at the time of the March 2022 sampling event was placed in a pile, and the June, September, and December samples were collected from this pile. Class A cake sample results are included in Table 8. Class A cake PFAS results are shown in column chart form on Figure 6, and time series graphs of PFOA and PFOS are shown on Figure 7a.

PFAS detected in the 2022 Class A cake samples included PFCAs, PFSAs, FTSSs, sulfonamides, sulfonamidoacetic acids, and sulfonamidoethanols. Replacement PFAS were not detected.

Results from the 2022 Class A Cake sampling show noticeable changes in PFAS composition between March, June, and September, followed by little change in composition between September and December, as further discussed in Section 5.3.3. The Class A cake sample PFOS concentration ranged from 9.9 ug/kg to 24 ug/kg and the PFOA concentration ranged from 1.7 ug/kg to 25.8 ug/kg. In general, concentrations of PFOA and PFOS detected in the Class A cake increased between March and the subsequent sampling events, as depicted in Figure 7a.

4.4.1 Comparison to WDNR Draft Interim Biosolids Strategy

The sum of PFOS and PFOA detected in the Class A cake samples ranged from approximately 11 ug/kg in March 2022 to approximately 40-45 ug/kg in June, September, and December 2022. The 2022 Class A cake results are below the 50 ug/kg PFOS + PFOA threshold for reducing land application rates based on the WDNR Draft Interim Biosolids Strategy. The median PFOS + PFOA result for samples collected after the pile passed the bacteria test (June, September, and December 2022) was 40.5 ug/kg, which is below the 50 ug/kg threshold.

4.5 Class B Sludge

Class B sludge was sampled quarterly during the March, June, September, and December 2022 sampling events. Samples were collected from the end of the gravity belt thickener. Class B sludge sample results are included in Table 8. Class B sludge PFAS results are shown in column chart form on Figure 8, and time series graphs of PFOA and PFOS detected in Class B sludge samples are shown on Figure 7b.

The Class B sludge sample results from 2022 indicate a generally similar composition of PFAS across the four quarterly samples. The PFAS detected in the 2022 Class B sludge samples included PFCAs, PFSAs, FTSSs, sulfonamides, sulfonamidoacetic acids, and sulfonamidoethanols. Replacement PFAS were not detected. The individual PFAS compounds detected at the highest concentrations include PFOS, n-methylperfluorooctanesulfonamido acetic acid (NMeFOSAA), n-ethylperfluorooctanesulfonamido acetic acid (NEtFOSAA), and n-methylperfluorooctanesulfonamido ethanol (NMeFOSE).

The individual PFAS results in the 2022 Class B sludge samples were generally similar to the July 2021 Class B sludge sample results in terms of the distribution of PFAS detected and the magnitude of the concentrations detected.

The Class B sludge PFOS results ranged from 6.3 ug/kg to 8.7 ug/kg and PFOA results ranged from 1.2 ug/kg to 1.4 ug/kg.

4.5.1 Comparison to WDNR Draft Interim Biosolids Strategy

The 2022 Class B sludge results for the combined sum of PFOS and PFOA ranged from 7.6 ug/kg to 10.1 ug/kg. According to the WDNR Draft Interim Biosolids strategy, results below 20 ug/kg PFOS + PFOA qualify for land application following the normal approach consistent with WAC ch. NR 204 and do not require PFAS source investigation or reduction efforts or effluent sampling.

4.6 Biosolids Process Sampling

Two biosolids process samples were collected in March 2022 for the purpose of understanding how PFAS concentrations may differ before and after thermophilic digestion. One sample was collected before thermophilic digestion from material being fed into the digester, and the other sample was collected the following day after the 14-hour thermophilic digestion period was completed, from the material being routed out of the same digester. Only approximately 5% of the thermophilic digester volume is replaced during each feeding; therefore, the effects of thermophilic digestion are not isolated by this sampling.

Biosolids process sampling results are included in Table 8 and shown as column charts on Figure 9. The biosolids PFAS results are reported on a dry weight basis as mass of PFAS per kilogram of solids. Solids are lost during the thermophilic digestion process and this loss of solids is expected to result in an increase in PFAS concentrations when reported as mass of PFAS per mass of solids. The solids content of the pre-thermophilic sample (2.58%) was slightly higher than the solids content of the post-thermophilic sample (1.92%). This reduction in solids would be expected to cause an increase in individual PFAS concentrations when corrected for dry weight. The concentrations of individual PFAS compounds detected in the post-thermophilic digestion sample were approximately two times higher than the individual PFAS concentrations in the pre-thermophilic digestion sample. The individual PFAS detected and their relative proportions were similar between the pre- and post-thermophilic digestion samples. The pre-thermophilic PFAS results are generally similar to the March 2022 Class B sludge results in terms of PFAS composition and concentrations, whereas the post-thermophilic results are generally similar to the March 2022 Class A cake results.

4.7 TOP Assay

TOP assay subjects a sample to artificially (non-environmentally occurring) forced oxidation using heat and strong oxidants, which can result in the transformation of precursor PFAS compounds to terminal PFAAs and possibly other PFAS. As such, the TOP assay can be used to identify the potential presence of precursor PFAS that are and are not part of the target analyte list and if these precursors will break down during the TOP assay to PFAS included in the target analyte list of 33 PFAS compounds. The extent of degradation and specific degradation products indicated by the post-oxidation TOP assay results are not necessarily indicative of the degradation that would be expected for the same sampled material in the natural environment or in WWTP influent, effluent, or biosolids. Rather, the TOP assay represents a characterization technique

and the individual concentrations of PFAS detected in the post-oxidation TOP assay results are also not intended to be compared to environmental standards or screening criteria.

The pre-oxidation TOP assay results are expected to be similar to the PFAS analysis performed following the Wisconsin Method Criteria. The post-oxidation TOP assay results are expected to have higher concentrations of PFCAs due to the degradation of precursors.

TOP assay results for influent and effluent samples are included in Table 9, and TOP assay results for biosolids are included in Table 10.

4.7.1 TOP Assay Data Quality and Usability

Samples were submitted for TOP assay from the March 2022, June 2022, and December 2022 sampling events. Two rounds of TOP assay data were determined to be usable for PFAS characterization and reporting: June 2022 and December 2022. The March 2022 results were determined not to be usable due to significant data quality issues.

The PFAS analysis following the Wisconsin Method Criteria and TOP assay (pre- and post-oxidation) analyses were performed by different laboratories (Pace – Minneapolis and Pace – Gulf Coast, respectively) and the samples for these analyses were submitted to each laboratory in separate containers. The pre-oxidation TOP assay results are expected to be similar to the PFAS analysis following the Wisconsin Method Criteria. However, for many of the June 2022 samples (including influent, effluent, Class A biosolids, and Class B biosolids), the pre-oxidation TOP assay results indicated lower concentrations of individual PFAS compared to the PFAS analysis following the Wisconsin Method Criteria performed by Pace-Minnesota. The exception to this trend is the influent PFPeA results, which were higher for the PFAS analysis following the Wisconsin Method Criteria than the pre-oxidation TOP assay results. It should be noted that many of the results were qualified as estimated concentrations, as indicated by the J qualifiers. Additionally, although PFAS aside from PFAAs were detected in most of the influent and effluent samples using the PFAS analysis following the Wisconsin Method Criteria, only PFAAs were detected in the samples prior to oxidation for TOP assay.

4.7.2 Influent TOP Assay

Influent TOP assay results are provided in Table 9. PFCAs and PFSA were detected in the pre- and post-oxidation influent TOP Assay results; other PFAS in the WI-33 list were not detected in the pre- and post-oxidation TOP assay samples despite being detected by the PFAS analysis following the Wisconsin Method Criteria performed by Pace-Minnesota. In general, concentrations of most PFCAs increased post-oxidation, assumed to result from the transformation of precursors. Trends in PFSA concentrations post-oxidation were variable (increasing or not discernable).

4.7.3 Effluent TOP Assay

Effluent TOP assay results are provided in Table 9. PFCAs and PFSA were detected in the pre- and post-oxidation TOP Assay; other PFAS in the WI-33 list were not detected. In general, concentrations of PFCAs increased slightly post oxidation, but concentrations of individual PFAS were generally fairly similar pre- and post-oxidation, suggesting that there might not be a large mass of unidentified precursors present in the effluent samples.

4.7.4 Class A Cake TOP Assay

Biosolids TOP assay results are provided in Table 10. The Class A cake TOP assay results from June and December 2022 show some increases in PFCA concentrations post-oxidation (particularly for PFBA and PFPeA) along with decreases in target analyte precursor concentrations (FTSs and perfluorooctane sulfonamido moieties), as expected for TOP assay. Overall, these results suggest that there might not be a large mass of unidentified precursors present in the Class A Cake samples.

4.7.5 Class B Sludge TOP Assay

Biosolids TOP assay results are provided in Table 10. The June TOP assay results for Class B biosolids indicated low, estimated PFAS concentrations (<4 ug/kg) detected pre-oxidation and post-oxidation. The December 2022 TOP assay results for Class B biosolids indicate increases in PFCA concentrations post-oxidation along with decreased concentrations of precursors. These results are consistent with expected oxidation of target and non-target precursors to PFCAs.

4.8 Blank Samples

The blank samples collected in 2022 included equipment blanks and field blanks. Equipment blanks were collected as rinsate samples of the equipment used for the Class A cake sampling during each event when Class A cake was sampled in 2022. Two field blanks were collected during the April 2022 sampling event. Field blanks were not collected during other sampling events in 2022. Results for equipment blanks and field blanks are provided in Table 11.

Equipment blank results were evaluated as part of the data quality and usability reviews (Appendix D). PFAS were detected in two equipment blank samples: June 2022 and December 2022. In June 2022, the dish and spoon used to homogenize the Class A cake were not known or confirmed to be PFAS-free and were also only double rinsed with PFAS-free water rather than triple rinsed. In December 2022, the metal bowl and spoon used for homogenizing the Class A cake were not decontaminated as specified in the SOP. Due to detections of PFBA and PFBS in the June 2022 equipment blank, the June Class A Cake results for PFBA and PFBS were qualified as nondetect (U) at the reported concentrations. No qualification of results was required due to the equipment blank detections in December 2022.

PFAS were not detected in the April 2022 field blanks.

5.0 Discussion of Conceptual Site Model

5.1 Possible Sources of PFAS

Generally, the presence and concentrations of the individual PFAS compounds detected in the influent, effluent, and biosolids samples from the District are consistent with the expected results for a large municipal WWTP plant without significant sources of PFAS from industrial dischargers, as found in the Phase 1: Initial PFAS Characterization (TRC, 2021). Indicator compounds of highly concentrated PFAS sources, such as PFOS and FTSs associated with different generations of aqueous film-forming foams (AFFFs) and chrome-plating acid mist suppressants, are not detected at concentrations that would suggest that these sources are discharging to the Nine Springs WWTP on a continuous basis. For example, the District's 2022 effluent PFOS concentrations ranged from 3 ng/L to 5.9 ng/L, consistent with the PFOS concentrations of 2 ng/L to 7 ng/L reported in Michigan WWTP effluent without significant sources of PFOS (EGLE, 2020). Additionally, the limited TOP Assay analyses conducted do not suggest that there is a significant unknown source of PFAS that could result in the transformation and degradation to target PFAS analytes and PFAS of regulatory concern such as PFOS and PFOA. Many of the PFAS compounds detected in the influent received by the District are likely the result of the use and prevalence of PFAS in commercial products that enter the municipal waste stream.

5.2 Temporal Trends for Influent and Effluent

PFAS concentrations in influent and effluent varied month-to-month. Results for several PFAS, including PFOS and PFOA, were detected at higher than the typically observed average concentrations in the influent and effluent in September 2022 (Figures 1 through 4). These elevated concentrations may be related to a major rain event around the time of sampling, which was associated with a significant increase in the typical combined influent flow rate of about 36 million gallons per day to over 55 million gallons during the September sample collection (Table 4). PFOS results also appeared to be higher than average for most influent pump stations in the June 2022 samples (Figure 2b). The flow conditions during the June sampling were typical of the other monthly samples.

5.3 Transformation and Partitioning

5.3.1 Influent vs. Effluent

Influent and effluent sample results may be compared to assess potential transformation and/or partitioning of PFAS within the WWTP. Relative to the results for Calculated Influent and Composite Influent, the effluent results tend to have higher concentrations of several PFCAs (PFBA, PFPeA, PFHxA, and PFOA), slightly lower concentrations of PFOS, and lower concentrations or no detections of several precursors (Figure 5). These differences could be due to transformation from precursors within the WWTP process or partitioning preferentially between to the solid phase of the biosolids from the liquid phase of the influent/effluent. In general, short-chain PFAS generally prefer the aqueous phase and long-chain PFAS generally adsorb and partition to organic carbon in the solid phase.

5.3.2 Biosolids vs. Effluent

When comparing the biosolids sample results to the effluent samples, the biosolids results generally contain higher proportions of longer chain/larger molecule PFAS, such as the perfluorooctane sulfonamido moieties. As noted in the Phase 1: Initial PFAS Characterization report (TRC, 2021), the higher proportion of larger PFAS molecules in biosolids is consistent with the expected partitioning of longer chain PFAS to solids based on greater sorption potential for these compounds.

5.3.3 Class A Cake Pile

Results from the 2022 Class A Cake sampling show noticeable changes in PFAS composition between March, June, and September, followed by little change in composition between September and December. Between March and September 2022, results showed increased concentrations of several PFCAs and NMeFOSAA, along with decreased concentrations of NMeFOSE. These changes in composition may result from transformation of precursors: NMeFOSE can break down to NMeFOSAA, and numerous PFAS can break down to PFCAs.

The PFAS results for the June, September, and December Class A cake samples were generally similar to the May 2021 initial Class A cake sample results in terms of the distribution of PFAS detected and the magnitude of the concentrations detected. According to District staff, the Class A cake sampled in May 2021 was at least 3 months old at the time of sampling, so it is possible that the PFAS detected are representative of Class A cake that has been subjected to several months of potential transformation.

6.0 Conclusions

The following conclusions are made based on the 2022 PFAS sampling at the Nine Springs WWTP:

- All effluent results for PFOS and PFOA were below the NR 102 surface water criteria.
- Biosolids results for the combined sum of PFOS and PFOA were below 50 ug/kg for Class A biosolids and below 11 ug/kg for Class B biosolids.
- Class A cake samples from the pile of material generated in 2022 indicate changes in PFAS concentrations over the four quarterly sampling events, including increased concentrations of several PFCAs and NMeFOSAA, along with decreased concentrations of NMeFOSE. These changes in PFAS concentrations may suggest that transformation is occurring within the pile of Class A cake.
- Additional evaluation of the thermophilic digestion process is needed to further understand its potential effects on PFAS concentrations.

7.0 References

- Glüge, J. et al. 2020. An Overview of the Uses of Per- and Polyfluoroalkyl Substances (PFAS). Environmental Science Processes & Impacts. Volume 22: pages 2345-2373.
- Interstate Technology and Regulatory Council (ITRC). 2021. PFAS Technical and Regulatory Guidance Document and Fact Sheets PFAS-1. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team. <https://pfas-1.itrcweb.org/>.
- Michigan Department of Environment, Great Lakes, and Energy (EGLE). 2020. Michigan Industrial Pretreatment Program (IPP) PFAS Initiative. August.
- EGLE. 2021/2022. Interim Strategy for Land Application of Biosolids. March 2021, updated April 2022.
- TRC. 2020a. PFAS Fate and Transport and Conceptual Site model for PFAS at Madison Metropolitan Sewerage District's Nine Springs Wastewater Treatment Plant. February 5.
- TRC. 2020b. Sampling and Analysis Blueprint. February 5.
- TRC. 2021. Phase 1: Initial PFAS Characterization, Evaluation of PFAS Sampling Results from Madison Metropolitan Sewerage District's Nine Springs Wastewater Treatment Plant. September 27.
- WDNR. 2021. Interim Strategy for Land Application of Biosolids Containing PFAS. September 22. <https://dnr.wisconsin.gov/topic/PFAS/WaterQuality.html#biosolids>. https://dnr.wisconsin.gov/sites/default/files/topic/PFAS/PFAS_BiosolidsInterimStrategy.pdf.
- WDNR. Undated. Water Quality PFAS Initiatives. <https://dnr.wisconsin.gov/topic/PFAS/WaterQuality.html>. Accessed June 27, 2023.

**Table 1: 2021-2022 PFAS Sampling Overview
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000**

Year	Sampling Event (Month-Year)	Influent (Five Individual Pump Stations)	Composite Influent	Effluent	Biosolids B	Biosolids A	Biosolids Process	Struvite	Polymers	Sampling by:
2021	May-2021	PFAS		PFAS	PFAS	PFAS		PFAS	PFAS, TOP^	TRC
	Jul-2021				PFAS					MMSD
2022	Mar-2022	PFAS		PFAS, TOP*	PFAS, TOP*	PFAS, TOP*	PFAS			TRC
	Apr-2022	PFAS		PFAS						MMSD
	May-2022	PFAS		PFAS						MMSD
	Jun-2022	PFAS, TOP		PFAS, TOP	PFAS, TOP	PFAS, TOP				MMSD
	Jul-2022	PFAS		PFAS						MMSD
	Aug-2022	PFAS		PFAS						MMSD
	Sep-2022	PFAS		PFAS	PFAS	PFAS				MMSD
	Oct-2022	PFAS		PFAS						MMSD
	Nov-2022	PFAS		PFAS						MMSD
	Dec-2022	PFAS, TOP	PFAS	PFAS, TOP	PFAS, TOP	PFAS, TOP				MMSD

Analytical Method Key

PFAS = PFAS analysis following Wisconsin Method Criteria established by the WDNR (EA-19-0001)

TOP = TOP assay

Notes

Refer to Table 3 for full scope of sampling. This table does not include analysis of TSS, total solids/percent moisture, or QC samples.

TOP Assay was included in the original September 2022 sampling scope, but was omitted due to anomalously high flow rates during this event.

^ = TOP assay results not reported

* = TOP assay results rejected

Prepared by: L. Auner, 6/19/2023

Checked by: M. Ursin 6/22/2023

**Table 2: Sampling Methods and Rationale
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000**

Sample Category	Sample Collection Methods	Goal/Rationale
Influent and Effluent		
Influent (Five Individual Pump Stations)	Carboys from dedicated composite samplers were stored in walk-in cooler from the end of the composite sampling period (around midnight) until the PFAS samples were collected the following day. Carboys were inverted several times to mix contents prior to pouring sample directly into laboratory containers.	Assess variation of influent concentrations over time and variation between the five pump stations (could be used to guide potential future efforts for source identification).
Composite Influent	Flow-weighted composite from five individual pumping stations, based on flow rates on day of influent sampling. Compositing performed in walk-in cooler. Carboys from individual force mains were inverted to mix contents prior to pouring off the calculated volume of sample into a graduated cylinder, which was then poured into a 4-liter high density polyethylene (HDPE) container. After sample volume from each of the 5 force mains was added, the 4-liter container was mixed prior to filling laboratory containers.	Assess precision between the true composite influent sample and the calculated flow-weighted averages for influent.
Effluent	Collected day after influent sample collection to reflect 24-hour residence time for treatment. Effluent carboy from dedicated composite sampler was stored in walk-in cooler from the end of the composite sampling period (around midnight) until the PFAS samples were collected the following day. Carboy was inverted several times to mix contents prior to pouring sample directly into laboratory containers.	Assess variation of PFAS concentrations in effluent over time and to serve as useful background information for future compliance requirements once PFAS are added to discharge permit.
Class B Sludge and Biosolids Process Sampling		
Biosolids Process Sampling	Collected two samples: one before thermophilic digestion (as thermophilic digester was filling) and another after the thermophilic digestion cycle was complete (as digester was being emptied). The pre-thermophilic sample was collected from a tap on the Digester 7 transfer pump in Sludge Control Building #2. The post-thermophilic sample was collected from a tap on a sludge recirculation pump in Sludge Control Building #1. Laboratory containers were filled directly from the taps. The pre-thermophilic sample was collected on the same day as the Class B Sludge sample.	Understand how PFAS concentrations may differ before and after thermophilic digestion. However, because only about 5% of the thermophilic digester volume is replaced during a single cycle, it is not possible to isolate the effects of thermophilic digestion with this sampling. Additionally, the loss of solids that occurs during the thermophilic digestion process is expected to cause an apparent increase in PFAS concentrations when reported as mass of PFAS per mass of solids.
Class B Sludge	Collected samples by filling laboratory containers directly from the end of the gravity belt thickener (GBT).	Assess variation in Class B sludge concentrations over time. Compare PFAS concentrations in Class B sludge (post-GBT) to the pre-thermophilic biosolids process sample.
Class B Sludge Duplicate	Collected duplicate with original sample (March 2022 only).	Quality Control - Assess sampling and analysis precision and matrix heterogeneity.
Class A Cake		
Class A Cake	During first event, collected one sample immediately from centrifuge ¹ and dedicated a pile where cake can be stored for future sampling. Once pile passed bacteria test, collected a second sample from the same dedicated pile. During two subsequent quarterly sampling events, collected samples from same pile. Samples from the pile were collected by compositing and homogenizing multiple grab samples from beneath the outer crust of the pile. Sampling equipment was required to collect and homogenize the samples from the pile.	Gather more data on PFAS in Class A cake used for application and assess potential changes in individual PFAS concentrations during storage in piles.
Class A Cake Duplicate	Collect duplicate with original sample after homogenizing sample (March 2022 only).	Quality Control - Assess sampling and analysis precision and matrix heterogeneity.
Blank Samples		
Equipment Blank (Class A Cake)	Collected as rinsate of sample-contacting equipment prior to equipment use.	Quality Control - Evaluate potential cross-contamination from equipment.
Field Blanks	Collected by pouring PFAS-free water supplied by the analytical laboratory into a sample container.	Quality Control - Assess whether ambient/surrounding conditions may have influenced analytical results.

Footnotes

1. The cake is not classified as Class A until it passes the bacteria test, so the sample from the centrifuge is technically not yet Class A cake.

Updated by: L. Auner, 11/7/2023

Checked by: M. Ursin, 11/10/2023

Table 3: 2022 Sampling Scope Details
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Sample Event	Samplers	Samples	Laboratory Analysis					Flow Rate
			PFAS (WI-33)	TOP Assay	MS/MSD	TSS	% Solids	
March 2022	TRC sampling, MMSD observing	Influent (Five Individual Pump Stations)	5	--	2	5	--	5
		Effluent	1	1	2	1	--	1
		Biosolids process sampling	2	--	2	--	2	--
		Class B Sludge	1	1	2	--	1	--
		Class B Sludge Duplicate	1	1	--	--	1	--
		Class A Cake	1	1	2	--	1	--
		Class A Cake Duplicate	1	1	--	--	1	--
		Equipment Blank (Class A Cake)	1	--	--	--	--	--
April 2022	MMSD sampling, TRC observing	Influent (Five Individual Pump Stations)	5	--	--	5	--	5
		Effluent	1	--	--	1	--	1
		Field Blank	2	--	--	--	--	--
May 2022	MMSD	Influent (Five Individual Pump Stations)	5	--	--	5	--	5
		Effluent	1	--	--	1	--	1
June 2022	MMSD	Influent (Five Individual Pump Stations)	5	5	--	5	--	5
		Effluent	1	1	--	1	--	1
		Class A Cake	1	1	--	--	1	--
		Class B Sludge	1	1	--	--	1	--
		Equipment Blank (Class A Cake)	1	--	--	--	--	--
July 2022	MMSD	Influent (Five Individual Pump Stations)	5	--	--	5	--	5
		Effluent	1	--	--	1	--	1
August 2022	MMSD	Influent (Five Individual Pump Stations)	5	--	--	5	--	5
		Effluent	1	--	--	1	--	1
September 2022	MMSD	Influent (Five Individual Pump Stations)	5	*	--	5	--	5
		Effluent	1	*	--	1	--	1
		Class A Cake	1	*	--	--	1	--
		Class B Sludge	1	*	--	--	1	--
		Equipment Blank (Class A Cake)	1	--	--	--	--	--
October 2022	MMSD	Influent (Five Individual Pump Stations)	5	--	--	5	--	5
		Effluent	1	--	--	1	--	1
November 2022	MMSD	Influent (Five Individual Pump Stations)	5	--	--	5	--	5
		Effluent	1	--	--	1	--	1
December 2022	MMSD	Influent (Five Individual Pump Stations)	5	5	--	5	--	5
		Composite Influent	1	--	--	1	--	--
		Effluent	1	1	--	1	--	1
		Class A Cake	1	1	--	--	1	--
		Class B Sludge	1	1	--	--	1	--
		Equipment Blank (Class A Cake)	1	--	--	--	--	--

Notes

* TOP Assay was included in the original September 2022 sampling scope, but was omitted due to anomalously high flow rates during this event.

Updated by: L. Auner, 6/19/2023

Checked by: M. Ursin 6/22/2023

**Table 4: Influent Flow Rates
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000**

Influent Sample Date	Flow Rate (MGD)					Total Flow
	INFLUENT-02	INFLUENT-07	INFLUENT-08	INFLUENT-11	INFLUENT-18	
5/6/2021	5.82	4.18	6.68	8.87	11.81	37.36
3/28/2022	6.21	4.45	6.33	8	11	35.99
4/25/2022	7.23	5.91	6.64	8.55	10.48	38.81
5/23/2022	5.54	9.18	6.19	7.92	5.24	34.07
6/20/2022	6.43	9.25	6.47	8.54	6.84	37.53
7/19/2022	6.36	8.80	6.55	8.51	6.11	36.33
8/15/2022	6.15	9.66	6.38	8.18	5.82	36.19
9/12/2022	11.78	14.04	8.13	12.31	9.15	55.41
10/10/2022	6.96	9.4	6.32	7.96	5.63	36.27
11/14/2022	7.03	8.76	6.39	7.93	6.63	36.74
12/12/2022	6.86	9.05	6.41	7.68	6.52	36.52

Notes

MGD = millions of gallons per day

Total influent flow includes only the influent from the pumping stations (not hauled waste).

Updated by: L. Auner, 6/16/2023

Checked by: T. Jackson-Strong, 6/23/2023

Table 5: Influent Results (Calculated/Composite)
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID			CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	CALCULATED INFLUENT	COMPOSITE INFLUENT	
Sample Name			Combined Influent-20210506	Combined Influent--20220328	Combined Influent-20220425	Combined Influent-20220523	COMBINED INFLUENT-20220620	Combined Influent-20220718	Combined Influent-20220815	Combined Influent-20220912	Combined Influent-20221010	Combined Influent-20221114	Combined Influent-20221112	Influent Comp 20221212
Sample Date			05/06/2021	03/28/2022	04/25/2022	05/24/2022	06/20/2022	07/18/2022	08/15/2022	09/12/2022	10/10/2022	11/14/2022	12/12/2022	12/12/2022
CAS RN	Analyte	Unit												
Carboxylic Acids														
375-22-4	PFBA	ng/L	8.05	6.3	7.9	6.8	11	7.1	8.8	11	7.4	7.3	8.9	9.7
2706-90-3	PFPeA	ng/L	32.6	4.2	4.7	4	4.8	4.1	4.4	12	5.4	5.4	120	128
307-24-4	PFHxA	ng/L	8.54	5.6	6.5	5.6	6.4	6.6	6.5	14	6.8	9.3	8.5	8.6
375-85-9	PFHpA	ng/L	1.86	2.2	1.8	1.5	2.2	1.7	1.8	3.6	1.6	2	1.1	1.3 J
335-67-1	PFOA	ng/L	5.13	4.3	4.8	3.9	5.2	4.3	4.6	8.4	4.2	4.8	3.7	3.5
375-95-1	PFNA	ng/L	0.81	1.7	ND	ND	0.44	ND	ND	0.46	ND	ND	ND	< 0.81
335-76-2	PFDA	ng/L	0.72	0.078	0.12	0.25	0.21	ND	0.14	0.94	ND	ND	ND	< 0.62
2058-94-8	PFUnA	ng/L	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 0.50
307-55-1	PFDoA	ng/L	ND	ND	ND	ND	0.16	ND	ND	ND	ND	ND	ND	< 0.49
72629-94-8	PFTTrDA	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 0.63
376-06-7	PFTA	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 0.61
Sulfonic Acids														
375-73-5	PFBS	ng/L	2.76	2.2	4.3	2.9	5	3.5	4.7	6	3.3	5.4	ND	< 2.1 U
2706-91-4	PFPeS	ng/L	0.51	0.46	0.63	0.47	1.5	0.52	0.85	0.84	0.76	0.61	0.42	< 0.61
355-46-4	PFHxS	ng/L	7.59	7.9	7.7	6.9	15	7.1	8.1	8.8	7.8	8	7.5	6.6
375-92-8	PFHpS	ng/L	0.11	ND	0.11	0.06	ND	ND	ND	ND	ND	ND	ND	< 0.68 UJ
1763-23-1	PFOS	ng/L	6.86	4.4	5.3	5.2	9.5	4.5	5.7	12	7.2	5.6	2.9	1.2 J
68259-12-1	PFNS	ng/L	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 0.60 UJ
335-77-3	PFDS	ng/L	ND	ND	ND	1.2	1.1	ND	0.29	ND	ND	ND	ND	< 0.65 UJ
79780-39-5	PFDoS	ng/L	ND	ND	ND	ND	0.3	ND	2.6	ND	ND	ND	ND	< 0.60 UJ
757124-72-4	4:2 FTS	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 0.47
27619-97-2	6:2 FTS	ng/L	1.2	1	ND	2	2.5	2.6	1.3	2.5	1.2	1.2	0.73	< 0.69
39108-34-4	8:2 FTS	ng/L	0.15	0.13	ND	ND	0.15	0.73	0.74	0.26	ND	ND	ND	< 0.51
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols														
754-91-6	PFOSA	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	R
31506-32-8	NMeFOSA	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	R
4151-50-2	NEtFOSA	ng/L	0.18	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	R
2355-31-9	NMeFOSAA	ng/L	0.51	0.48	0.57	0.5	1.1	1.1	0.73	1.7	0.47	0.49	ND	< 0.71 UJ
2991-50-6	NEtFOSAA	ng/L	0.67	1.9	0.69	0.5	1.6	1.6	0.81	1.6	1.4	0.45	0.37	< 0.83 UJ
24448-09-7	NMeFOSE	ng/L	3.12	1.4	1.2	2.7	9.5	17	1.6	1.2	2.2	1.7	ND	R
1691-99-2	NEtFOSE	ng/L	1.28	0.073	0.88	ND	0.91	0.37	0.24	ND	1.2	ND	ND	R
Replacement Chemicals														
13252-13-6	HFPO-DA	ng/L	ND	ND	ND	ND	0.98	ND	ND	ND	ND	ND	ND	< 0.50
919005-14-4	DONA	ng/L	1.2	ND	ND	ND	0.13	ND	ND	ND	ND	ND	1.5	2.1
756426-58-1	9CI-PF3ONS	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 0.48 UJ
763051-92-9	11CI-PF3OUdS	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 0.57 UJ
Solids														
-	TSS	mg/L	--	--	--	--	--	--	--	--	--	--	--	107

Notes

CAS RN = Chemical Abstracts Service Registry Number
 Calculated Influent = Calculated as an average of the results from five influent pumping station samples weighted by their respective flow rates, with nondetect results represented by zero for the purpose of the calculation.
 Composite Influent = Sample composited as flow-weighted average of five influent pumping station samples.
 ND = Calculated influent result considered to be nondetect due to analyte not being detected in any of the five influent pumping station samples.
 -- = Not analyzed or not applicable
 TSS = Total suspended solids

Data Qualifiers

U = nondetect
 J = estimated
 R = rejected
 UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
 Checked by: T. Jackson-Strong, 6/23/2023

Table 6: Influent Results (Individual Force Mains)
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-07	INFLUENT-07	INFLUENT-07	
Sample Name	INFLUENT-02-20210506	INFLUENT-02-20220328	INFLUENT-02-20220425	Influent-02-20220523	Influent-02-20220620	Influent-02-20220718	Influent-02-20220815	Influent-02-20220912	Influent 02-20221010	Influent 02-20221114	Influent 02-20221212	INFLUENT-07-20210506	INFLUENT-07-20220328	INFLUENT-07-20220425		
Sample Date	05/06/2021	03/28/2022	04/25/2022	05/24/2022	06/20/2022	07/18/2022	08/15/2022	09/12/2022	10/10/2022	11/14/2022	12/12/2022	05/06/2021	03/28/2022	04/25/2022		
CAS RN	Analyte	Unit														
Carboxylic Acids																
375-22-4	PFBA	ng/L	4.6	4.5	5.2	5.2	7.5 J	3.1	6.6	7.1	4.4	4.9	9.7	21	12	14
2706-90-3	PFPeA	ng/L	3.7	3.4	3.2	3.4	4.2 J	3.9	4.1	7.3	4.1	5.7	126	15	5.9	7.5
307-24-4	PFHxA	ng/L	4.6	3.8	3.2	4.2	6.3 J	4.2	4.3	6.6	3.8 IJ	11	9.0	30	11	12
375-85-9	PFHpA	ng/L	1.3 J	1.7 J	1.0 J	1.4 J	3.5 J	1.5 J	1.5 J	2.4	1.3 J	2.4	1.0 J	4.8	3.0	2.9
335-67-1	PFOA	ng/L	3.3	2.7	2.3	3.2	7.3 J	3.3	3.3	5.1	3.0	4.3	2.2	11	5.2	7.3
375-95-1	PFNA	ng/L	0.66 J	< 0.77	< 0.79	< 0.71	R	< 0.71	< 0.85	< 0.80	< 0.78	< 0.78	< 0.80	1.3 J	14	< 0.71
335-76-2	PFDA	ng/L	< 0.25	< 0.59	< 0.60	< 0.54	1.2 J	< 0.54	< 0.65	0.67 J	< 0.60	< 0.59	< 0.61	1.1 J	0.63 J	< 0.54
2058-94-8	PFUnA	ng/L	< 0.89	< 0.56	< 0.58	< 0.52	R	< 0.52	< 0.52	< 0.49	< 0.48	< 0.47	< 0.49	< 0.93	1.7 J	< 0.52
307-55-1	PFDoA	ng/L	< 0.45 UJ	< 0.50	< 0.52	< 0.46	R	< 0.46	< 0.51	< 0.48	< 0.47	< 0.47	< 0.49	< 0.46 UJ	< 0.46	< 0.47
72629-94-8	PFTTrDA	ng/L	< 1.1	< 0.65	< 0.66	< 0.59	R	< 0.60	< 0.67	< 0.62	< 0.61	< 0.61	< 0.63	< 1.1 UJ	< 0.60	< 0.60
376-06-7	PFTA	ng/L	< 0.59	< 0.49	< 0.51	< 0.45	< 0.46 UJ	< 0.46	< 0.64	< 0.60	< 0.59	< 0.59	< 0.61	< 0.61 UJ	< 0.46	< 0.46
Sulfonic Acids																
375-73-5	PFBS	ng/L	1.8 I	1.9	4.6	1.9	4.3 J	2.7	2.5	4.6	2.5	4.9	< 2.2 U	5.8	3.6	5.9
2706-91-4	PFPeS	ng/L	< 0.24	< 0.49	< 0.51	< 0.45	1.3 J	< 0.46	0.77 IJ	0.68 IJ	0.61 IJ	< 0.59	< 0.61	< 0.25	< 0.46	0.80 J
355-46-4	PFHxS	ng/L	4.9 I	5.0	3.8	5.0	17 J	4.1 IJ	5.2 IJ	5.4	4.6 IJ	4.5	4.2	7.6	4.5	10
375-92-8	PFHpS	ng/L	< 0.15	< 0.43	< 0.44	< 0.39	R	< 0.39	< 0.71	< 0.67	< 0.66	< 0.65	< 0.67	< 0.16	< 0.39	< 0.40
1763-23-1	PFOS	ng/L	6.9 I	4.9	4.1	4.2	16 J	5.4	5.8	12	7.0 IJ	4.8	2.4	6.2 I	2.8	6.8
68259-12-1	PFNS	ng/L	< 0.30	< 0.46	< 0.48	< 0.43	R	< 0.43	< 0.63	< 0.59	< 0.58	< 0.57	< 0.59	< 0.31	< 0.43	< 0.43
335-77-3	PFDS	ng/L	< 0.26	< 0.47	< 0.48	7.3	1.3 J	< 0.43	< 0.69	< 0.64	< 0.63	< 0.63	< 0.65	< 0.27	< 0.43	< 0.43
79780-39-5	PFDoS	ng/L	< 0.79	< 0.48	< 0.49	< 0.44	R	< 0.44	2.5 IJ	< 0.59	< 0.58	< 0.58	< 0.60	< 0.82	< 0.44	< 0.44
757124-72-4	4:2 FTS	ng/L	< 0.19	< 0.58	< 0.60	< 0.53	< 0.53 UJ	< 0.53	< 0.50	< 0.47	< 0.46	< 0.46	< 0.47	< 0.20	< 0.53	< 0.54
27619-97-2	6:2 FTS	ng/L	< 2.0	< 0.67	< 0.69	1.5 J	1.9 J	0.85 J	1.1 J	2.2 J	1.6 J	1.7 J	< 0.68	< 2.1	0.88 J	< 0.62 UJ
39108-34-4	8:2 FTS	ng/L	< 0.37	< 0.68	< 0.70	< 0.62	< 0.62 UJ	< 0.63	< 0.54	< 0.51	< 0.49	< 0.49	< 0.51	< 0.39	< 0.63	< 0.63
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols																
754-91-6	PFOSA	ng/L	< 0.79	< 0.85	< 0.87	< 0.78	R	< 0.78	< 0.77	< 0.72	< 0.70	< 0.70	R	< 0.82	< 0.78	< 0.79
31506-32-8	NMeFOSA	ng/L	< 0.35	< 0.53	< 0.55	< 0.49	R	< 0.49	< 0.59	< 0.55	< 0.54	< 0.54	R	< 0.36	< 0.49	< 0.49
4151-50-2	NEtFOSA	ng/L	< 0.71	< 0.63	< 0.65	< 0.58	R	< 0.58	< 0.61	< 0.58	< 0.56	< 0.56	R	1.6 J	< 0.58	< 0.59
2355-31-9	NMeFOSAA	ng/L	< 0.97	< 0.45	< 0.46	0.42 J	0.73 J	0.52 J	< 0.74	< 0.70	< 0.68	< 0.68	< 0.70 UJ	4.6	1.4 J	1.3 J
2991-50-6	NEtFOSAA	ng/L	< 1.1 UJ	< 0.58	< 0.59	0.71 J	1.7 J	0.73 J	< 0.87	< 0.82	4.3	< 0.79	< 0.82 UJ	2.3 J	12	1.1 J
24448-09-7	NMeFOSE	ng/L	1.3 J	0.84 J	0.90 J	1.5 J	12 J	29 J	1.3 J	< 0.52	1.2 J	1.0 J	R	4.7	2.1	2.2
1691-99-2	NEtFOSE	ng/L	< 0.69	< 0.52	< 0.53	< 0.48	R	< 0.48	1.4 J	< 0.89	1.3 J	< 0.87	R	1.0 J	0.59 J	0.80 J
Replacement Chemicals																
13252-13-6	HFPO-DA	ng/L	< 1.2	< 0.55	< 0.56	< 0.51	1.2 IJ	< 0.51	< 0.53	< 0.49	< 0.48	< 0.48	< 0.50	< 1.3	< 0.51	< 0.51
919005-14-4	DONA	ng/L	1.2 JI	< 0.53	< 0.55	< 0.49	R	< 0.49	< 0.98	< 0.92	< 0.90	< 0.90	< 0.93	< 0.34	< 0.49	< 0.50
756426-58-1	9CI-PF3ONS	ng/L	< 0.19	< 0.32	< 0.33	< 0.29	R	< 0.29	< 0.50	< 0.47	< 0.46	< 0.46	< 0.47	< 0.20	< 0.29	< 0.29
763051-92-9	11CI-PF3OUdS	ng/L	< 0.26	< 0.45	< 0.47	< 0.42	R	< 0.42	< 0.59	< 0.56	< 0.55	< 0.54	< 0.56	< 0.27	< 0.42	< 0.42
Solids																
-	Total Solids	mg/L	1200	--	--	--	--	--	--	--	--	--	--	1400	--	--
-	TSS	mg/L	190	224	184	208	215 J-	270 J-	260	152	247	239	282	220	157	151

Notes CAS RN = Chemical Abstracts Service Registry Number -- = Not analyzed TSS = Total suspended solids	Data Qualifiers U = nondetect J = estimated J- = estimated with potential low bias I = ion transition ratio did not meet acceptance limits R = rejected UJ = estimated nondetect
--	---

Prepared by: L. Auner, 6/21/2023
Checked by: T. Jackson-Strong, 6/23/2023

Table 6: Influent Results (Individual Force Mains)
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08
Sample Name	Influent-07 20220523	Influent-07-20220620	Influent-07-20220718	Influent-07-20220815	Influent-07 20220912	Influent 07 20221010	Influent 07 20221114	Influent 07 20221212	Influent 07 20221212	INFLUENT-08-20210506	DUP01-20210506	INFLUENT-08-20220328	INFLUENT-08-20220425	Influent-08 20220523	Influent-08-20220620	
Sample Date	05/24/2022	06/20/2022	07/18/2022	08/15/2022	09/12/2022	10/10/2022	11/14/2022	12/12/2022	12/12/2022	05/06/2021	05/06/2021	03/28/2022	04/25/2022	05/24/2022	06/20/2022	
CAS RN	Analyte	Unit														
Carboxylic Acids																
375-22-4	PFBA	ng/L	11	20 J	12	12	20	14	13	17.2	5.8	5.1	4.4	5.0	5.5	9.0 J
2706-90-3	PFPeA	ng/L	5.5	7.0 J	5.4	5.9	17	7.7	7.8	98.9	160	170 J	3.0	3.7	3.9	3.1 J
307-24-4	PFHxA	ng/L	8.6	9.6 J	11	10	28	13	15	11.8	5.2	4.9 l	3.7	5.3	4.1	4.5 J
375-85-9	PFHpA	ng/L	2.2	2.8 J	2.7	2.8	6.7	2.5	3.0	1.8 J	1.1 J	1.1 J	1.6 J	1.2 J	0.92 J	1.4 J
335-67-1	PFOA	ng/L	6.2	9.1 J	6.3	6.9	16	6.6	7.1	5.9	2.2	2.5	2.0 J	2.6	1.9	3.2 J
375-95-1	PFNA	ng/L	< 0.75	1.0 J	< 0.74	< 0.89	1.8 J	< 0.79	< 0.79	< 0.79	0.52 J	< 0.23	< 0.74	< 0.77	< 0.71	< 0.74 UJ
335-76-2	PFDA	ng/L	0.63 J	R	< 0.56	< 0.68	2.2	< 0.60	< 0.60	< 0.61	0.48 J	< 0.26	< 0.57	0.71 J	< 0.54	< 0.56 UJ
2058-94-8	PFUnA	ng/L	< 0.55	R	< 0.54	< 0.54	< 0.50	< 0.48	< 0.48	< 0.48	< 0.93	< 0.92	< 0.54	< 0.56	< 0.52	< 0.54 UJ
307-55-1	PFDoA	ng/L	< 0.49	R	< 0.48	< 0.54	< 0.49	< 0.48	< 0.48	< 0.48	< 0.47 UJ	< 0.46 UJ	< 0.49	< 0.50	< 0.46	R
72629-94-8	PFTTrDA	ng/L	< 0.63	R	< 0.62	< 0.70	< 0.64	< 0.62	< 0.62	< 0.62	< 1.1	< 1.1 UJ	< 0.62	< 0.64	< 0.59	R
376-06-7	PFTA	ng/L	< 0.48	R	< 0.47	< 0.67	< 0.61	< 0.59	< 0.60	< 0.60	< 0.62	< 0.61 UJ	< 0.48	< 0.49	< 0.46	< 0.47 UJ
Sulfonic Acids																
375-73-5	PFBS	ng/L	4.8	9.6 J	5.3	7.7	9.0	5.2	8.3	< 4.6 U	1.6 J	< 0.17	1.7 J	2.5	1.7	3.1 J
2706-91-4	PFPeS	ng/L	1.0 J	4.0 lJ	1.1 J	1.5 lJ	1.3 lJ	1.4 J	1.1 J	0.84 J	< 0.25	0.28 J	< 0.48	< 0.49	< 0.45	R
355-46-4	PFHxS	ng/L	11	28 lJ	11	11	14	12	12	11.2	3.3 l	2.1 l	3.5	3.8	4.2	4.9 J
375-92-8	PFHpS	ng/L	< 0.42	R	< 0.41	< 0.75	< 0.68	< 0.66	< 0.66	< 0.67	< 0.16	< 0.16	< 0.41	< 0.43	< 0.39	R
1763-23-1	PFOS	ng/L	8.9	12 J	5.6	6.7	16	7.5	8.6	3.4	2.6 l	2.3	5.0 lJ	2.7	2.9	4.3 lJ
68259-12-1	PFNS	ng/L	< 0.45	R	< 0.44	< 0.66	< 0.60	< 0.58	< 0.58	< 0.58	0.58 J l	< 0.31	< 0.45	< 0.46	< 0.43	R
335-77-3	PFDS	ng/L	< 0.46	R	< 0.45	1.1 lJ	< 0.66	< 0.64	< 0.64	< 0.64	< 0.27	< 0.27	< 0.45	< 0.47	< 0.43	R
79780-39-5	PFDoS	ng/L	< 0.47	R	< 0.46	3.0 lJ	< 0.61	< 0.59	< 0.59	< 0.59	< 0.82	< 0.81	< 0.46	< 0.48	< 0.44	R
757124-72-4	4:2 FTS	ng/L	< 0.57	< 0.53 UJ	< 0.56	< 0.52	< 0.48	< 0.46	< 0.46	< 0.46	< 0.20	< 0.20	< 0.56	< 0.58	< 0.53	< 0.56 UJ
27619-97-2	6:2 FTS	ng/L	3.5 J	4.5 J	1.8 J	2.1 J	3.8 J	1.7 J	1.9 J	1.5 J	< 2.1	2.8 J	1.5 J	< 0.67 UJ	1.4 J	1.2 J
39108-34-4	8:2 FTS	ng/L	< 0.66	R	0.91 J	0.57 J	0.65 J	< 0.50	< 0.50	< 0.50	< 0.39	< 0.39	0.73 J	< 0.68	< 0.62	< 0.65 UJ
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols																
754-91-6	PFOSA	ng/L	< 0.83	R	< 0.81	< 0.81	< 0.73	< 0.71	< 0.71	R	< 0.83	< 0.82	< 0.82	< 0.85	< 0.78	R
31506-32-8	NMeFOSA	ng/L	< 0.52	R	< 0.51	R	< 0.57	< 0.55	< 0.55	R	< 0.36	< 0.36	< 0.51	< 0.53	< 0.49	R
4151-50-2	NEtFOSA	ng/L	< 0.62	R	< 0.61	< 0.64	1.2 J	< 0.57	< 0.57	R	< 0.74	< 0.73	< 0.61	< 0.63	< 0.58	R
2355-31-9	NMeFOSAA	ng/L	0.74 J	1.8 J	2.0 J	1.5 J	4.4	1.2 J	1.4 J	< 0.69 UJ	< 1.0	< 1.0 UJ	< 0.44	< 0.45	< 0.42	0.53 lJ
2991-50-6	NEtFOSAA	ng/L	0.95 J	2.6 J	1.5 J	1.5 J	3.4	1.2 J	0.98 J	0.82 J	< 1.1 UJ	< 1.1 UJ	< 0.56	0.85 J	< 0.53	< 0.55 UJ
24448-09-7	NMeFOSE	ng/L	1.9 J	9.0 J	27	2.1 J	2.1	2.6	1.8 J	R	2.4 J	< 1.2	1.3 J	1.4 J	1.8 J	5.6 J
1691-99-2	NEtFOSE	ng/L	< 0.50	1.3 J	0.59 J	< 1.00	< 0.91	2.0 J	< 0.88	R	< 0.72	< 0.71	< 0.50	0.91 J	< 0.48	0.79 J
Replacement Chemicals																
13252-13-6	HFPO-DA	ng/L	< 0.54	1.8 J	< 0.53	< 0.55	< 0.51	< 0.49	< 0.49	< 0.49	< 1.3	< 1.3	< 0.53	< 0.55	< 0.51	0.69 J
919005-14-4	DONA	ng/L	< 0.52	0.54 J	< 0.51	< 1.0	< 0.94	< 0.91	< 0.91	1.8 J	< 0.34	< 0.33	< 0.52	< 0.53	< 0.49	R
756426-58-1	9CI-PF3ONS	ng/L	< 0.31	R	< 0.30	< 0.53	< 0.48	< 0.47	< 0.47	< 0.47	< 0.20	< 0.20	< 0.31	< 0.32	< 0.29	R
763051-92-9	11CI-PF3OUdS	ng/L	< 0.44	R	< 0.43	< 0.62	< 0.57	< 0.55	< 0.55	< 0.55	< 0.27	< 0.27	< 0.44	< 0.45	< 0.42	R
Solids																
-	Total Solids	mg/L	--	--	--	--	--	--	--	--	1400	--	--	--	--	--
-	TSS	mg/L	214	216 J-	250 J-	208	178	175	234	149	170	--	177	226	221	210 J-

Notes
CAS RN = Chemical Abstracts Service Registry Number
-- = Not analyzed
TSS = Total suspended solids

Data Qualifiers
U = nondetect
J = estimated
J- = estimated with potential low bias
l = ion transition ratio did not meet acceptance limits
R = rejected
UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
Checked by: T. Jackson-Strong, 6/23/2023

Table 6: Influent Results (Individual Force Mains)
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID		INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-11
Sample Name		Influent-08-20220718	Influent-08-20220815	Influent-08-20220912	Influent 08-20221010	Influent 08-20221114	Influent 08-20221212	INFLUENT-11-20210506	INFLUENT-11-20220328	INFLUENT-11-20220425	Influent-11-20220523	Influent-11-20220620	Influent-11-20220718	Influent-11-20220815	Influent-11-20220912	
Sample Date		07/18/2022	08/15/2022	09/12/2022	10/10/2022	11/14/2022	12/12/2022	05/06/2021	03/28/2022	04/25/2022	05/24/2022	06/20/2022	07/18/2022	08/15/2022	09/12/2022	
CAS RN	Analyte	Unit														
Carboxylic Acids																
375-22-4	PFBA	ng/L	8.0	10.0	6.6	2.1	5.0	7.5	3.3 J	2.8	3.4	2.7	4.7 J	1.0 J	4.0	3.3
2706-90-3	PFPeA	ng/L	3.4	3.8	18	3.2	4.2	124	< 0.42	2.1	2.6	2.2	3.7 J	2.3	2.4	6.7
307-24-4	PFHxA	ng/L	4.6	4.7 IJ	7.0	3.5 IJ	6.4	6.8	4.1	3.0	4.3	3.5	4.4 J	4.0	3.9 IJ	6.4
375-85-9	PFHpA	ng/L	1.1 J	1.00 J	1.8 J	0.76 J	1.2 J	0.86 J	0.82 J	1.4 IJ	0.88 J	0.82 J	1.3 J	0.78 J	0.99 J	1.4 J
335-67-1	PFOA	ng/L	2.5	2.4	3.4	2.2	2.6	2.0	2.2	1.8 J	2.6	1.9	R	2.2	2.4	3.4
375-95-1	PFNA	ng/L	< 0.72	< 0.81	< 0.75	< 0.79	< 0.80	< 0.77	0.72 J	< 0.75	< 0.71	< 0.71	0.83 J	< 0.69	< 0.80	< 0.81
335-76-2	PFDA	ng/L	< 0.55	< 0.62	0.58 J	< 0.60	< 0.61	< 0.59	0.54 J	< 0.57	< 0.54	< 0.54	R	< 0.53	0.64 J	0.68 J
2058-94-8	PFUnA	ng/L	< 0.53	< 0.50	< 0.46	< 0.48	< 0.49	< 0.47	< 0.95	< 0.55	< 0.52	< 0.52	R	< 0.51	< 0.49	< 0.49
307-55-1	PFDoA	ng/L	< 0.47	< 0.49	< 0.45	< 0.48	< 0.48	< 0.46	< 0.48 UJ	< 0.49	< 0.46	< 0.46	0.72 J	< 0.45	< 0.48	< 0.49
72629-94-8	PFTtDA	ng/L	< 0.61	< 0.64	< 0.59	< 0.62	< 0.62	< 0.60	< 1.1 UJ	< 0.63	< 0.59	< 0.60	R	< 0.58	< 0.63	< 0.63
376-06-7	PFTA	ng/L	< 0.46	< 0.62	< 0.57	< 0.59	< 0.60	< 0.58	< 0.63 UJ	< 0.48	< 0.45	< 0.46	< 0.45 UJ	< 0.45	< 0.60	< 0.61
Sulfonic Acids																
375-73-5	PFBS	ng/L	2.1	3.1	3.3	1.4 J	4.1	< 1.2 UJ	1.2 J	0.85 J	2.7	1.5 J	2.1 J	1.8	2.4	2.9
2706-91-4	PFPeS	ng/L	< 0.46	< 0.62	< 0.57	< 0.60	< 0.60	< 0.58	< 0.26	< 0.48	< 0.45	< 0.46	R	< 0.45	< 0.61	< 0.61
355-46-4	PFHxS	ng/L	3.2	4.7 IJ	3.7	3.3 IJ	4.3	4.8	2.7 I	2.8 IJ	2.2 IJ	1.5 IJ	6.4 IJ	2.5	3.0 IJ	2.5 IJ
375-92-8	PFHpS	ng/L	< 0.40	< 0.69	< 0.63	< 0.66	< 0.67	< 0.64	< 0.16	< 0.42	< 0.39	< 0.40	R	< 0.39	< 0.67	< 0.68
1763-23-1	PFOS	ng/L	2.5 IJ	3.4 IJ	8.6 IJ	8.6 IJ	3.8	2.2	3.5 I	1.4 J	1.9	2.1	6.2 J	1.9	3.2 IJ	7.3 IJ
68259-12-1	PFNS	ng/L	< 0.44	< 0.60	< 0.55	< 0.58	< 0.59	< 0.57	< 0.32	< 0.45	< 0.43	< 0.43	R	< 0.42	< 0.59	< 0.60
335-77-3	PFDS	ng/L	< 0.44	< 0.66	< 0.61	< 0.64	< 0.64	< 0.62	< 0.28	< 0.46	< 0.43	< 0.43	3.8 J	< 0.42	< 0.65	< 0.65
79780-39-5	PFDoS	ng/L	< 0.45	2.4 IJ	< 0.56	< 0.59	< 0.59	< 0.57	< 0.84	< 0.47 UJ	< 0.44	< 0.44	1.3 J	< 0.43	1.8 IJ	< 0.60
757124-72-4	4:2 FTS	ng/L	< 0.54	< 0.48	< 0.44	< 0.46	< 0.47	< 0.45	< 0.21	< 0.57	< 0.53	< 0.54	< 0.53 UJ	< 0.52	< 0.47	< 0.48
27619-97-2	6:2 FTS	ng/L	2.3 J	< 0.69	0.73 J	0.83 J	< 0.68	< 0.65	< 2.2	< 0.65	< 0.62 UJ	1.1 J	1.7 J	5.1 J	0.71 J	0.84 J
39108-34-4	8:2 FTS	ng/L	0.74 J	0.65 IJ	< 0.48	< 0.50	< 0.50	< 0.49	< 0.40	< 0.66	< 0.62	< 0.63	0.67 J	0.89 J	1.7 J	< 0.51
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols																
754-91-6	PFOSA	ng/L	< 0.80	< 0.74	< 0.68	< 0.71 UJ	< 0.72	R	< 0.85	< 0.83	< 0.78	< 0.79	R	< 0.77	< 0.72	< 0.73
31506-32-8	NMeFOSA	ng/L	< 0.50	< 0.57	< 0.52	< 0.55	< 0.55	R	< 0.37	< 0.52	< 0.49	< 0.49	R	< 0.48	< 0.56	< 0.56
4151-50-2	NEtFOSA	ng/L	< 0.59	< 0.59	< 0.54	< 0.57	< 0.57	R	< 0.75	< 0.62	< 0.58	< 0.58	R	< 0.57	< 0.58	< 0.59
2355-31-9	NMeFOSAA	ng/L	0.68 J	0.75 J	< 0.66	< 0.69	< 0.70	< 0.67 UJ	< 1.0 UJ	0.45 J	0.45 J	0.60 J	1.1 J	0.80 J	< 0.70	0.81 J
2991-50-6	NEtFOSAA	ng/L	3.9	0.86 J	1.3 J	< 0.81	< 0.82	< 0.79 UJ	< 1.1 UJ	< 0.56	< 0.53	< 0.53	1.5 J	0.54 J	< 0.82	< 0.83
24448-09-7	NMeFOSE	ng/L	1.8 J	1.5 J	1.0 J	2.6	1.3 J	R	4.4	1.3 J	1.0 J	4.6	14 J	2.5	1.3 J	1.3 J
1691-99-2	NEtFOSE	ng/L	0.59 J	< 0.91	< 0.84	1.5 J	< 0.89	R	< 0.74	< 0.50	0.64 J	< 0.48	1.6 J	0.50 J	< 0.90	< 0.91
Replacement Chemicals																
13252-13-6	HFPO-DA	ng/L	< 0.52	< 0.51	< 0.47	< 0.49	< 0.49	< 0.48	< 1.3	< 0.54	< 0.51	< 0.51	0.92 J	< 0.50	< 0.50	< 0.50
919005-14-4	DONA	ng/L	< 0.50	< 0.94	< 0.87	< 0.91	< 0.92	0.89 J	< 0.35	< 0.52	< 0.49	< 0.49	R	< 0.48	< 0.93	< 0.94
756426-58-1	9Cl-PF3ONS	ng/L	< 0.30	< 0.48	< 0.44	< 0.47	< 0.47	< 0.45	< 0.21	< 0.31	< 0.29	< 0.29	R	< 0.29	< 0.47	< 0.48
763051-92-9	11Cl-PF3OUdS	ng/L	< 0.43	< 0.57	< 0.53	< 0.55	< 0.56	< 0.54	< 0.28	< 0.44	< 0.42	< 0.42	R	< 0.41	< 0.56	< 0.57
Solids																
-	Total Solids	mg/L	--	--	--	--	--	--	1300	--	--	--	--	--	--	--
-	TSS	mg/L	251 J-	206	185	243	211	367	230	251	200	248	271 J-	314 J-	251	212

Notes
CAS RN = Chemical Abstracts Service Registry Number
-- = Not analyzed
TSS = Total suspended solids

Data Qualifiers
U = nondetect
J = estimated
J- = estimated with potential low bias
I = ion transition ratio did not meet acceptance limits
R = rejected
UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
Checked by: T. Jackson-Strong, 6/23/2023

Table 6: Influent Results (Individual Force Mains)
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18
Sample Name	Influent 11 20221010	Influent 11 20221114	Influent 11 20221212	INFLUENT-18- 20210506	INFLUENT-18- 20220328	INFLUENT-18- 20220425	Influent-18- 20220523	Influent-18- 20220620	Influent-18- 20220718	Influent-18- 20220815	Influent-18- 20220912	Influent 18 20221010	Influent 18 20221114	Influent 18 20221212	Influent 18 20221010	Influent 18 20221114
Sample Date	10/10/2022	11/14/2022	12/12/2022	05/06/2021	03/28/2022	04/25/2022	05/24/2022	06/20/2022	07/18/2022	08/15/2022	09/12/2022	10/10/2022	11/14/2022	12/12/2022	10/10/2022	11/14/2022
CAS RN	Analyte	Unit														
Carboxylic Acids																
375-22-4	PFBA	ng/L	3.7	2.6	< 0.48	10	8.6	12	8.7	9.8 J	12	11	15	11	10	8.5 J
2706-90-3	PFPeA	ng/L	4.4	2.9	164	5.6	6.3	6.5	5.1	5.5 J	5.8	5.8	13	6.8	5.9	109
307-24-4	PFHxA	ng/L	4.3 IJ	4.5 IJ	5.4	8.1	7.3	8.4	6.5	6.7	8.6	8.4	16	7.5	8.7	8.5
375-85-9	PFHpA	ng/L	0.96 J	0.92 J	< 0.67	2.3	3.0	2.7	1.9	2.2	2.4	2.4	5.0	2.2	2.4	1.7 J
335-67-1	PFOA	ng/L	2.0	2.2	1.8 J	7.8	7.9	8.3	5.9	6.5	7.6	7.7	12	6.8	7.4	6.3
375-95-1	PFNA	ng/L	< 0.77	< 0.78	< 0.77	0.93 JI	< 0.76	< 0.74	< 0.70	< 0.70	< 0.70	< 0.80	< 0.82	< 0.78	< 0.75	< 0.80
335-76-2	PFDA	ng/L	< 0.59	< 0.60	< 0.59	1.2 J	< 0.58	< 0.57	0.54 J	< 0.53	< 0.54	< 0.61	< 0.63	< 0.59	< 0.57	< 0.61
2058-94-8	PFUnA	ng/L	< 0.47	< 0.48	< 0.47 UJ	< 0.90	< 0.55	< 0.54	< 0.51	< 0.51	< 0.51	< 0.49	< 0.50	< 0.47	< 0.46	< 0.49
307-55-1	PFDoA	ng/L	< 0.46	< 0.47	< 0.47 UJ	< 0.45 UJ	< 0.49	< 0.49	< 0.45	< 0.46 UJ	< 0.46	< 0.48	< 0.50	< 0.47	< 0.45	< 0.48 UJ
72629-94-8	PFTTrDA	ng/L	< 0.60	< 0.61	< 0.60 UJ	< 1.1	< 0.64	< 0.63	< 0.58	< 0.59 UJ	< 0.59	< 0.62	< 0.64	< 0.61	< 0.59	< 0.63 UJ
376-06-7	PFTA	ng/L	< 0.58	< 0.59	< 0.58	< 0.60	< 0.49	< 0.48	< 0.45	< 0.45 UJ	< 0.45	< 0.60	< 0.62	< 0.59	< 0.57	< 0.60
Sulfonic Acids																
375-73-5	PFBS	ng/L	2.4	2.6	< 0.92 UJ	4.0	3.1	5.8	3.9	5.1	5.6	7.3	10	4.6	6.8	< 3.2 U
2706-91-4	PFPeS	ng/L	< 0.58	< 0.59	< 0.58	1.6	1.5 J	1.9	1.3 J	1.8 J	1.5 J	2.0	2.2 IJ	1.8 IJ	1.9	1.2 J
355-46-4	PFHxS	ng/L	4.0 IJ	2.9	2.7	15	17	16	13	14 J	15	17	18	15	16	13.9
375-92-8	PFHpS	ng/L	< 0.65	< 0.66	< 0.65	0.35 J	< 0.42	0.41 J	0.39 J	< 0.39	< 0.39	< 0.67	< 0.69	< 0.65	< 0.63	< 0.67
1763-23-1	PFOS	ng/L	4.3 IJ	2.2	1.6 J	12	6.7	9.8	7.1	9.2	7.6	9.9	14	9.6	8.4	5.1
68259-12-1	PFNS	ng/L	< 0.57	< 0.58	< 0.57	< 0.30	< 0.46	< 0.45	< 0.42	< 0.42	< 0.42	< 0.59	< 0.61	< 0.57	< 0.55	< 0.59
335-77-3	PFDS	ng/L	< 0.62	< 0.63	< 0.62	< 0.26	< 0.46	< 0.45	< 0.42	< 0.43	< 0.43	< 0.64	< 0.66	< 0.63	< 0.61	< 0.64 UJ
79780-39-5	PFDoS	ng/L	< 0.57	< 0.58	< 0.57	< 0.80	< 0.47	< 0.46	< 0.43	< 0.44	< 0.44	3.4 IJ	< 0.61	< 0.58	< 0.56	< 0.59
757124-72-4	4:2 FTS	ng/L	< 0.45	< 0.46	< 0.45	< 0.20	< 0.57	< 0.56	< 0.52	< 0.53	< 0.53	< 0.47	< 0.48	< 0.46	< 0.44	< 0.47
27619-97-2	6:2 FTS	ng/L	< 0.65	< 0.67	< 0.66	3.8 J	2.2 J	< 0.65 U	2.2 J	2.4	2.7 J	2.5 J	4.8 J	2.3 J	2.1 J	2.0 J
39108-34-4	8:2 FTS	ng/L	< 0.49	< 0.50	< 0.49	0.46 JI	< 0.67	< 0.66	< 0.61	< 0.62	1.0 J	0.56 J	0.55 J	< 0.49	< 0.48	< 0.51
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols																
754-91-6	PFOSA	ng/L	< 0.69	< 0.71	R	< 0.81	< 0.84	< 0.82	< 0.77	< 0.78 UJ	< 0.78	< 0.72	< 0.74	< 0.70	< 0.68	R
31506-32-8	NMeFOSA	ng/L	< 0.53	< 0.55	R	< 0.35	< 0.52	< 0.51	< 0.48	< 0.48	< 0.49	R	< 0.57	< 0.54	< 0.52	R
4151-50-2	NEtFOSA	ng/L	< 0.56	< 0.57	R	< 0.71	< 0.62	< 0.61	< 0.57	R	< 0.58	< 0.58	< 0.59	< 0.56	< 0.54	R
2355-31-9	NMeFOSAA	ng/L	< 0.67	< 0.69	R	< 0.99	0.67 J	1.0 J	0.58 J	0.94 J	1.0 J	1.2 J	2.3	1.0 J	0.84 J	< 0.70 UJ
2991-50-6	NEtFOSAA	ng/L	< 0.79	< 0.80	R	1.3 J	1.3 J	1.4 J	0.83 J	1.9 J	1.7 J	1.6 J	3.4	1.4 J	1.2 J	0.91 J
24448-09-7	NMeFOSE	ng/L	2.0	2.6	R	2.9 J	1.5 J	0.73 J	3.7	5.7	24	1.4 J	1.4 J	2.4	1.5 J	R
1691-99-2	NEtFOSE	ng/L	1.0 J	< 0.88	R	3.7	< 0.51	1.7 J	< 0.47	0.49 J	< 0.47	< 0.89	< 0.92	R	< 0.84	R
Replacement Chemicals																
13252-13-6	HFPO-DA	ng/L	< 0.48	< 0.49	< 0.48	< 1.2	< 0.54	< 0.53	< 0.50	< 0.50	< 0.50	< 0.50	< 0.51	< 0.48	< 0.47	< 0.50
919005-14-4	DONA	ng/L	< 0.89	< 0.91	2.2	3.2 I	< 0.53	< 0.52	< 0.48	< 0.49	< 0.49	< 0.92	< 0.95	< 0.90	< 0.87	2.3
756426-58-1	9CI-PF3ONS	ng/L	< 0.45	< 0.46	< 0.46	< 0.20	< 0.31	< 0.31	< 0.29	< 0.29	< 0.29	< 0.47	< 0.49	< 0.46	< 0.44	< 0.47
763051-92-9	11CI-PF3OUdS	ng/L	< 0.54	< 0.55	< 0.54	< 0.26	< 0.45	< 0.44	< 0.41	< 0.41	< 0.41	< 0.56	< 0.58	< 0.54	< 0.53	< 0.56
Solids																
-	Total Solids	mg/L	--	--	--	1500	--	--	--	--	--	--	--	--	--	--
-	TSS	mg/L	224	239	291	250	186	264	230	285 J-	269 J-	238	175	193	264	220

Notes
 CAS RN = Chemical Abstracts Service Registry Number
 -- = Not analyzed
 TSS = Total suspended solids

Data Qualifiers
 U = nondetect
 J = estimated
 J- = estimated with potential low bias
 I = ion transition ratio did not meet acceptance limits
 R = rejected
 UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
 Checked by: T. Jackson-Strong, 6/23/2023

Table 7: Effluent Results
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID			NR 102 Surface Water Criteria	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Name				EFFLUENT-PERM- 20210506	DUP02- 20210506	EFFLUENT- 20220329	EFFLUENT- 20220426	Effluent 20220525	Effluent- 20220621	Effluent 20220719	Effluent 20220816	Effluent 20220913	Effluent 20221011	Effluent 20221115	Effluent 20221213
Sample Date				05/06/2021	05/06/2021	03/29/2022	04/26/2022	05/25/2022	06/21/2022	07/19/2022	08/16/2022	09/13/2022	10/11/2022	11/15/2022	12/13/2022
CAS RN	Analyte	Unit													
Carboxylic Acids															
375-22-4	PFBA	ng/L	-	10	11	7.7	9.9	9.7	6.5 J	9.9	8.8	13	9.6	10	6.1
2706-90-3	PFPeA	ng/L	-	15	17	12	11	16	14 J	20	18	31	20	16	12.9
307-24-4	PFHxA	ng/L	-	24	22	17	21	22	16 J	17	16	26	17	18	16.7
375-85-9	PFHpA	ng/L	-	3.5	3.8	2.4	2.5 J	1.8 J	1.6 J	1.8 J	1.8 J	3.9	2.1	2.0	1.5 J
335-67-1	PFOA	ng/L	95 ⁽¹⁾	9.7	11	9.0	7.8	6.8	7.2 J	8.2	7.8	11	8.5	7.8	6.5
375-95-1	PFNA	ng/L	-	0.81 J	0.71 J	1.3 J	< 1.0	< 0.71	0.78 J	< 0.72	< 0.89	0.97 J	1.3 J	< 0.78	< 0.81
335-76-2	PFDA	ng/L	-	1.4 J	1.5 J	0.90 J	0.98 J	1.4 J	1.3 J	1.7 J	1.3 J	1.4 J	1.3 J	1.1 J	0.85 J
2058-94-8	PFUnA	ng/L	-	< 0.96	< 1.0	< 0.51	< 0.76	< 0.52	< 0.52 UJ	< 0.53	< 0.54	< 0.47	< 0.46	< 0.48	< 0.49
307-55-1	PFDoA	ng/L	-	< 0.48	< 0.51	< 0.45	< 0.68	< 0.46	< 0.46 UJ	< 0.47	< 0.54	< 0.46	< 0.46	< 0.47	< 0.49
72629-94-8	PFTrDA	ng/L	-	< 1.1	< 1.2	< 0.58	< 0.88	< 0.60	< 0.60 UJ	< 0.61	< 0.69	< 0.60	< 0.60	< 0.61	< 0.63
376-06-7	PFTA	ng/L	-	< 0.64	< 0.67	< 0.45	< 0.67	< 0.46	< 0.46 UJ	< 0.46	< 0.67	< 0.58	< 0.57	< 0.59	< 0.61
Sulfonic Acids															
375-73-5	PFBS	ng/L	-	3.9 J	< 0.18 UJ	2.7	3.5	2.2	3.0 J	3.0	2.4	6.4	2.3	2.9	< 3.3 U
2706-91-4	PFPeS	ng/L	-	0.54 J	0.91 J	0.73 J	< 0.67	0.54 J	0.64 J	0.55 J	< 0.67	0.79 J	< 0.58	0.63 J	< 0.61
355-46-4	PFHxS	ng/L	-	7.5	7.0	7.5	7.0	6.2	6.5 J	7.0	5.8	9.6	7.1	7.1	7.0
375-92-8	PFHpS	ng/L	-	< 0.17	< 0.18	< 0.39	< 0.58	< 0.39	< 0.39 UJ	< 0.40	< 0.74	< 0.64	< 0.64	< 0.65	< 0.68
1763-23-1	PFOS	ng/L	g ⁽²⁾	3.7	3.7	3.8	3.0	3.1	4.3 J	4.5	3.3	5.9	5.2	4.4	3.6
68259-12-1	PFNS	ng/L	-	< 0.32	< 0.34	< 0.42	< 0.63	< 0.43	< 0.43 UJ	< 0.43	< 0.65	< 0.57	< 0.56	< 0.57	< 0.60
335-77-3	PFDS	ng/L	-	< 0.28	< 0.29	< 0.42	< 0.63	< 0.43	< 0.43 UJ	< 0.44	< 0.71	< 0.62	< 0.61	< 0.63	< 0.65
79780-39-5	PFDoS	ng/L	-	< 0.85	< 0.89	< 0.43 UJ	< 0.65	< 0.44	< 0.44 UJ	< 0.45	< 0.66	< 0.57	< 0.57	< 0.58	< 0.60
757124-72-4	4:2 FTS	ng/L	-	< 0.21	< 0.22	< 0.52	< 0.79	< 0.54	< 0.53 J	< 0.54	< 0.52	< 0.45	< 0.45	< 0.46	< 0.47
27619-97-2	6:2 FTS	ng/L	-	< 2.2	< 2.3	2.1 J	< 0.91 UJ	1.3 J	1.0 J	1.5 J	0.83 J	2.6 J	0.88 J	0.79 J	0.76 J
39108-34-4	8:2 FTS	ng/L	-	< 0.40	< 0.42	< 0.61	< 0.92	< 0.63	< 0.63 UJ	< 0.64	< 0.56	< 0.49	< 0.48	< 0.49	< 0.51
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols															
754-91-6	PFOSA	ng/L	-	< 0.86	2.1	< 0.77	< 1.2	< 0.79	< 0.78 UJ	< 0.80	< 0.80	< 0.69	< 0.69	< 0.70	< 0.73
31506-32-8	NMeFOSA	ng/L	-	< 0.38	< 0.40	R	R	< 0.49	R	R	< 0.62	< 0.53	< 0.53	< 0.54	< 0.56
4151-50-2	NEtFOSA	ng/L	-	< 0.76	< 0.80	R	R	< 0.58	R	R	< 0.64	< 0.55	< 0.55	< 0.56	< 0.58
2355-31-9	NMeFOSAA	ng/L	-	1.4 J	1.3 J	0.84 J	1.1 J	0.92 J	0.94 J	1.4 J	1.2 J	1.2 J	1.2 J	1.3 J	0.82 J
2991-50-6	NEtFOSAA	ng/L	-	< 1.1	< 1.2	0.53 J	< 0.78	< 0.53	0.71 J	0.72 J	< 0.91	< 0.79	< 0.78	< 0.80	< 0.83
24448-09-7	NMeFOSE	ng/L	-	< 1.2	< 1.3	< 0.31	< 0.46	< 0.32	0.67 J	< 0.32	< 0.58	< 0.50	< 0.50	< 0.51	< 0.53
1691-99-2	NEtFOSE	ng/L	-	< 0.75	< 0.78	< 0.47	< 0.70	< 0.48	< 0.48	< 0.48	< 0.99	< 0.86	< 0.85	< 0.87	< 0.90
Replacement Chemicals															
13252-13-6	HFPO-DA	ng/L	-	< 1.3	< 1.4	< 0.50	< 0.74	< 0.51	R	< 0.52	< 0.55	< 0.48	< 0.47	< 0.48	< 0.50
919005-14-4	DONA	ng/L	-	< 0.35	< 0.37	< 0.48	< 0.72	< 0.49	< 0.49 UJ	< 0.50	< 1.0	< 0.89	< 0.88	< 0.90	< 0.93
756426-58-1	9Cl-PF3ONS	ng/L	-	< 0.21	< 0.22	< 0.29	< 0.43	< 0.29	< 0.29 UJ	< 0.30	< 0.52	< 0.45	< 0.45	< 0.46	< 0.48
763051-92-9	11Cl-PF3OUdS	ng/L	-	< 0.28	< 0.29	< 0.41	< 0.61	< 0.42	< 0.42 UJ	< 0.43	< 0.62	< 0.54	< 0.53	< 0.54	< 0.57
Solids															
-	Total Solids	mg/L	-	1200	--	--	--	--	--	--	--	--	--	--	--
-	TSS	mg/L	-	6.5	--	<5.0	<5.0	<5.0	10.6 J-	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	9.3 J

Notes
CAS RN = Chemical Abstracts Service Registry Number
- = Standard not established
-- = Not analyzed
TSS = Total suspended solids
NR 102 = Wisconsin Administrative Code chapter NR 102

Data Qualifiers
U = nondetect
J = estimated
J- = estimated with potential low bias
I = ion transition ratio did not meet acceptance limits
R = rejected
UJ = estimated nondetect

Footnotes
(1) Standard is for surface waters not classified as public water supplies.
(2) Standard is for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.

Table 8: Biosolids Results
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID	BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-POST-THERM	BIOSOLIDS-PRE-THERM	
Sample Name	BIOSOLIDS-A-20210506	BIOSOLIDS-A-20220330	DUP02-20220330	Biosolids A-20220622	Biosolids A-20220914	Biosolids A-20221214	BIOSOLIDS-B-20210506	DUP03-20210506	Class B Biosolids	Class B Biosolids Dup	BIOSOLIDS-B-20220329	DUP01-20220329	Biosolids B-20220622	Biosolids B-20220914	Biosolids B-20221214	BIOSOLIDS-POST-THERM-20220329	BIOSOLIDS-PRE-THERM-20220329		
Sample Date	05/06/2021	03/30/2022	03/30/2022	06/22/2022	09/14/2022	12/14/2022	05/06/2021	05/06/2021	07/19/2021	07/19/2021	03/29/2022	03/29/2022	06/22/2022	09/14/2022	12/14/2022	03/30/2022	03/29/2022		
CAS RN	Analyte	Unit																	
Carboxylic Acids																			
375-22-4	PFBA	ug/kg	3.4 J	< 0.11	0.11 J	< 0.11 U	11	9.8	< 4.7	< 4.5	< 0.74	< 0.88	< 0.42	< 0.43	< 0.53	< 0.49	< 0.44	1.7 J	< 0.91
2706-90-3	PFPeA	ug/kg	11 J	0.18 J	0.14 J	8.7	17	15.0	< 13	< 12	< 0.66	< 0.79	< 0.46	< 0.48	0.73 J	0.69 J	< 0.44	1.4 J	< 1.0
307-24-4	PFHxA	ug/kg	29 J	1.7	1.6	23	42	37.1	< 7.0	< 6.8	3.2	3.8 I	2.6 IJ	2.4	2.1	2.4	1.3 J	9.7	4.9
375-85-9	PFHpA	ug/kg	< 0.96	< 0.10	< 0.10	1.3	4.9	2.9	< 4.8	< 4.7	< 0.61	< 0.73	< 0.40	< 0.41	< 0.64	< 0.60	< 0.54	< 1.1	< 0.87
335-67-1	PFOA	ug/kg	16 J	1.7	1.7	21	24	25.8	< 14	< 14	1.2 J	1.6 J	1.4 J	1.3 J	1.3 J	1.4 J	1.2 J	4.6 J	1.9 J
375-95-1	PFNA	ug/kg	1.3 JI	0.74	0.73	1.2	1.4	1.4	< 6.0	< 5.8	0.60 J	0.65 J	< 0.50	0.56 J	< 0.58	0.56 J	< 0.48	< 1.5	< 1.1
335-76-2	PFDA	ug/kg	15 J	5.7	5.6	9.2	12	11.8	< 3.7	< 3.5	4.9	5.7	2.9 J	3.4	3.9	4.6	2.8	5.4	3.8 J
2058-94-8	PFUnA	ug/kg	< 1.2	1.4	1.4	1.1	1.3	1.5	< 6.0	< 5.8	1.2 J	1.2 J	1.1 J	0.88 J	0.68 J	1.0 J	0.81 J	1.5 J	< 1.1
307-55-1	PFDoA	ug/kg	5.4 J	3.1 J	3.7 J	3.8	3.8 J	4.0 J	< 11	< 11	2.6 J	3.0 J	1.6 J	1.6 J	1.9	3.6	1.8	3.5 J	1.7 J
72629-94-8	PFTDA	ug/kg	< 1.7	0.56 J	0.56 J	0.50	0.74 J	1.6 J	< 8.5	< 8.2	< 0.34 UJ	< 0.40	< 0.38	< 0.39	< 0.59	0.57 J	< 0.49	< 1.1	< 0.82
376-06-7	PFTA	ug/kg	< 1.8	0.73 J	0.66 J	0.88	1.1 J	1.1	< 9.0	< 8.7	1.0 J	0.85 J	< 0.56	< 0.58	< 0.64	0.82 J	0.56 J	< 1.6	< 1.2
Sulfonic Acids																			
375-73-5	PFBS	ug/kg	< 0.83	< 0.10	< 0.099	< 0.11 U	1.6	1.8	< 4.2	< 4.0	< 0.61	< 0.73	2.2 IJ	< 0.40	1.9 IJ	1.2 IJ	1.2 J	< 1.1	< 0.85
2706-91-4	PFPeS	ug/kg	< 0.66	< 0.085	< 0.084	< 0.097	< 0.075	0.11 J	< 3.3	< 3.2	< 0.60	< 0.71	< 0.33	< 0.34	< 0.45	< 0.42	< 0.37	< 0.95	< 0.72
355-46-4	PFHxS	ug/kg	< 1.0	1.0	0.98	0.81	1.0	1.0	< 5.2	< 5.0	2.0 J	2.4 J	1.3 J	0.82 J	0.82 J	2.0	0.52 J	2.3 J	1.0 J
375-92-8	PFHpS	ug/kg	< 1.2	0.76 IJ	0.44 IJ	0.25 IJ	0.19 J	0.39	< 5.9	< 5.6	< 0.79	< 0.94	< 0.44	< 0.45	0.73 IJ	< 0.48	< 0.43	< 1.3	< 0.96
1763-23-1	PFOS	ug/kg	19 J	9.9	9.7	24 IJ	14	14.7	< 33	< 32	8.0 I	10 I	6.5	6.3	7.5	8.7	8.5	8.7	6.8
68259-12-1	PFNS	ug/kg	< 0.66	< 0.081	< 0.080	< 0.14	< 0.11	< 0.11	< 3.3	< 3.2	< 0.47	< 0.56	< 0.31	< 0.33	< 0.64	< 0.60	< 0.54	< 0.91	< 0.69
335-77-3	PFDS	ug/kg	4.6 J	1.6	1.5	1.5	1.7	1.7	< 6.5	< 6.3	2.4 J	2.0 J	0.56 J	0.73 J	1.5 J	1.8	0.70 J	< 1.3	1.1 J
79780-39-5	PFDoS	ug/kg	< 2.0	< 0.14 UJ	< 0.13	< 0.11	< 0.081	< 0.084	< 10	< 9.6	< 0.76 UJ	< 0.90	< 0.53 UJ	< 0.54	< 0.48	0.89 IJ	< 0.40	< 1.5	< 1.2 UJ
757124-72-4	4:2 FTS	ug/kg	< 12 UJ	< 0.14	< 0.14	< 0.094	< 0.072	< 0.075	< 62	< 59	< 0.82	< 0.98	< 0.56	< 0.58	< 0.43	< 0.40	< 0.36	< 1.6	< 1.2
27619-97-2	6:2 FTS	ug/kg	< 5.0	0.31 J	0.25 IJ	1.2	2.4 J	2.1	< 25	< 24	< 0.43	< 0.52	< 0.56	< 0.58	< 0.77	< 0.72	< 0.64	< 1.6	< 1.2
39108-34-4	8:2 FTS	ug/kg	< 8.3	0.89 J	0.84 J	1.0	1.1	1.2	< 42	< 40	0.60 J	0.67 J	0.77 J	0.72 IJ	0.89 IJ	< 0.76	< 0.68	< 1.3	< 1.00
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols																			
754-91-6	PFOSA	ug/kg	< 2.7	1.2	1.1	1.6	0.97	1.6	< 14	< 13	1.0 J	1.2 J	0.98 J	0.94 J	0.81 J	0.52 J	< 0.45	1.2 J	0.97 J
31506-32-8	NMeFOSA	ug/kg	< 1.4	0.25 J	< 0.11	0.17 J	0.096 IJ	0.13 J	< 6.9	< 6.6	< 0.79	< 0.94	< 0.44	R	R	R	R	R	< 0.96
4151-50-2	NEtFOSA	ug/kg	< 0.79	0.51 J	0.60 J	0.30 IJ	0.18 J	0.18 J	< 4.0	< 3.9	< 0.76	< 0.90	< 0.42	R	R	R	R	R	< 0.91
2355-31-9	NMeFOSAA	ug/kg	41 J	21	22	28	31	29.8	< 65	< 63	13	16	9.9	9.7	8.8	13	8.6	21	10
2991-50-6	NEtFOSAA	ug/kg	14 J	7.3	7.9	9.2	7.9	9.0	< 62	< 59	7.9	9.1	3.5	3.5	5.7	6.7	4.9	7.9	5.7
24448-09-7	NMeFOSE	ug/kg	9.9 J	17	16	9.7	5.1	5.8	< 12	< 11	11	12	7.9	8.5	5.4 J+	6.9	4.5	15	7.1
1691-99-2	NEtFOSE	ug/kg	< 1.2	3.4	3.2	3.4	2.4	2.8	< 6.0	< 5.8	3.1 J	5.7	2.2	1.8 J	1.5 J	2.1	1.3 J	3.6 J	1.8 J
Replacement Chemicals																			
13252-13-6	HFPO-DA	ug/kg	< 3.6	< 0.14	< 0.13	< 0.11	< 0.087	< 0.090	< 18	< 18	< 0.66	< 0.79	< 0.52	< 0.54	< 0.52	< 0.48	< 0.43	< 1.5	< 1.1
919005-14-4	DONA	ug/kg	< 0.60	< 0.17	< 0.17	< 0.15	< 0.11	< 0.12	< 3.0	< 2.9	< 0.63	< 0.75	< 0.68	< 0.70	< 0.67	< 0.63	< 0.56	< 2.0	< 1.5
756426-58-1	9Cl-PF3ONS	ug/kg	< 0.89	< 0.066	< 0.065	< 0.10	< 0.078	< 0.081	< 4.5	< 4.3	< 0.56 UJ	< 0.67	< 0.26	< 0.26	< 0.47	< 0.43	< 0.39	< 0.74	< 0.56
763051-92-9	11Cl-PF3OUdS	ug/kg	< 0.73	< 0.074	< 0.073	< 0.10	< 0.079	< 0.082	< 3.7	< 3.5	< 0.50	< 0.59	< 0.28	< 0.29	< 0.47	< 0.44	< 0.39	< 0.82	< 0.62
Sum of PFOA + PFOS																			
-	PFOA+PFOS	ug/kg	35	11.6	11.4	45	38	40.5	--	--	9.2	11.6	7.9	7.6	8.8	10.1	9.7	--	--

Notes
CAS RN = Chemical Abstracts Service Registry Number
-- = Not analyzed or not applicable
Sum of PFOA and PFOS is based on the sum of detected concentrations.

Data Qualifiers
U = nondetect
J = estimated
J+ = estimated with potential high bias
I = ion transition ratio did not meet acceptance limits
R = rejected
UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
Checked by: T. Jackson-Strong, 6/23/2023

Table 9: TOP Assay Results (Influent and Effluent)
 Madison Metropolitan Sewerage District
 Madison, Dane County, Wisconsin
 TRC Project #390131.0003.0000

Location ID			INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-02	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-07	INFLUENT-08	INFLUENT-08	INFLUENT-08	INFLUENT-08
Pre/Post Oxidation			PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
Sample Name			Influent-02-20220620	Influent-02-20220620	INFLUENT 02 20221212	INFLUENT 02 20221212	Influent-07-20220620	Influent-07-20220620	INFLUENT 07 20221212	INFLUENT 07 20221212	Influent-08-20220620	Influent-08-20220620	INFLUENT 08 20221212	INFLUENT 08 20221212
Sample Date			06/20/2022	06/20/2022	12/12/2022	12/12/2022	06/20/2022	06/20/2022	12/12/2022	12/12/2022	06/20/2022	06/20/2022	12/12/2022	12/12/2022
CAS RN	Analyte	Unit												
Carboxylic Acids														
375-22-4	PFBA	ng/L	< 3.8	20.7	3.88 J	11.9	5.58 J	29.7	12.2	25.9	< 3.8	21.1	< 3.80	10.7
2706-90-3	PFPeA	ng/L	13	29.2	53.3	12.3	13.8	40.8	7.51 J	15.2	11.9	32.6	56.3	18.1
307-24-4	PFHxA	ng/L	4 J	8.92 J	5.05 J	5.96 J	6.1 J	14.4	12.0	14.9	3.15 J	10.8	4.86 J	9.00 J
375-85-9	PFHpA	ng/L	< 2.9	6.59 J	< 2.90	< 2.90	< 2.9	9.69 J	< 2.90	< 2.90	< 2.9	10	< 2.90	< 2.90
335-67-1	PFOA	ng/L	2.23 J	5.93 J	2.73 J	2.75 J	2.82 J	7.43 J	6.39 J	6.70 J	< 2.1	5.27 J	2.56 J	2.70 J
375-95-1	PFNA	ng/L	< 2.45	< 2.45	< 2.45	< 2.45	< 2.45	2.64 J	< 2.45	< 2.45	< 2.45	2.79 J	< 2.45	< 2.45
335-76-2	PFDA	ng/L	< 3.6	< 3.6	< 3.60	< 3.60	< 3.6	< 3.6	< 3.60	< 3.60	< 3.6	< 3.6	< 3.60	< 3.60
2058-94-8	PFUnA	ng/L	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10
307-55-1	PFDoA	ng/L	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25
72629-94-8	PFTTrDA	ng/L	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08
376-06-7	PFTA	ng/L	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85
Sulfonic Acids														
375-73-5	PFBS	ng/L	1.67 J	< 1.55	2.54 J	< 1.55	2.06 J	1.99 J	4.14 J	< 1.55	< 1.55	< 1.55	1.60 J	< 1.55
2706-91-4	PFPeS	ng/L	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	3.36 J	< 2.55	< 2.55	< 2.55	< 2.55
355-46-4	PFHxS	ng/L	4.6 J	< 3.1	5.71 J	6.68 J	5.4 J	4.76 J	11.6	16.4	< 3.1	< 3.1	5.76 J	6.71 J
375-92-8	PFHpS	ng/L	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05
1763-23-1	PFOS	ng/L	5.2 J	3.02 J	4.09 J	< 16.1 U	5.34 J	2.5 J	5.96 J	< 15.5 U	3.25 J	< 1.9	5.48 J	15.3
68259-12-1	PFNS	ng/L	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35
335-77-3	PFDS	ng/L	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05
79780-39-5	PFDoS	ng/L	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28
757124-72-4	4:2 FTS	ng/L	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10
27619-97-2	6:2 FTS	ng/L	< 3.75	< 3.75	< 3.75	< 15.3 U	< 3.75	< 3.75	< 3.75	< 16.9 U	< 3.75	< 3.75	< 3.75	< 15.0 U
39108-34-4	8:2 FTS	ng/L	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols														
754-91-6	PFOSA	ng/L	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85
31506-32-8	NMeFOSA	ng/L	< 4.15	< 4.15	< 4.15	< 4.15	< 4.15	R	< 4.15	< 4.15	< 4.15	< 4.15	< 4.15	< 4.15
4151-50-2	NEtFOSA	ng/L	< 3.5	< 3.5	< 3.50	< 3.50	< 3.5	R	< 3.50	< 3.50	< 3.5	< 3.5	< 3.50	< 3.50
2355-31-9	NMeFOSAA	ng/L	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25
2991-50-6	NEtFOSAA	ng/L	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95
24448-09-7	NMeFOSE	ng/L	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25
1691-99-2	NEtFOSE	ng/L	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53
Replacement Chemicals														
13252-13-6	HFPO-DA	ng/L	< 16.7	< 16.7	< 4.33	< 4.33	< 16.7	< 16.7	< 4.33	< 4.33	< 16.7	< 16.7	< 4.33	< 4.33
919005-14-4	DONA	ng/L	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15
756426-58-1	9Cl-PF3ONS	ng/L	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25
763051-92-9	11Cl-PF3OUdS	ng/L	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25

Notes
 CAS RN = Chemical Abstracts Service Registry Number
 TOP Assay = Total oxidizable precursor assay

Data Qualifiers
 U = nondetect
 J = estimated
 R = rejected
 UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
 Checked by: T. Jackson-Strong, 6/23/2023

Table 9: TOP Assay Results (Influent and Effluent)
 Madison Metropolitan Sewerage District
 Madison, Dane County, Wisconsin
 TRC Project #390131.0003.0000

Location ID			INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-11	INFLUENT-18	INFLUENT-18	INFLUENT-18	INFLUENT-18	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Pre/Post Oxidation			PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
Sample Name			Influent-11-20220620	Influent-11-20220620	INFLUENT 11-20221212	INFLUENT 11-20221212	Influent-18-20220620	Influent-18-20220620	INFLUENT 18-20221212	INFLUENT 18-20221212	Effluent-20220621	Effluent-20220621	EFFLUENT 20221213	EFFLUENT 20221213
Sample Date			06/20/2022	06/20/2022	12/12/2022	12/12/2022	06/20/2022	06/20/2022	12/12/2022	12/12/2022	06/21/2022	06/21/2022	12/13/2022	12/13/2022
CAS RN	Analyte	Unit												
Carboxylic Acids														
375-22-4	PFBA	ng/L	< 3.8	22.6	< 3.80	11.7	4.43 J	27.1	8.77 J	22.8	< 3.8	9.25 J	7.34 J	20.1 J
2706-90-3	PFPeA	ng/L	19	31.4	69.7	11.0	16.5	43.7	6.59 J	12.0	5.17 J	8.37 J	12.3	15.9 J
307-24-4	PFHxA	ng/L	3.06 J	11.4	3.44 J	7.96 J	5.37 J	13.1	8.01 J	11.2	6.18 J	6.61 J	16.4	14.8 J
375-85-9	PFHpA	ng/L	< 2.9	10.4	< 2.90	< 2.90	< 2.9	9.51 J	< 2.90	< 2.90	< 2.9	< 2.9	< 2.90	3.28 J
335-67-1	PFOA	ng/L	< 2.1	5.46 J	2.52 J	2.96 J	3.03 J	7.23 J	6.81 J	7.12 J	2.84 J	3.36 J	7.29 J	5.21 J
375-95-1	PFNA	ng/L	< 2.45	2.61 J	< 2.45	< 2.45	< 2.45	2.45 J	< 2.45	< 2.45	< 2.45	< 2.45	< 2.45	< 2.45 UJ
335-76-2	PFDA	ng/L	< 3.6	< 3.6	< 3.60	< 3.60	< 3.6	< 3.6	< 3.60	< 3.60	< 3.6	< 3.6	< 3.60	< 3.60 UJ
2058-94-8	PFOA	ng/L	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10 UJ
307-55-1	PFDoA	ng/L	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25 UJ
72629-94-8	PFTTrDA	ng/L	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08	< 3.08 UJ
376-06-7	PFTA	ng/L	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85	< 2.85 UJ
Sulfonic Acids														
375-73-5	PFBS	ng/L	< 1.55	< 1.55	< 1.55	1.95 J	2.53 J	2.07 J	3.96 J	< 1.55	< 1.55	< 1.55	2.86 J	3.30 J
2706-91-4	PFPeS	ng/L	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55	< 2.55 UJ
355-46-4	PFHxS	ng/L	< 3.1	< 3.1	< 3.10	7.85 J	6.98 J	6.23 J	14.9	19.4	< 3.1	< 3.1	7.27 J	6.04 J
375-92-8	PFHpS	ng/L	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05 UJ
1763-23-1	PFOS	ng/L	4.12 J	< 1.9	3.97 J	< 14.4 U	4.25 J	3.76 J	8.87 J	< 21.2 U	1.98 J	< 1.9	4.17 J	8.90 J
68259-12-1	PFNS	ng/L	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35	< 4.35 UJ
335-77-3	PFDS	ng/L	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05	< 3.05 UJ
79780-39-5	PFDoS	ng/L	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28	< 3.28 UJ
757124-72-4	4:2 FTS	ng/L	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10	< 3.1	< 3.1	< 3.10	< 3.10 UJ
27619-97-2	6:2 FTS	ng/L	< 3.75	< 3.75	< 3.75	< 17.3 U	< 3.75	< 3.75	< 3.75	< 19.9 U	< 3.75	< 3.75	< 3.75	< 3.75 UJ
39108-34-4	8:2 FTS	ng/L	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65	< 2.65 UJ
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols														
754-91-6	PFOSA	ng/L	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85	< 1.85 UJ
31506-32-8	NMeFOSA	ng/L	< 4.15	< 4.15	< 4.15	< 4.15	< 4.15	R	< 4.15	< 4.15	< 4.15	< 4.15	< 4.15	< 4.15 UJ
4151-50-2	NEtFOSA	ng/L	< 3.5	< 3.5	< 3.50	< 3.50	< 3.5	R	< 3.50	< 3.50	< 3.5	< 3.5	< 3.50	< 3.50 UJ
2355-31-9	NMeFOSAA	ng/L	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25 UJ
2991-50-6	NEtFOSAA	ng/L	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95	< 3.95 UJ
24448-09-7	NMeFOSE	ng/L	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25	< 3.25 UJ
1691-99-2	NEtFOSE	ng/L	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	R	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53	< 2.53 UJ
Replacement Chemicals														
13252-13-6	HFPO-DA	ng/L	< 16.7	< 16.7	< 4.33	< 4.33	< 16.7	< 16.7	< 4.33	< 4.33	< 16.7	< 16.7	< 4.33	< 4.33 UJ
919005-14-4	DONA	ng/L	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15	< 2.15 UJ
756426-58-1	9Cl-PF3ONS	ng/L	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25 UJ
763051-92-9	11Cl-PF3OUdS	ng/L	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25	< 2.25 UJ

Notes
 CAS RN = Chemical Abstracts Service Registry Number
 TOP Assay = Total oxidizable precursor assay

Data Qualifiers
 U = nondetect
 J = estimated
 R = rejected
 UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
 Checked by: T. Jackson-Strong, 6/23/2023

Table 10: TOP Assay Results (Biosolids)
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID			BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-A	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B	BIOSOLIDS-B
Pre/Post TOP Assay			PRE	POST	PRE	POST	PRE	POST	PRE	POST
Sample Name			Biosolids A-20220622	Biosolids A-20220622	BIOSOLIDS A20221214	BIOSOLIDS A20221214	Biosolids B-20220622	Biosolids B-20220622	BIOSOLIDS B20221214	BIOSOLIDS B20221214
Sample Date			06/22/2022	06/22/2022	12/14/2022	12/14/2022	06/22/2022	06/22/2022	12/14/2022	12/14/2022
CAS RN	Analyte	Unit								
Carboxylic Acids										
375-22-4	PFBA	ug/kg	1.74 J	15	6.56	33.1 J	< 0.704	< 0.687 UJ	< 0.598	34.2 J
2706-90-3	PFPeA	ug/kg	3.15 J	8.91	12.1	22.1 J-	< 0.352	< 0.343 UJ	0.411 J	18.4 J-
307-24-4	PFHxA	ug/kg	8.43	6.31	28.5	17.7 J-	1.01 J	< 0.343 UJ	0.991 J	11.1 J
375-85-9	PFHpA	ug/kg	0.433 J	3.30 J	1.74 J	8.07 J-	< 0.352	1.68 J	< 0.299	6.01 J
335-67-1	PFOA	ug/kg	7.81	6.76	22.0	9.25 J-	< 1.41	2.17 J	< 1.20	5.48 J
375-95-1	PFNA	ug/kg	0.442 J	1.41 J	1.06 J	2.73 J	< 0.352	0.699 J	0.323 J	2.31 J
335-76-2	PFDA	ug/kg	3.48 J	1.73 J	10.2	4.09 J-	1.59 J	< 0.687	2.26 J	1.93 J
2058-94-8	PFUnA	ug/kg	0.485 J	0.602 J	1.10 J	1.44 J	0.370 J	< 0.343	0.589 J	1.20 J
307-55-1	PFDoA	ug/kg	1.33 J	0.615 J	2.95	1.93 J	0.787 J	< 0.343	1.30 J	1.04 J
72629-94-8	PFTTrDA	ug/kg	0.212 J	0.189 J	0.440 J	0.423 J	< 0.528	< 0.515	< 0.449	R
376-06-7	PFTA	ug/kg	0.354 J	0.188 J	0.717 J	0.406 J	< 0.352	< 0.343	0.413 J	R
Sulfonic Acids										
375-73-5	PFBS	ug/kg	0.234 J	0.204 J	1.42 J	2.33 J	< 0.352	< 0.343	< 0.299	0.834 J
2706-91-4	PFPeS	ug/kg	< 0.079	< 0.079	< 0.056	< 0.055	< 0.352	< 0.343	< 0.299	< 0.301
355-46-4	PFHxS	ug/kg	0.353 J	0.322 J	0.866 J	0.805 J	2.74 J	< 0.515	0.873 J	0.584 J
375-92-8	PFHpS	ug/kg	0.167 J	< 0.079	0.206 J	0.082 J	< 0.352	< 0.343	< 0.299	< 0.301
1763-23-1	PFOS	ug/kg	3.74 J	1.56 J	11.8	9.56	3.77 J	1.06 J	5.64 J	4.51 J
68259-12-1	PFNS	ug/kg	< 0.118	< 0.119	< 0.085	< 0.082	< 0.528	< 0.515	< 0.449	< 0.451
335-77-3	PFDS	ug/kg	0.574 J	0.212 J	1.41 J	0.857 J	0.730 J	< 0.515	7.57 J	< 0.451
79780-39-5	PFDoS	ug/kg	2.14 J	< 0.119	1.25 J	< 0.082	< 0.528	< 0.515	2.57 J	< 0.451
757124-72-4	4:2 FTS	ug/kg	< 0.197	< 0.198	< 0.141	< 0.137	< 0.88	< 0.859	< 0.748	< 0.752
27619-97-2	6:2 FTS	ug/kg	0.511 J	< 0.238	5.67	< 2.81 UJ	< 1.06	< 1.03	< 0.897	< 7.54 UJ
39108-34-4	8:2 FTS	ug/kg	0.443 J	< 0.119	1.56 J	< 0.694 UJ	0.852 J	< 0.515	< 0.449	< 1.87 UJ
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols										
754-91-6	PFOSA	ug/kg	0.497 J	< 0.079	< 1.54 UJ	< 0.151 UJ	< 0.352	< 0.343	< 1.85 UJ	< 0.556 UJ
31506-32-8	NMeFOSA	ug/kg	< 0.157	< 0.159	0.201 J	< 0.110	R	< 0.687	R	< 0.601
4151-50-2	NEtFOSA	ug/kg	< 0.157	< 0.159	< 0.180 UJ	< 0.110	R	< 0.687	R	< 0.601
2355-31-9	NMeFOSAA	ug/kg	10.3	< 0.079	25.3	0.075 J	3.55 J	< 0.343	7.23 J	< 0.301
2991-50-6	NEtFOSAA	ug/kg	3.14 J	< 0.119	6.41	< 0.082	1.96 J	< 0.515	3.28 J	< 0.451
24448-09-7	NMeFOSE	ug/kg	3.81 J	< 0.119	4.25	< 0.082	2.53 J	< 0.515	3.76 J	< 0.451
1691-99-2	NEtFOSE	ug/kg	1.07 J	< 0.119	0.986 J	0.135 J	0.746 J	< 0.515	0.740 J	< 0.451
Replacement Chemicals										
13252-13-6	HFPO-DA	ug/kg	< 0.55	< 0.556	< 0.395	< 0.384	< 2.47	< 2.4	< 2.09	< 2.11
919005-14-4	DONA	ug/kg	< 0.039	< 0.04	< 0.028	< 0.027	< 0.176	< 0.172	< 0.150	< 0.150
756426-58-1	9Cl-PF3ONS	ug/kg	< 0.118	< 0.119	< 0.085	< 0.082	< 0.528	< 0.515	< 0.449	< 0.451
763051-92-9	11Cl-PF3OUdS	ug/kg	< 0.079	< 0.079	< 0.056	< 0.055	< 0.352	< 0.343	< 0.299	< 0.301

Notes

CAS RN = Chemical Abstracts Service Registry Number
TOP Assay = Total oxidizable precursor assay

Data Qualifiers

U = nondetect
J = estimated
J- = estimated with potential low bias
R = rejected
UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
Checked by: T. Jackson-Strong, 6/23/2023

Table 11: Blank Sample Results
Madison Metropolitan Sewerage District
Madison, Dane County, Wisconsin
TRC Project #390131.0003.0000

Location ID			EQUIPMENT BLANK	EQUIPMENT BLANK	EQUIPMENT BLANK	EQUIPMENT BLANK	EQUIPMENT BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK
Sample Name			EB01-20210504	EB01-20220330	Equipment Blank 20220622	EB-01 20220914	EB01 202221214	FB01-20210506	FB02-20210506	FB03-20210506	FB01-20220426	FB-20220427
Sample Date			05/04/2021	03/30/2022	06/22/2022	09/14/2022	12/14/2022	05/06/2021	05/06/2021	05/06/2021	04/26/2022	04/27/2022
CAS RN	Analyte	Unit										
Carboxylic Acids												
375-22-4	PFBA	ng/L	< 2.2	< 0.42	5.6 J	< 0.49	< 0.49	< 2.1	< 2.2	< 2.1	< 0.43	< 0.43
2706-90-3	PFPeA	ng/L	< 0.45	< 0.41	R	< 0.81	< 0.81	< 0.43	< 0.45	< 0.43	< 0.43	< 0.42
307-24-4	PFHxA	ng/L	< 0.53	< 0.41	R	< 0.89	< 0.90	< 0.51	< 0.53	< 0.50	< 0.43	< 0.42
375-85-9	PFHpA	ng/L	< 0.23	< 0.52	R	< 0.68	< 0.68	< 0.22	< 0.23	< 0.22	< 0.53	< 0.53
335-67-1	PFOA	ng/L	< 0.78	< 0.55	R	< 0.85	< 0.85	< 0.75	< 0.78	< 0.74	< 0.57	< 0.57
375-95-1	PFNA	ng/L	< 0.25	< 0.70	R	< 0.78	< 0.78	< 0.24	< 0.25	< 0.23	< 0.72	< 0.72
335-76-2	PFDA	ng/L	< 0.28	< 0.53	< 0.53 UJ	< 0.60	< 0.60	< 0.27	< 0.29	< 0.27	< 0.55	< 0.55
2058-94-8	PFUnA	ng/L	< 1.0	< 0.51	< 0.51 UJ	< 0.48	< 0.48	< 0.97	< 1.0	< 0.96	< 0.52	< 0.52
307-55-1	PFDaA	ng/L	< 0.50	< 0.45	< 0.46	< 0.47	< 0.47	< 0.48	< 0.51	< 0.48	< 0.47	< 0.47
72629-94-8	PFTDA	ng/L	< 1.2	< 0.59	< 0.59	< 0.61	< 0.61	< 1.1	< 1.2	< 1.1	< 0.60	< 0.60
376-06-7	PFTA	ng/L	< 0.67	< 0.45	< 0.45	< 0.59	< 0.59	< 0.64	< 0.67	< 0.63	< 0.46	< 0.46
Sulfonic Acids												
375-73-5	PFBS	ng/L	< 0.18	< 0.45	0.48 J	< 0.48	< 0.48	< 0.18	< 0.18	< 0.17	< 0.46	< 0.46
2706-91-4	PFPeS	ng/L	< 0.27	< 0.45	R	< 0.59	< 0.59	< 0.26	< 0.28	< 0.26	< 0.46	< 0.46
355-46-4	PFHxS	ng/L	< 0.52	< 0.48	R	< 0.52	< 0.52	< 0.50	< 0.53	< 0.50	< 0.49	< 0.49
375-92-8	PFHpS	ng/L	< 0.17	< 0.39	< 0.39 UJ	< 0.66	< 0.66	< 0.17	< 0.18	< 0.17	< 0.40	< 0.40
1763-23-1	PFOS	ng/L	< 0.49	< 0.52	< 0.52 UJ	< 0.65	< 0.66	< 0.47	< 0.50	< 0.47	< 0.53	< 0.53
68259-12-1	PFNS	ng/L	< 0.34	< 0.42	< 0.42 UJ	< 0.58	< 0.58	< 0.33	< 0.34	< 0.32	< 0.43	< 0.43
335-77-3	PFDS	ng/L	< 0.29	< 0.42	< 0.43 UJ	< 0.63	< 0.63	< 0.28	< 0.29	< 0.28	< 0.44	< 0.44
79780-39-5	PFDoS	ng/L	< 0.89	< 0.43	< 0.44 UJ	< 0.58	< 0.58	< 0.85	< 0.89	< 0.84	< 0.45	< 0.45
757124-72-4	4:2 FTS	ng/L	< 0.22	< 0.53	R	< 0.46	< 0.46	< 0.21	< 0.22	< 0.21	< 0.54	< 0.54
27619-97-2	6:2 FTS	ng/L	< 2.3	< 0.61	R	< 0.66	< 0.66	< 2.2	< 2.3	< 2.2	< 0.63	< 0.62
39108-34-4	8:2 FTS	ng/L	< 0.42	< 0.62	< 0.62 UJ	< 0.50	< 0.50	< 0.40	< 0.42	< 0.40	< 0.63	< 0.63
Sulfonamides, Sulfonamidoacetic acids, Sulfonamidoethanols												
754-91-6	PFOSA	ng/L	< 0.90	< 0.77	R	< 0.70	< 0.71	< 0.86	< 0.90	< 0.85	< 0.79	< 0.79
31506-32-8	NMeFOSA	ng/L	< 0.39	< 0.48	R	< 0.54	< 0.54	< 0.38	< 0.40	< 0.37	< 0.50	< 0.49
4151-50-2	NEtFOSA	ng/L	< 0.80	< 0.57	R	< 0.56	< 0.57	< 0.76	< 0.80	< 0.76	< 0.59	< 0.59
2355-31-9	NMeFOSAA	ng/L	< 1.1	< 0.41	< 0.41	< 0.68	< 0.68	< 1.1	< 1.1	< 1.0	< 0.42	< 0.42
2991-50-6	NEtFOSAA	ng/L	< 1.2	< 0.52	< 0.53	< 0.80	4.1	< 1.1	< 1.2	< 1.1	< 0.54	< 0.54
24448-09-7	NMeFOSE	ng/L	< 1.3	< 0.31	R	< 0.51	< 0.51	< 1.2	< 1.3	< 1.2	< 0.32	< 0.32
1691-99-2	NEtFOSE	ng/L	< 0.78	< 0.47	R	< 0.87	< 0.88	< 0.75	< 0.78	< 0.74	< 0.48	< 0.48
Replacement Chemicals												
13252-13-6	HFPO-DA	ng/L	< 1.4	< 0.50	0.63 J	< 0.48	< 0.49	< 1.3	< 1.4	< 1.3	< 0.51	< 0.51
919005-14-4	DONA	ng/L	< 0.37	< 0.48	R	< 0.90	< 0.90	< 0.35	< 0.37	< 0.35	< 0.50	< 0.50
756426-58-1	9Cl-PF3ONS	ng/L	< 0.22	< 0.29	< 0.29 UJ	< 0.46	< 0.46	< 0.21	< 0.22	< 0.21	< 0.30	< 0.30
763051-92-9	11Cl-PF3OUdS	ng/L	< 0.29	< 0.41	< 0.41 UJ	< 0.55	< 0.55	< 0.28	< 0.29	< 0.28	< 0.42	< 0.42

Notes
CAS RN = Chemical Abstracts Service Registry Number
-- = Not analyzed

Data Qualifiers
U = nondetect
J = estimated
R = rejected
UJ = estimated nondetect

Prepared by: L. Auner, 6/21/2023
Checked by: T. Jackson-Strong, 6/23/2023

Figure 1
Calculated Influent & Composite Influent PFAS Results

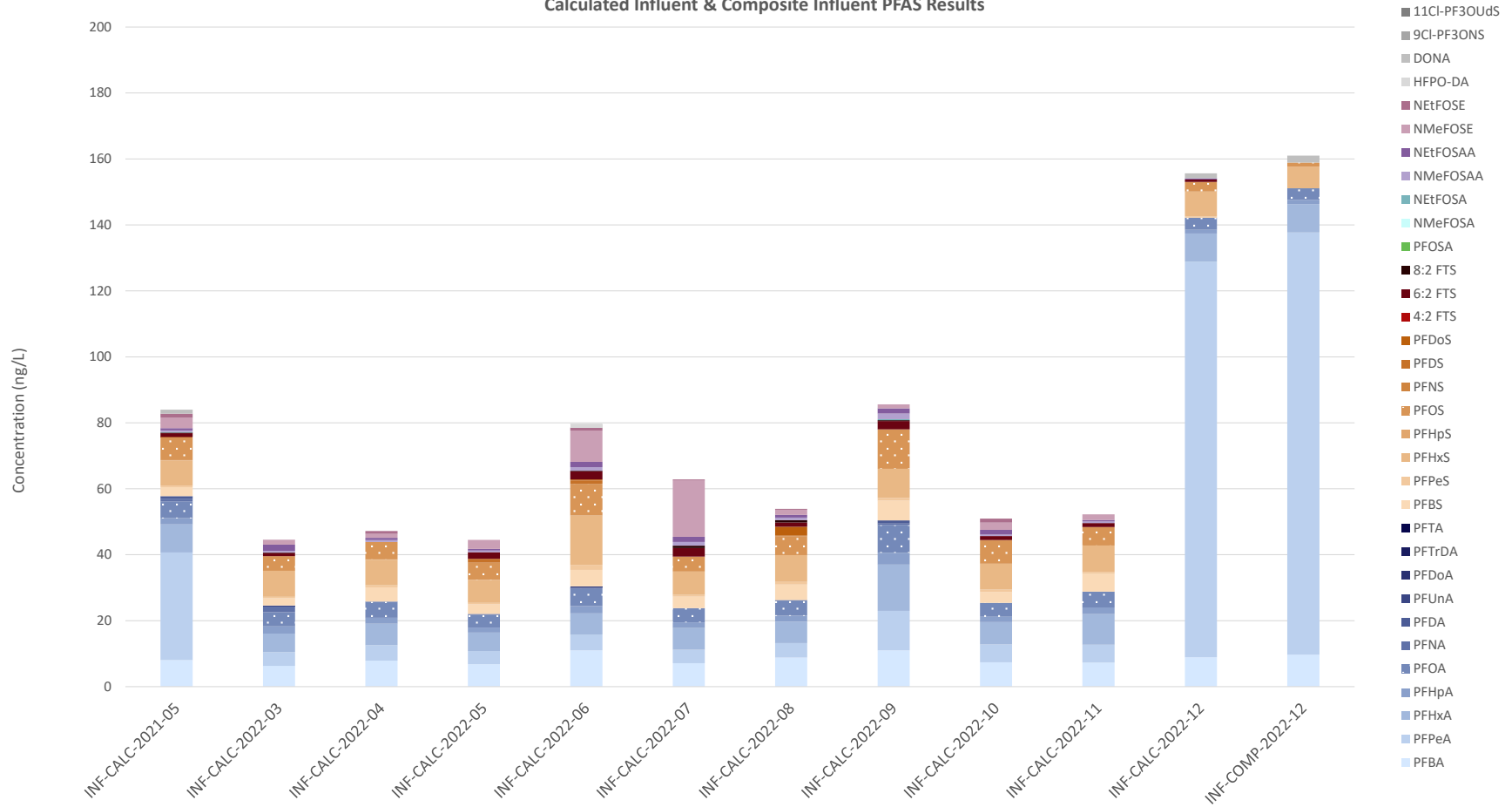


Figure 2a
Influent PFOA Time Series

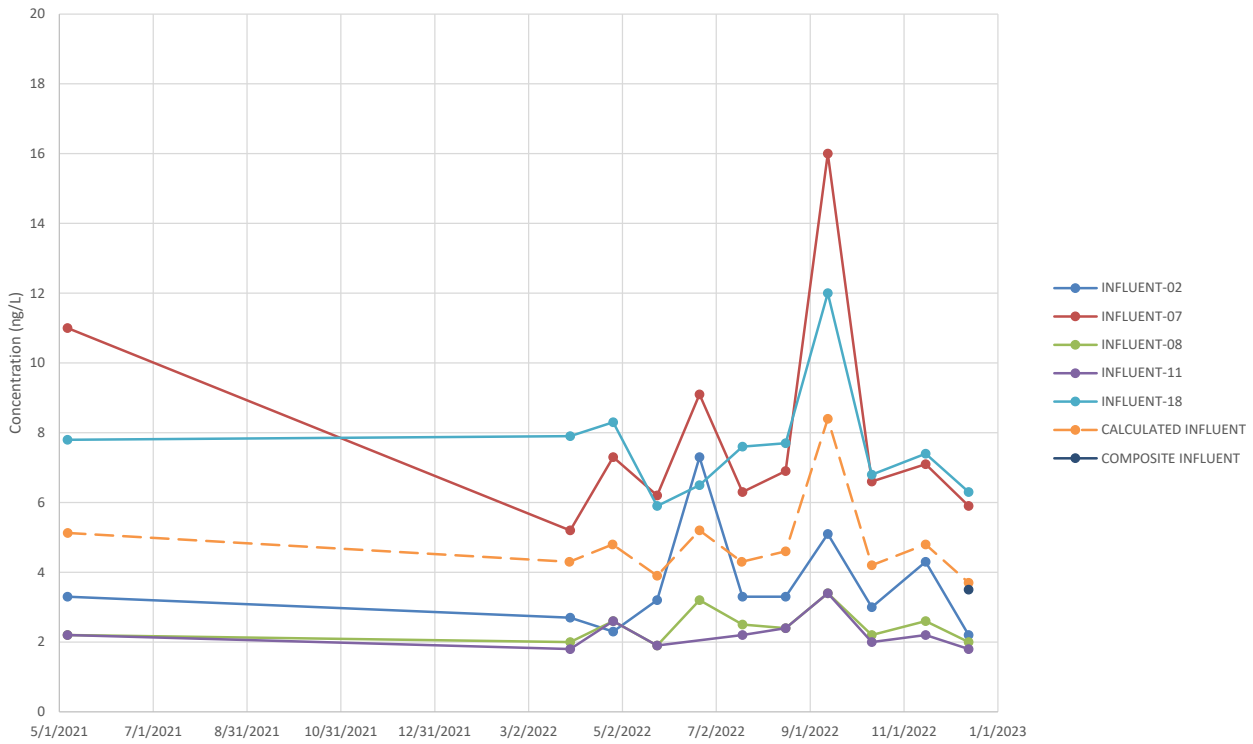


Figure 2b
Influent PFOS Time Series

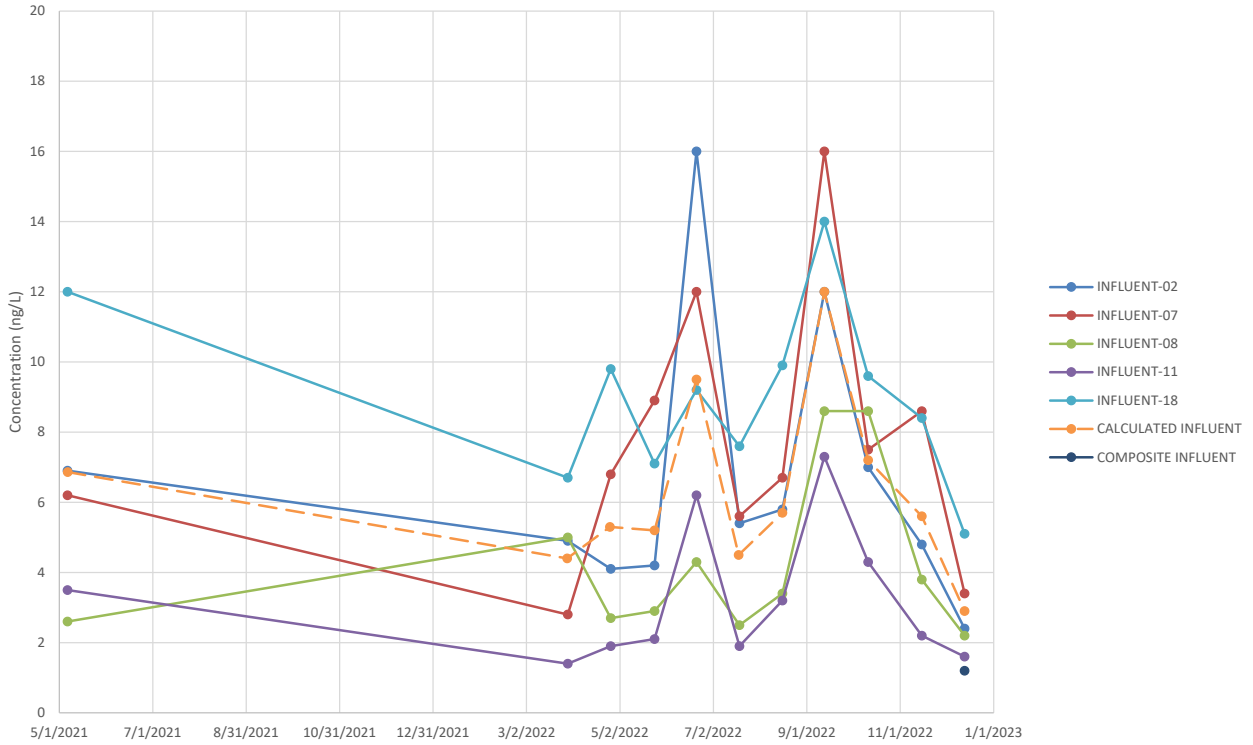


Figure 3
Effluent PFAS Results

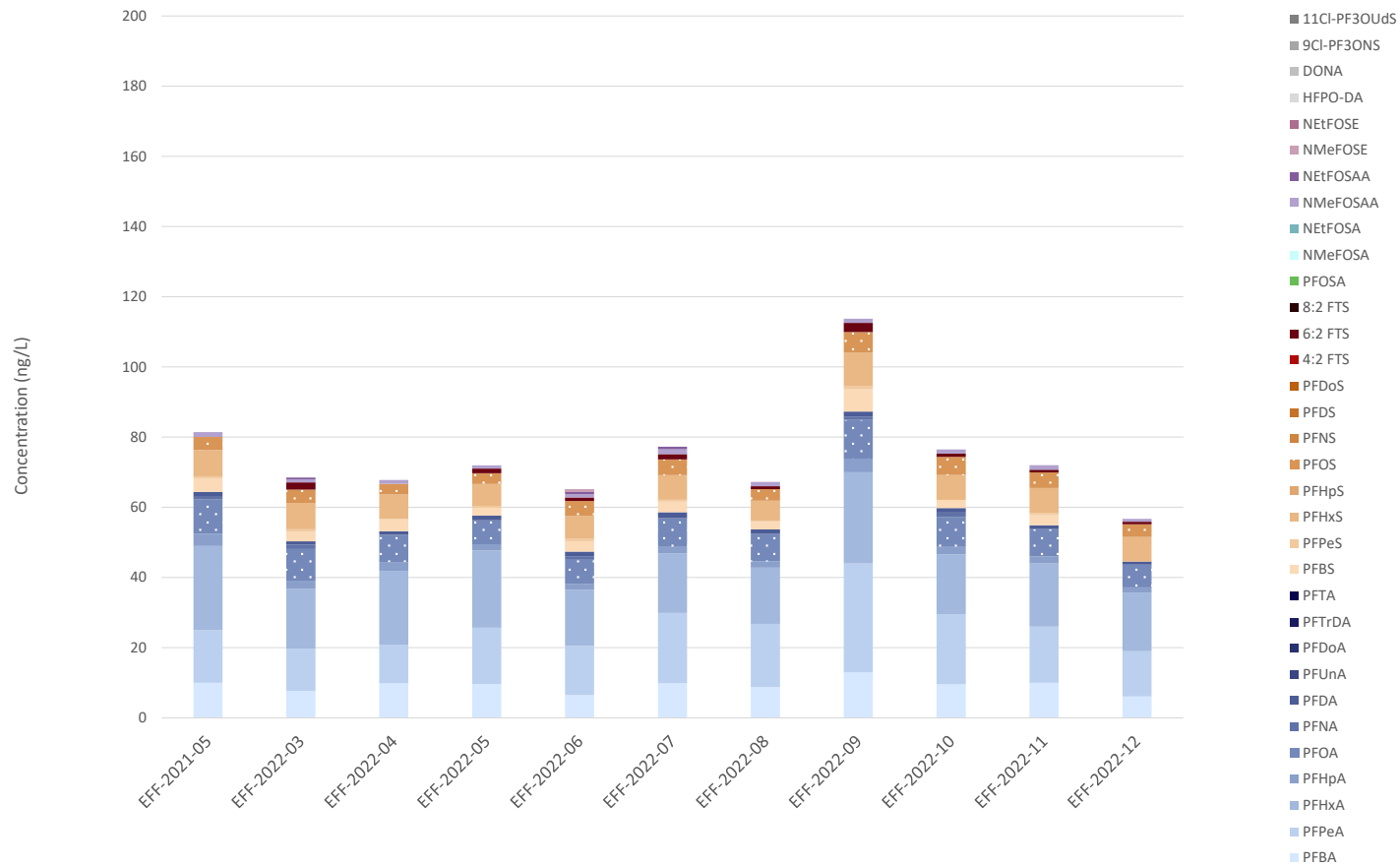


Figure 4a
Effluent PFOA Time Series

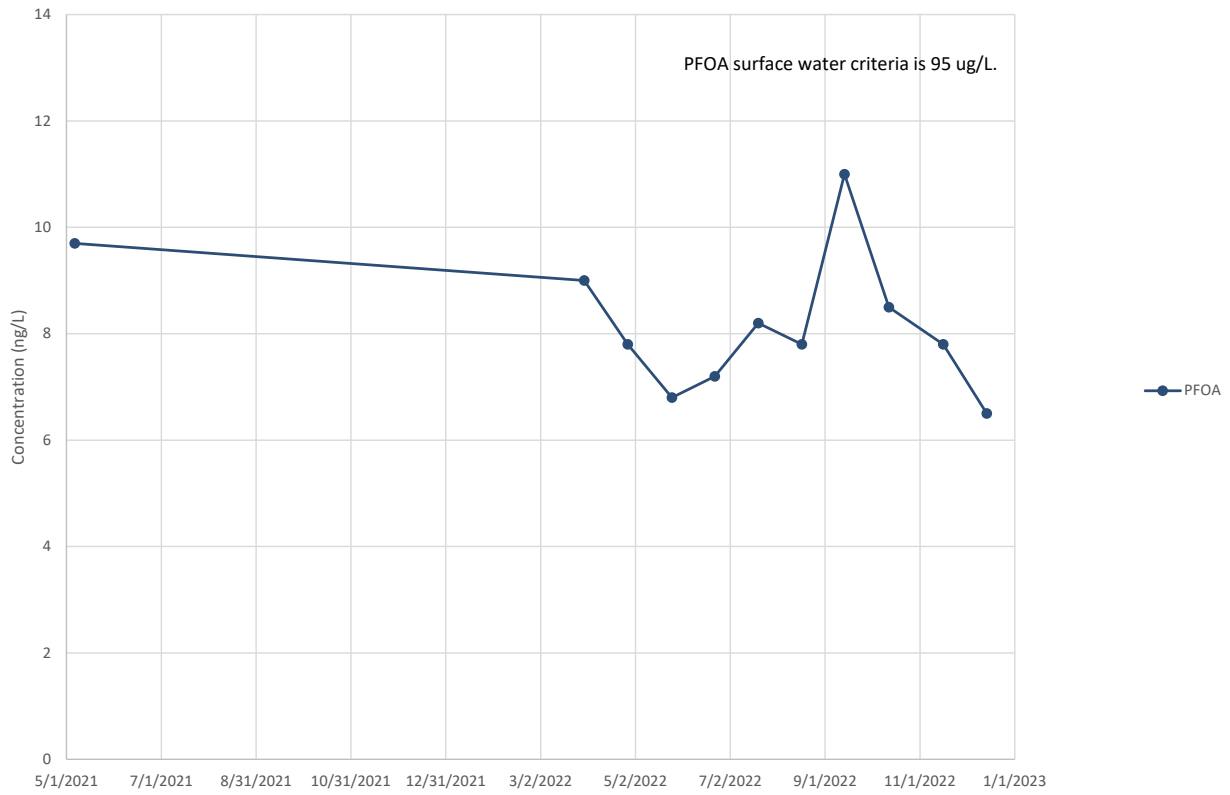


Figure 4b
Effluent PFOS Time Series

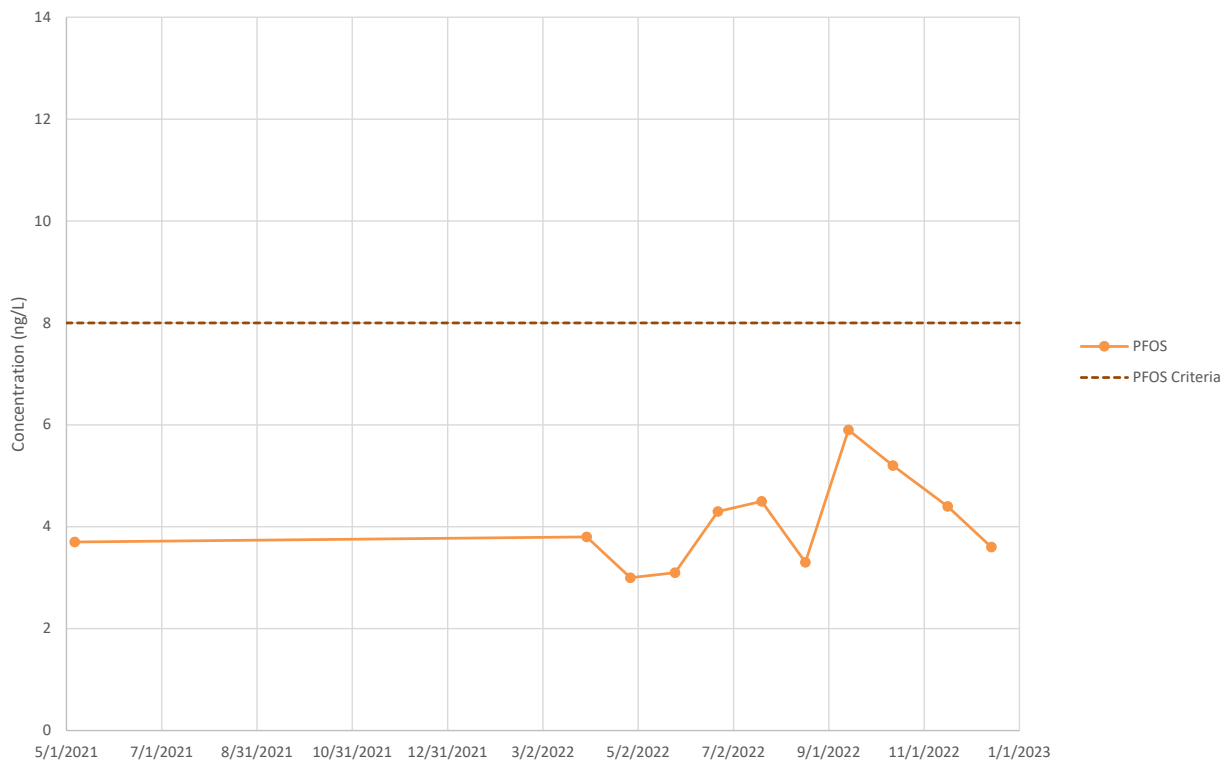
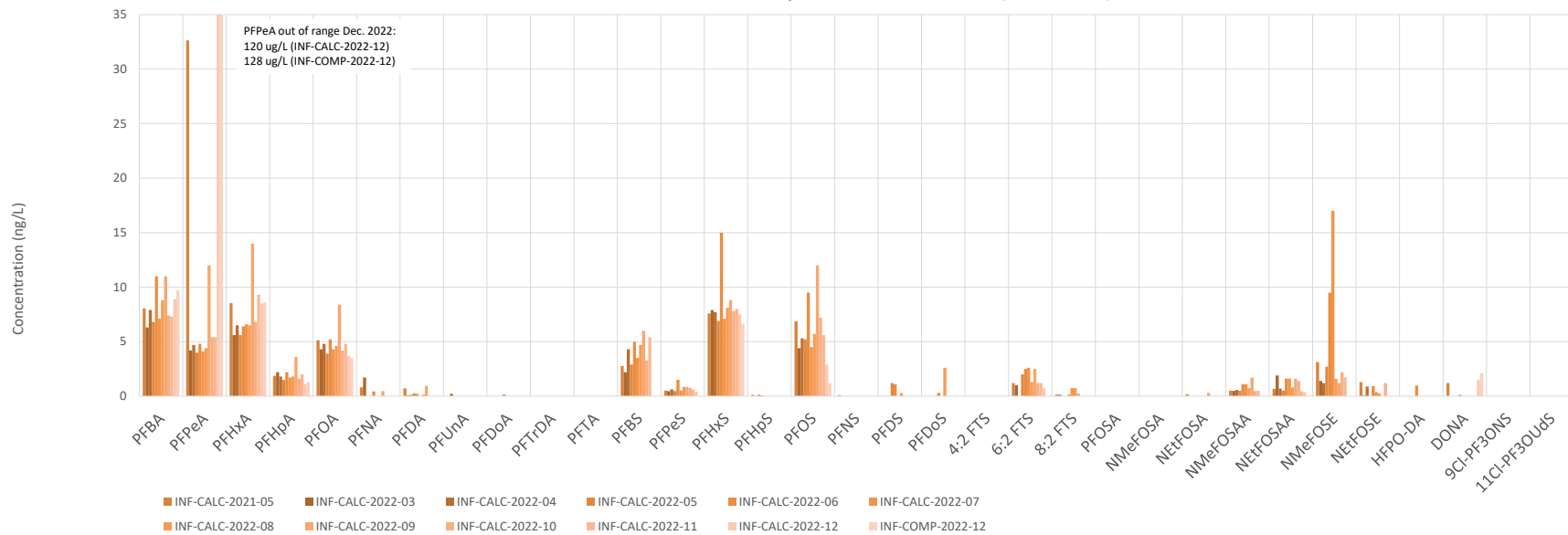


Figure 5
Influent vs. Effluent PFAS Results Comparison

Calculated Influent & Composite Influent Results (2021-2022)



Effluent Results (2021-2022)

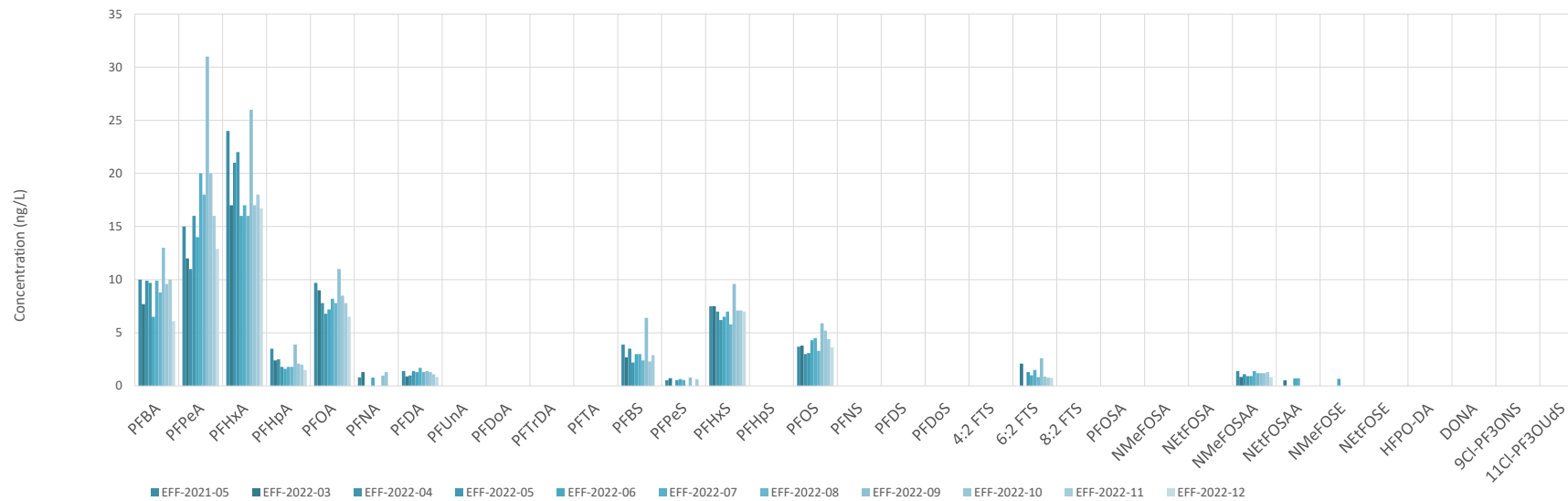


Figure 6
Biosolids A PFAS Results

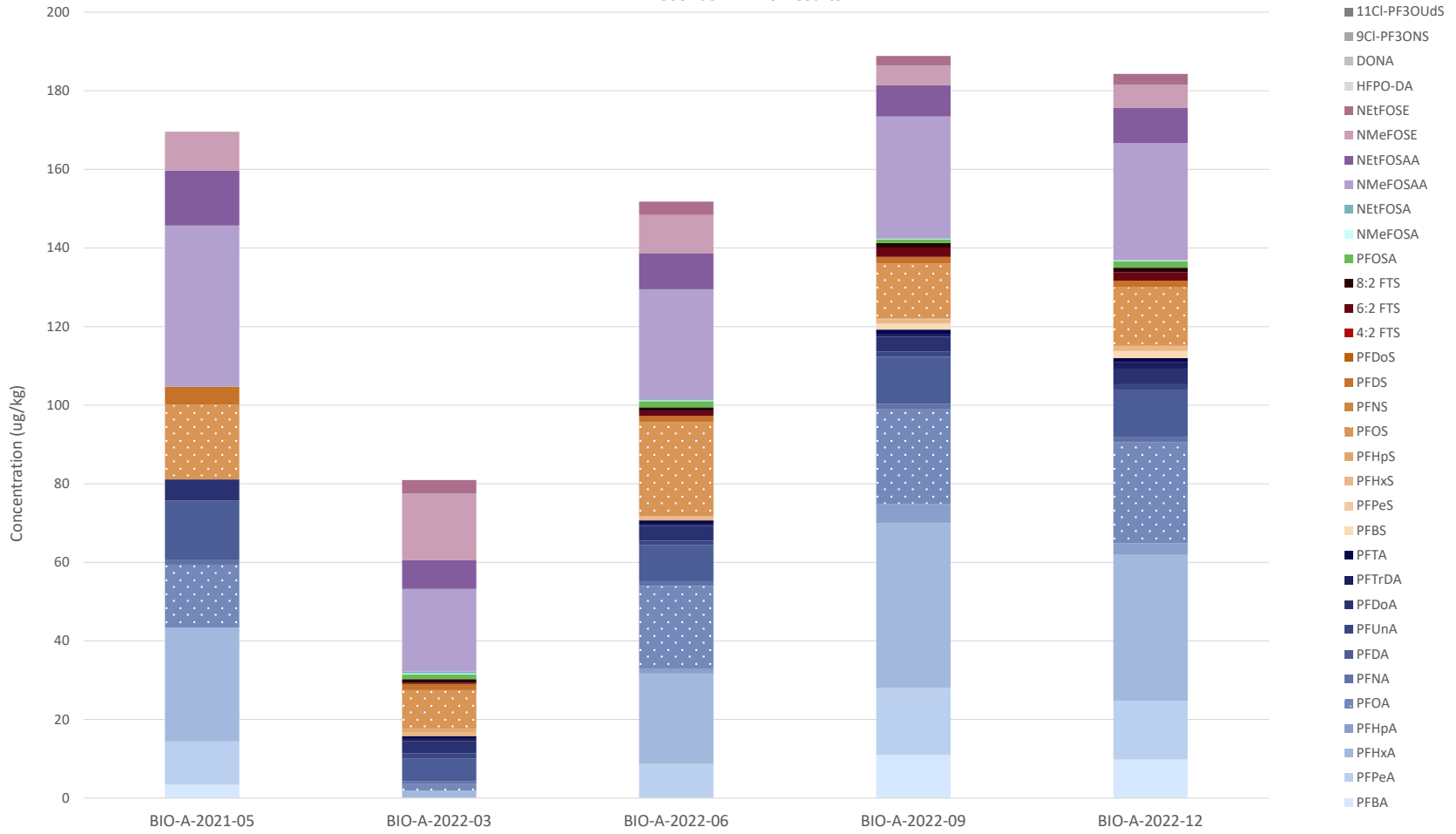


Figure 7a
Biosolids A PFOA and PFOS Time Series

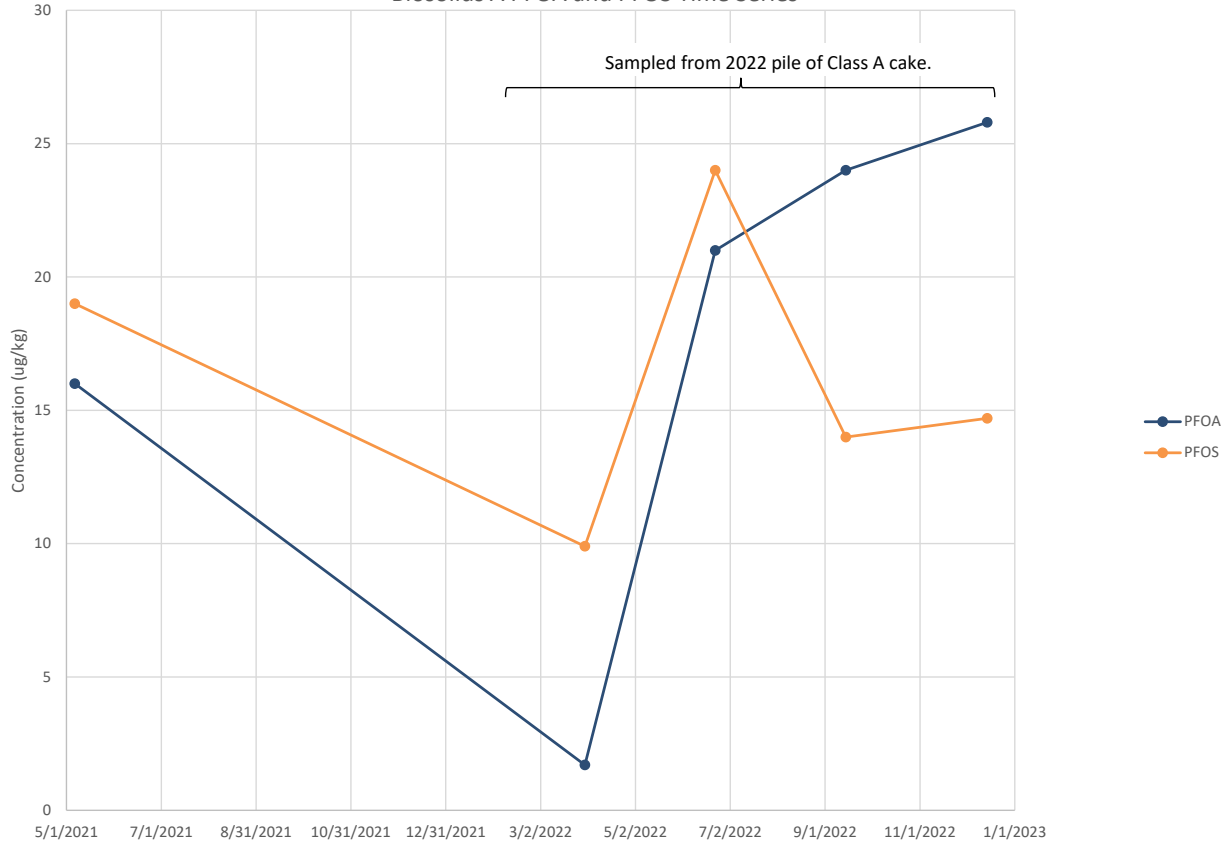


Figure 7b
Biosolids B PFOA and PFOS Time Series

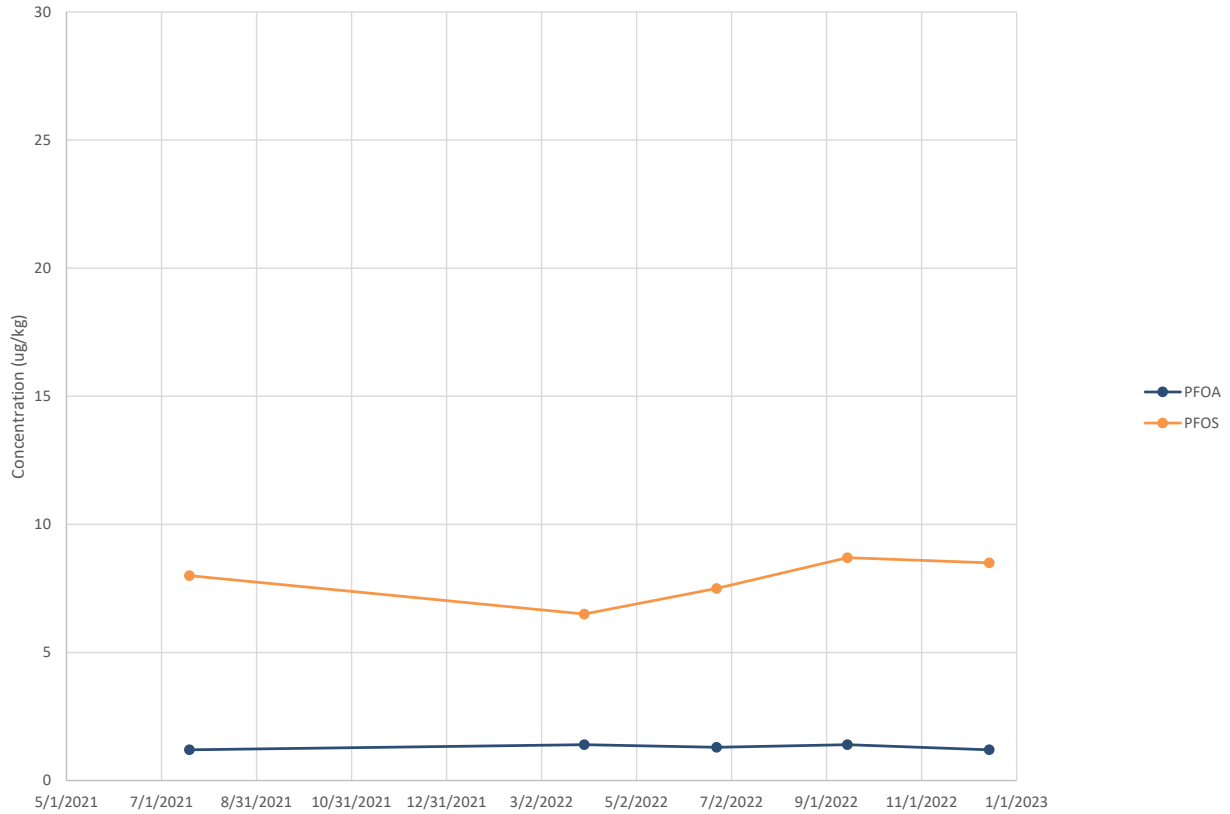


Figure 8
Biosolids B PFAS Results

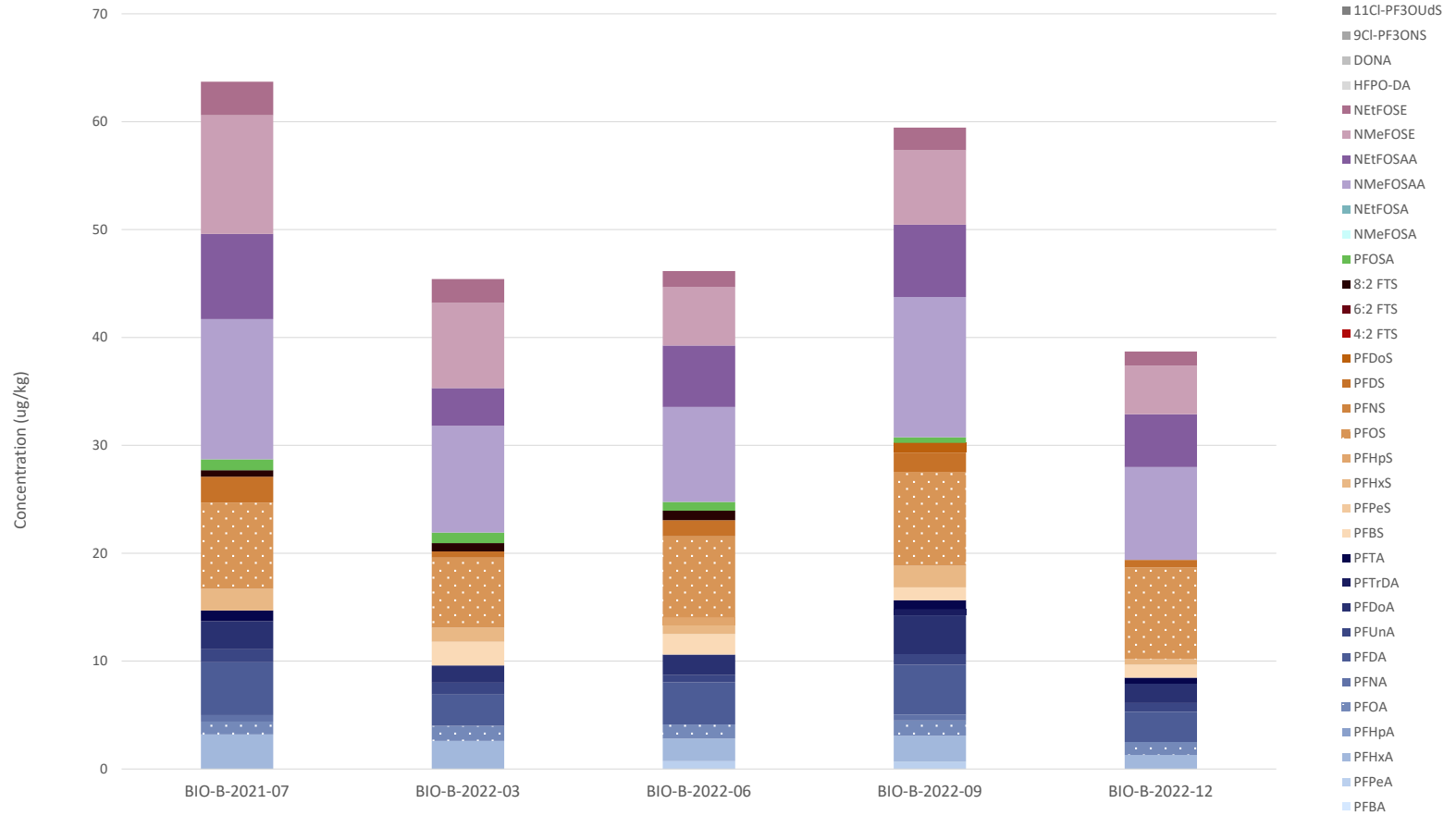
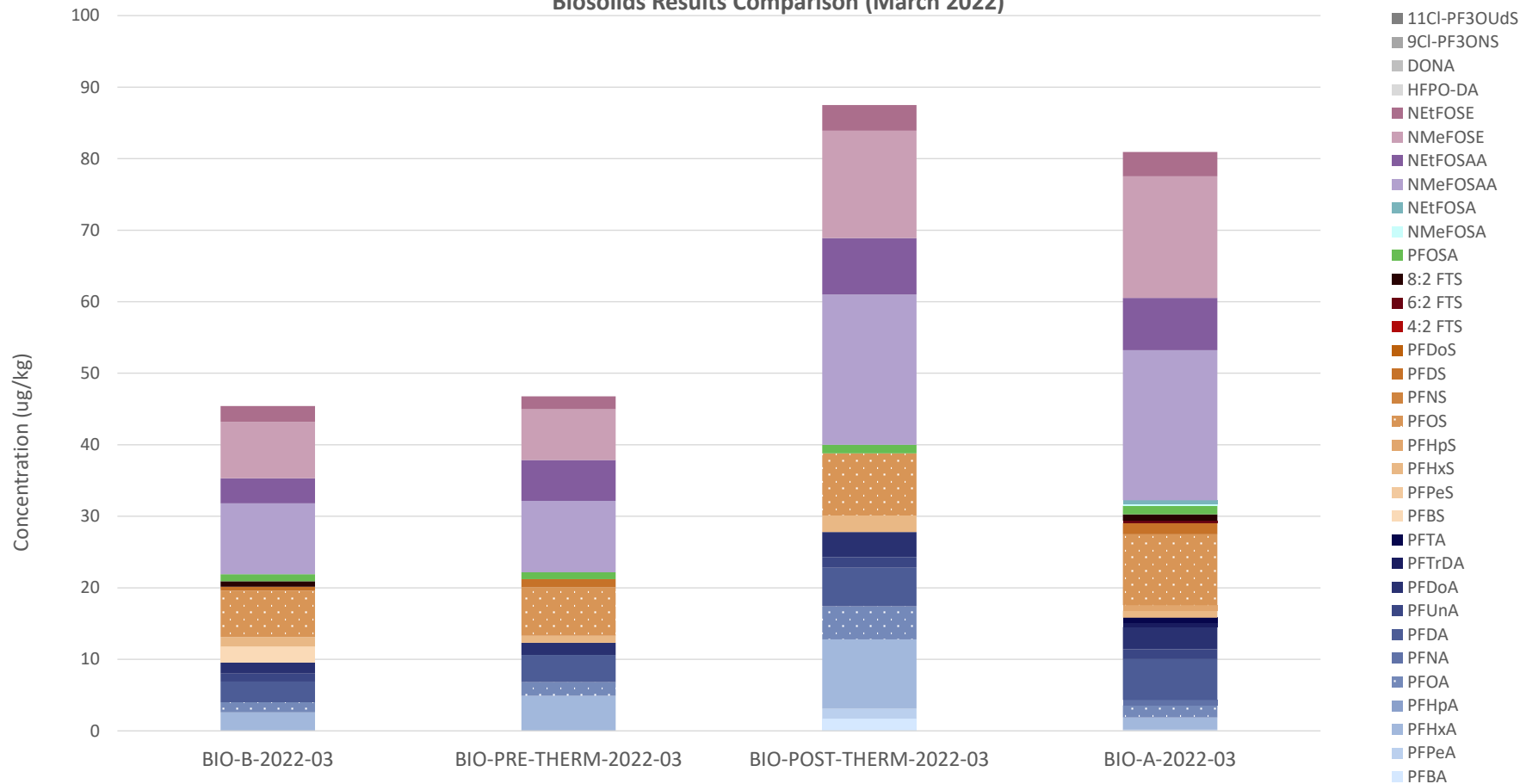


Figure 9
Biosolids Results Comparison (March 2022)



Appendix A: Photographic Log

Photographic Log



Client Name:		Site Location:	Project No.:
Madison Metropolitan Sewerage District		1610 Moorland Road, Madison, WI	390131.0003.0000
Photo No.	Date		
1	3/29/2022		
Description The pre-thermophilic biosolids process sample was collected from a spigot on the Digester 7 transfer pump in Sludge Control Building #2 (see Photo 2 for close-up of spigot).			

Photo No.	Date		
2	3/29/2022		
Description Spigot used for pre-thermophilic biosolids process sampling.			

Photographic Log


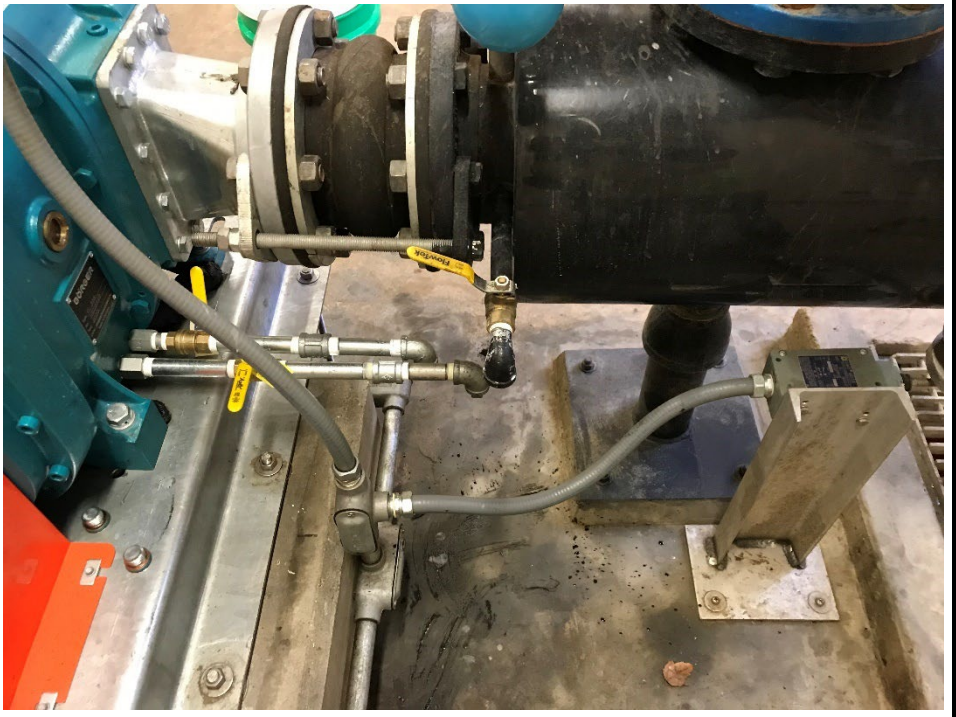
Client Name:		Site Location:	Project No.:
Madison Metropolitan Sewerage District		1610 Moorland Road, Madison, WI	390131.0003.0000
Photo No.	Date		
3	3/30/2022		
Description The post-thermophilic biosolids process sample was collected from a tap on a sludge recirculation pump in Sludge Control Building #1 (see Photo 4 for close-up of tap).			

Photo No.	Date		
4	3/30/2022		
Description Tap used for post-thermophilic biosolids process sampling.			

Photographic Log


Client Name:		Site Location:	Project No.:
Madison Metropolitan Sewerage District		1610 Moorland Road, Madison, WI	390131.0003.0000
Photo No.	Date		
5	3/30/2022		
Description The March 2022 Class A cake sample was collected from the pile of cake material, below the end of the conveyor belt.			

Photo No.	Date		
6	3/29/2022		
Description Influent and effluent laboratory sample containers were filled in the walk-in cooler, where the influent and effluent carboys had been stored overnight.			

Appendix B: Influent Compositing SOP

Compositing of the Influent

Prior to compositing, clean a 500 ml graduated cylinder and a 4L HDPE sample container to hold the influent composite, using the protocol for cleaning for PFAS jugs. The cylinder and 4L container should be dedicated for PFAS sample collection only.

Decontamination Procedure:

1. Wear a new pair of nitrile gloves for each decontamination procedure.
2. Prepare a bucket with a mixture of potable water and PFAS-free soap. Use approximately 1 tablespoon of soap per 5 gallons of water.
3. Brush or scrape any visible material from the sampling equipment.
4. Using a clean, coarse scrub brush, submerge and wash the sampling equipment in the soap solution.
5. Rinse the equipment with potable water.
6. Rinse 2 times with RO water.
7. Triple rinse with laboratory certified PFAS-free water.
8. Place decontaminated equipment on a clean surface.

Obtain the flows for the five force mains from DARC for the day before you are making the composite. (Samplers begin at collection at midnight and end at midnight and sample is composited the following morning.)

Add the flows of each of the five force mains for a total flow. Determine what multiplication factor (MF) is needed to end up with approximately 2 L of sample. (The total flow is around 40 MGD so $50 \times 40 = 2000$ or 2L of sample.)

Multiply each force main by the MF. Using that value, you will measure out the number of mls for each. Once these values are determined, you can begin compositing from the large carboys. Compositing will take place in the lab's walk-in refrigerator.

Invert the first force main carboy, PS2, and mix well. Carefully pour off the determined number of mls into the graduated cylinder. From the cylinder, pour into the 4L container. Continue to do the same procedure for the remaining 4 force mains. After completing all five additions, be sure to adequately mix the composite sample before pouring the sample into the containers from the analytical lab. Having around 2 L of sample allows for a representative sample.

Prepare the sample for shipping as directed by the analytical lab.

Appendix C: Laboratory Reports

March 2022

May 17, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS
Pace Project No.: 10602741

Dear Mike Ursin:

Enclosed are the analytical results for sample(s) received by the laboratory on March 31, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicholas Gilmartin
nicholas.gilmartin@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS

Pace Project No.: 10602741

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS

Pace Project No.: 10602741

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10602741001	INFLUENT-02-20220328	Water	03/28/22 23:59	03/31/22 08:50
10602741002	INFLUENT-07-20220328	Water	03/28/22 23:59	03/31/22 08:50
10602741003	INFLUENT-08-20220328	Water	03/28/22 23:59	03/31/22 08:50
10602741004	INFLUENT-11-20220328	Water	03/28/22 23:59	03/31/22 08:50
10602741005	INFLUENT-18-20220328	Water	03/28/22 23:59	03/31/22 08:50
10602741006	EFFLUENT-20220329	Water	03/29/22 23:59	03/31/22 08:50
10602741007	BIOSOLIDS-PRE-THERM-20220329	Solid	03/29/22 11:30	03/31/22 08:50
10602741008	BIOSOLIDS-POST-THERM-20220329	Solid	03/30/22 09:40	03/31/22 08:50
10602741009	BIOSOLIDS-A-20220330	Solid	03/30/22 10:00	03/31/22 08:50
10602741010	BIOSOLIDS-B-20220329	Solid	03/29/22 10:10	03/31/22 08:50
10602741011	DUP01-20220329	Solid	03/29/22 00:00	03/31/22 08:50
10602741012	DUP02-20220330	Solid	03/30/22 00:00	03/31/22 08:50
10602741013	EB01-20220330	Water	03/30/22 09:55	03/31/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS

Pace Project No.: 10602741

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10602741001	INFLUENT-02-20220328	SM 2540D	DP1	1	PASI-M
10602741002	INFLUENT-07-20220328	SM 2540D	DP1	1	PASI-M
10602741003	INFLUENT-08-20220328	SM 2540D	DP1	1	PASI-M
10602741004	INFLUENT-11-20220328	SM 2540D	DP1	1	PASI-M
10602741005	INFLUENT-18-20220328	SM 2540D	DP1	1	PASI-M
10602741006	EFFLUENT-20220329	SM 2540D	DP1	1	PASI-M
10602741007	BIOSOLIDS-PRE-THERM-20220329	ASTM D2974	JDL	1	PASI-M
10602741008	BIOSOLIDS-POST-THERM-20220329	ASTM D2974	JDL	1	PASI-M
10602741009	BIOSOLIDS-A-20220330	ASTM D2974	JDL	1	PASI-M
10602741010	BIOSOLIDS-B-20220329	ASTM D2974	JDL	1	PASI-M
10602741011	DUP01-20220329	ASTM D2974	JDL	1	PASI-M
10602741012	DUP02-20220330	ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10602741

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: May 17, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 807162

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 4284648)
- Total Suspended Solids

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10602741

Sample: INFLUENT-02-20220328 Lab ID: 10602741001 Collected: 03/28/22 23:59 Received: 03/31/22 08:50 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	224	mg/L	25.0	12.5	1		04/04/22 14:25		
Sample: INFLUENT-07-20220328 Lab ID: 10602741002 Collected: 03/28/22 23:59 Received: 03/31/22 08:50 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	157	mg/L	25.0	12.5	1		04/04/22 14:25		
Sample: INFLUENT-08-20220328 Lab ID: 10602741003 Collected: 03/28/22 23:59 Received: 03/31/22 08:50 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	177	mg/L	25.0	12.5	1		04/04/22 14:25		
Sample: INFLUENT-11-20220328 Lab ID: 10602741004 Collected: 03/28/22 23:59 Received: 03/31/22 08:50 Matrix: Water									
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	251	mg/L	25.0	12.5	1		04/04/22 14:25		D6
Sample: INFLUENT-18-20220328 Lab ID: 10602741005 Collected: 03/28/22 23:59 Received: 03/31/22 08:50 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	186	mg/L	25.0	12.5	1		04/04/22 14:25		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10602741

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: EFFLUENT-20220329 Lab ID: 10602741006 Collected: 03/29/22 23:59 Received: 03/31/22 08:50 Matrix: Water									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	<5.0	mg/L	10.0	5.0	1		04/05/22 11:55		

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: BIOSOLIDS-PRE-THERM-20220329 Lab ID: 10602741007 Collected: 03/29/22 11:30 Received: 03/31/22 08:50 Matrix: Solid									
<i>Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.</i>									
Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis									
Percent Moisture	97.4	%	0.10	0.10	1		03/31/22 13:02		N2

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: BIOSOLIDS-POST-THERM-20220329 Lab ID: 10602741008 Collected: 03/30/22 09:40 Received: 03/31/22 08:50 Matrix: Solid									
<i>Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.</i>									
Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis									
Percent Moisture	98.1	%	0.10	0.10	1		03/31/22 13:03		N2

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: BIOSOLIDS-A-20220330 Lab ID: 10602741009 Collected: 03/30/22 10:00 Received: 03/31/22 08:50 Matrix: Solid									
<i>Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.</i>									
Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis									
Percent Moisture	78.1	%	0.10	0.10	1		03/31/22 13:03		N2

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: BIOSOLIDS-B-20220329 Lab ID: 10602741010 Collected: 03/29/22 10:10 Received: 03/31/22 08:50 Matrix: Solid									
<i>Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.</i>									
Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis									
Percent Moisture	94.4	%	0.10	0.10	1		03/31/22 13:03		N2

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10602741

Sample: DUP01-20220329 **Lab ID: 10602741011** Collected: 03/29/22 00:00 Received: 03/31/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974		Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	94.6	%	0.10	0.10	1		03/31/22 13:03		N2

Sample: DUP02-20220330 **Lab ID: 10602741012** Collected: 03/30/22 00:00 Received: 03/31/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974		Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	78.1	%	0.10	0.10	1		03/31/22 13:04		N2

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10602741

QC Batch: 806653

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10602741007, 10602741008, 10602741009, 10602741010, 10602741011, 10602741012

SAMPLE DUPLICATE: 4281756

Parameter	Units	10602017012 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.1	18.9	11	30	N2

SAMPLE DUPLICATE: 4281801

Parameter	Units	10602692004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.7	2.8	5	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10602741

QC Batch: 807162 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10602741001, 10602741002, 10602741003, 10602741004, 10602741005

METHOD BLANK: 4284646 Matrix: Water
Associated Lab Samples: 10602741001, 10602741002, 10602741003, 10602741004, 10602741005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	04/04/22 14:23	

LABORATORY CONTROL SAMPLE: 4284647

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	89.0	89	80-120	

SAMPLE DUPLICATE: 4284648

Parameter	Units	10602741004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	251	278	10	5	D6

SAMPLE DUPLICATE: 4284649

Parameter	Units	10602428001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10602741

QC Batch: 807442	Analysis Method: SM 2540D
QC Batch Method: SM 2540D	Analysis Description: 2540D Total Suspended Solids
	Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10602741006

METHOD BLANK: 4285567 Matrix: Water

Associated Lab Samples: 10602741006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	5.0	04/05/22 11:55	

LABORATORY CONTROL SAMPLE: 4285568

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	90.0	90	80-120	

SAMPLE DUPLICATE: 4285569

Parameter	Units	10602741006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	<5.0	5.4J		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS

Pace Project No.: 10602741

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS

Pace Project No.: 10602741

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10602741007	BIOSOLIDS-PRE-THERM-20220329	ASTM D2974	806653		
10602741008	BIOSOLIDS-POST-THERM-20220329	ASTM D2974	806653		
10602741009	BIOSOLIDS-A-20220330	ASTM D2974	806653		
10602741010	BIOSOLIDS-B-20220329	ASTM D2974	806653		
10602741011	DUP01-20220329	ASTM D2974	806653		
10602741012	DUP02-20220330	ASTM D2974	806653		
10602741001	INFLUENT-02-20220328	SM 2540D	807162		
10602741002	INFLUENT-07-20220328	SM 2540D	807162		
10602741003	INFLUENT-08-20220328	SM 2540D	807162		
10602741004	INFLUENT-11-20220328	SM 2540D	807162		
10602741005	INFLUENT-18-20220328	SM 2540D	807162		
10602741006	EFFLUENT-20220329	SM 2540D	807442		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



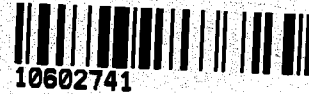
CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE

WO#: 10602741

umber or



Company: **TRC**

Billing Information: **Bill to MMSD (see PO)**

Address: **708 Heathland Trail, Suite 3000
Madison, WI 53717**

Report To: **Mike Ursin**

Email To: **MikeUrsin@TRCCompanies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address: **1610 Moorland Rd**

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Phone:
Email:

Site/Facility ID #:
Compliance Monitoring?
 Yes No

DW PWS ID #:
DW Location Code:

Collected By (print):
Lydia Auner

Purchase Order #: **2200666**
Quote #:

Immediately Packed on Ice:
 Yes No

Collected By (signature):
Lydia Auner

Turnaround Date Required:
Standard TAT

Field Filtered (if applicable):
 Yes No

Sample Disposal:
 Dispose as appropriate Return
 Archive: _____
 Hold: _____

Rush:
 Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
(Expedite Charges Apply)

Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TSS	MS/MSD	TOP ASSAY							
			Date	Time	Date	Time													
INFLUENT-02-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X									001
INFLUENT-07-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X									002
INFLUENT-08-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X									003
INFLUENT-11-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		5	X	X	X								004
INFLUENT-16-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X									005
EFFLUENT-20220329	WW	C	3/29/22	00:00	3/29/22	23:59		6	X	X	X	X							006
BIO SOLIDS-PRE-THERM-20220329	SL	G	3/29/22	11:30				1	X		X								007
BIO SOLIDS-POST-THERM-20220329	SL	G	3/29/22	9:40				1	X										008
BIO SOLIDS-A-20220330	SL	C	3/30/22	10:00				1	X		X	X							009
BIO SOLIDS-B-20220329	SL	G	3/29/22	10:10				1	X		X	X							010

Container Preservative Type:
U U U U

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line: **43976**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signature Present Y N NA

Bottles Intact Y N NA

Correct Bottles Y N NA

Sufficient Volume Y N NA

Samples Received on Ice Y N NA

VOA - Headspace Acceptable Y N NA

USDA Regulated Soils Y N NA

Samples in Holding Time Y N NA

Residual Chlorine Present Y N NA

Cl Strips: _____

Sample pH Acceptable Y N NA

pH Strips: _____

Sulfide Present Y N NA

Lead Acetate Strips: _____

Lab USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
For influent samples, follow EA-19-0001 (WI PFAS Method Expectations) Section VI.3 procedure for particulates in aqueous samples and centrifugation, if necessary, based on visual appearance.

Type of Ice Used: **(Wet)** Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: **2743975**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via:
(FEDEX) UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: **DN** NA

Therm ID#: **12**

Cooler 1 Temp Upon Receipt: **31.4c**

Cooler 1 Therm Corr. Factor: **True** oC

Cooler 1 Corrected Temp: **18.14** oC

Comments:

Relinquished by/Company: (Signature)
Lydia Auner (TRC)

Date/Time:
3/30/22 13:30

Received by/Company: (Signature)
CSM/Pace

Date/Time:
3-31-22

MTJL LAB USE ONLY

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Table #:
Acctnum:
Template:
Prelogin:

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

PM:
PB:

Trip Blank Received: Y N NA

HCL MeOH TSP O₂

Non Conformance(s): YES / NO

Page of:



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY - Affix Workorder/Login Label Here or List Pace Workorder Number or
MTJL Log-in Number Here

Company: **TRC**

Address: **700 Heartland Trail, Suite 3000 Madison, WI**

Report To: **Mike Ursin**

Copy To: **Lydia Anner, Jeff Ramey**

Customer Project Name/Number: **MMSD PFAS**

Phone: _____
Email: _____

Site/Facility ID #: _____

Compliance Monitoring?
 Yes No

Collected By (print): **Lydia Anner**

Purchase Order #: **2200666**

Quote #: _____

DW PWS ID #: _____
DW Location Code: _____

Collected By (signature): *Lydia Anner*

Turnaround Date Required: **Standard TAT**

Immediately Packed on Ice: Yes No

Sample Disposal:
 Dispose as appropriate Return
 Archive: _____
 Hold: _____

Rush:
 Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
(Expedite Charges Apply)

Field Filtered (if applicable):
 Yes No

Analysis: _____

Billing Information: **Bill to MMSD (see po)**

Email To: **MURSIN Mike Ursin@trccompanies.com**

Site Collection Info/Address: **1610 Moorland Rd.**

State: _____ County/City: **WI / Madison** Time Zone Collected: **[] PT [] MT CT [] ET**

ALL SHADED AREAS are for LAB USE ONLY

Container Preservative Type **										Lab Project Manager:	
U	U										
** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____										Lab Profile/Line: 43476	
Analyses										Lab Sample Receipt Checklist:	
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PFAS WI-33 LIST</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TOP ASSAY</div> </div>										Custody Seals Present/Intact Y N NA	
										Custody Signatures Present Y N NA	
										Collector Signature Present Y N NA	
										Bottles Intact Y N NA	
										Correct Bottles Y N NA	
										Sufficient Volume Y N NA	
										Samples Received on Ice Y N NA	
										VOA - Headspace Acceptable Y N NA	
										USDA Regulated Soils Y N NA	
										Samples in Holding Time Y N NA	
Residual Chlorine Present Y N NA											
Cl Strips: _____											
Sample pH Acceptable Y N NA											
pH Strips: _____											
Sulfide Present Y N NA											
Lead Acetate Strips: _____											
LAB USE ONLY: Lab Sample # / Comments: _____											

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
DUP01-20220329	SL	G	3/29/22	-				1
DUP02-20220330	SL	C	3/30/22	-				1
EB01-20220330	W	G	3/30/22	9:55				1

Customer Remarks / Special Conditions / Possible Hazards: _____

Type of Ice Used: **Wet** Blue Dry None

Packing Material Used: _____

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **2743976**

Samples received via: **FEDEX** UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: **D** N NA

Therm ID#: **12**

Cooler 1 Temp Upon Receipt: **8.14** °C

Cooler 1 Therm Corr. Factor: **Five** °C

Cooler 1 Corrected Temp: **13.14** °C

Comments: _____

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	MTJL LAB USE ONLY	
				Table #:	Acctnum:
<i>Lydia Anner (TRC)</i>	3/30/22 15:30				
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Template:	Prelogin:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	PM:	PB:

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: **2** of **2**

Sample Condition Upon Receipt	Client Name: <u>TRC</u>	Project #:	WO#: 10602741 PM: NEG Due Date: 04/07/22 CLIENT: TRC-WI
Courier:	<input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input type="checkbox"/> Pace <input type="checkbox"/> Speedee <input type="checkbox"/> Commercial		

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No *CSM3-31-22* **Seals Intact?** Yes No **Biological Tissue Frozen?** Yes No N/A

Packing Material: Bubble Wrap Bubble Bags None Other: Plastic Bags **Temp Blank?** Yes No

Thermometer: T1(0461) T2(1336) T3(0459) T4(0254) **Type of Ice:** Wet Blue None Dry Melted

Did Samples Originate in West Virginia? Yes No **Were All Container Temps Taken?** Yes No N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 1.8 1.4 °C **Average Corrected Temp (no temp blank only):** _____ °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 1.8 1.4 °C

USDA Regulated Soil: (N/A water sample/Other: Sludge) **Date/Initials of Person Examining Contents:** CSM3-31-22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.


Location (check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If Fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8hr, <24 hrs, <input type="checkbox"/> >24 hrs
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8. <u>Extra GSE received not on COC</u> <u>10:30</u> <u>Sample</u> <u>BIOSOLIDS-Pre Therm</u> <u>20220329</u>
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input checked="" type="checkbox"/> Other- <u>Sludge</u>	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No pH Paper Lot# <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: *Min Gilbert* **Date:** 3/31/22

	Document Name: Sample Condition Upon Receipt (SCUR) Exception Form	Document Revised: 04Jun2020 Page 1 of 1
	Document No.: ENV-FRM-MIN4-0142 Rev.01	Pace Analytical Services - Minneapolis

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No																		
			If yes, indicate who was contacted/date/time. If no, indicate reason why.																		
			Multiple Cooler Project? <input type="checkbox"/> Yes <input type="checkbox"/> No If you answered yes, fill out information to the left.																		
			<table border="1"> <thead> <tr> <th colspan="3">No Temp Blank</th> </tr> <tr> <th>Read Temp</th> <th>Corrected Temp</th> <th>Average Temp</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	No Temp Blank			Read Temp	Corrected Temp	Average Temp												
No Temp Blank																					
Read Temp	Corrected Temp	Average Temp																			

Tracking Number/Temperature	
5405 1818 1672	1.8
5405 1818 1683	1.4

Issue Type:	Container Type	# of Containers
Sample ID		

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition? <input type="checkbox"/> Yes <input type="checkbox"/> No	Initials
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

Report Prepared for:

Lydia Auner
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Prepared Date:

May 5, 2022

Report Information:


Pace Project #: 10602741
Sample Receipt Date: 03/31/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nick Gilmartin, your Pace Project Manager.

This report has been reviewed by:



May 05, 2022

Nick Gilmartin, Project Manager
(612) 656-2262
(612) 607-6444 (fax)
Nicholas.Gilmartin@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on thirteen samples, five matrix spikes, and five matrix spike duplicates submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance. Reporting limits were set to MDL levels. This report was revised April 26, 2022 to update the results based on dry weight. This report was revised May 2, 2022 to edit narrative about centrifugation and update the solids results reporting unit. This report was revised May 3, 2022 to update the sample IDs for biosolid samples in case narrative and to include matrix spike duplicate RPD limit in case narrative. This report was revised May 5, 2022 to update the report format.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. This spike indicates that extraction performed as expected.

On the matrix spikes there are several analytes that are marked R as the recoveries are diminished or elevated from the expected levels. These deviations may be due to the presence of the affected analytes in the sample material and/or sample inhomogeneity. With the exception of PFHxS and PFOS in matrix spikes of 10602741004; PFBS and PFNS in matrix spikes of 10602741009, the RPDs (relative percent differences) between one designated spike and its duplicate were within the method limits of 0-30%.

Diminished/elevated extracted internal standard (EIS) recovery ("R" flagged) were present in samples and LCS-97833, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

DISCUSSION

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Values were flagged "I" where incorrect isotope ratios were obtained.

Samples INFLUENT-02-20220328, INFLUENT-07-20220328, INFLUENT-08-20220328, INFLUENT-11-20220328, INFLUENT-18-20220328, INFLUENT-11-20220328-MS, and INFLUENT-11-20220328-MSD required centrifugation prior to extraction due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of methanol. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <1mL and reconstituted to 1mL using methanol by transfer pipet.

Moisture percentages for solid samples are:
BIOSOLIDS-PRE-THERM-20220329: 97.4219%
BIOSOLIDS-POST-THERM-20220329: 98.0824%
BIOSOLIDS-A-20220330: 78.1314%
BIOSOLIDS-B-20220329: 94.4465%
DUP01-20220329: 94.5797%
DUP02-20220330: 78.1293%



Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
INFLUENT-02-20220328	10602741001	03/31/2022	Water
INFLUENT-07-20220328	10602741002	03/31/2022	Water
INFLUENT-08-20220328	10602741003	03/31/2022	Water
INFLUENT-11-20220328	10602741004	03/31/2022	Water
INFLUENT-11-20220328-MS	10602741004-MS	03/31/2022	Water
INFLUENT-11-20220328-MSD	10602741004-MSD	03/31/2022	Water
INFLUENT-18-20220328	10602741005	03/31/2022	Water
EFFLUENT-20220329	10602741006	03/31/2022	Water
EFFLUENT-20220329-MS	10602741006-MS	03/31/2022	Water
EFFLUENT-20220329-MSD	10602741006-MSD	03/31/2022	Water
BIOSOLIDS-PRE-THERM-20220329	10602741007	03/31/2022	Solid
BIOSOLIDS-PRE-THERM-20220329-MS	10602741007-MS	03/31/2022	Solid
BIOSOLIDS-PRE-THERM-20220329-MSD	10602741007-MSD	03/31/2022	Solid
BIOSOLIDS-POST-THERM-20220329	10602741008	03/31/2022	Solid
BIOSOLIDS-A-20220330	10602741009	03/31/2022	Solid
BIOSOLIDS-A-20220330-MS	10602741009-MS	03/31/2022	Solid
BIOSOLIDS-A-20220330-MSD	10602741009-MSD	03/31/2022	Solid
BIOSOLIDS-B-20220329	10602741010	03/31/2022	Solid
BIOSOLIDS-B-20220329-MS	10602741010-MS	03/31/2022	Solid
BIOSOLIDS-B-20220329-MSD	10602741010-MSD	03/31/2022	Solid
DUP01-20220329	10602741011	03/31/2022	Solid
DUP02-20220330	10602741012	03/31/2022	Solid
EB01-20220330	10602741013	03/31/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

LAB USE

WO#: 10602741

Number or

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: **TRC**Billing Information: **Bill to MMSD (see PO)**Address: **708 Heathland Trail, Suite 3000
Madison, WI 53717**Report To: **Mike Ursin**Email To: **Mike Ursin@trccompanies.com**Copy To: **Lydia Auner, Jeff Ramey**Site Collection Info/Address: **1610 Moorland Rd**Customer Project Name/Number: **MMSD PFAS**State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**Phone:
Email:Site/Facility ID #:
Compliance Monitoring?
[] Yes [X] NoCollected By (print):
Lydia AunerPurchase Order #: **2200666**
Quote #:DW PWS ID #:
DW Location Code:Collected By (signature):
Lydia AunerTurnaround Date Required:
Standard TATImmediately Packed on Ice:
[X] Yes [] NoSample Disposal:
[X] Dispose as appropriate [] Return
[] Archive:
[] Hold:Rush:
[] Same Day [] Next Day
[] 2 Day [] 3 Day [] 4 Day [] 5 Day
(Expedite Charges Apply)Field Filtered (if applicable):
[] Yes [X] No
Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS W1-33 LIST	TSS	MS/MSD	TOP ASSAY
			Date	Time	Date	Time						
INFLUENT-02-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X		
INFLUENT-07-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X		
INFLUENT-08-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X		
INFLUENT-11-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		5	X	X	X	
INFLUENT-16-20220328	WW	C	3/28/22	00:00	3/28/22	23:59		3	X	X		
EFFLUENT-20220329	WW	C	3/29/22	00:00	3/29/22	23:59		6	X	X	X	X
BIOIDS-PRE-THERM-20220329	SL	G	3/29/22	11:30				1	X	X		
BIOIDS-POST-THERM-20220329	SL	G	3/29/22	9:40				1	X			
BIOIDS-A-20220330	SL	C	3/30/22	10:00				1	X	X	X	
BIOIDS-B-20220329	SL	G	3/29/22	10:10				1	X	X	X	

Container Preservative Type: **U U U U**

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses												Lab Profile/Line: 4376	
Lab Sample Receipt Checklist:													
Custody Seals Present/Intact	Y	N	NA										
Custody Signatures Present	Y	N	NA										
Collector Signature Present	Y	N	NA										
Bottles Intact	Y	N	NA										
Correct Bottles	Y	N	NA										
Sufficient Volume	Y	N	NA										
Samples Received on Ice	Y	N	NA										
VOA - Headspace Acceptable	Y	N	NA										
USDA Regulated Soils	Y	N	NA										
Samples in Holding Time	Y	N	NA										
Residual Chlorine Present	Y	N	NA										
Cl Strips:													
Sample pH Acceptable	Y	N	NA										
pH Strips:													
Sulfide Present	Y	N	NA										
Lead Acetate Strips:													
LAB USE ONLY: Lab Sample # / Comments:													
													001
													002
													003
													004
													005
													006
													007
													008
													009
													010

Customer Remarks / Special Conditions / Possible Hazards:
For influent samples, follow EA-19-0001 (WI PFAS Method Expectations) Section VI.3 procedure for particulates in aqueous samples and centrifugation, if necessary, based on visual appearance.Type of Ice Used: **(Wet)** Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: **2743975**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: **(FEDEX)** UPS Client Courier Pace CourierRelinquished by/Company: (Signature)
Lydia Auner (TRC)
Date/Time: **3/30/22 13:30**Received by/Company: (Signature)
CSM/Pace
Date/Time: **3-31-22**Date/Time: **8:50**
3-31-22
MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:Lab Sample Temperature Info:
Temp Blank Received: **DN NA**
Therm ID#: **12**
Cooler 1 Temp Upon Receipt: **31.4c**
Cooler 1 Therm Corr. Factor: **True** oC
Cooler 1 Corrected Temp: **18.14** oC
Comments:

Trip Blank Received: Y N N
HCL MeOH TSP O
Non Conformance(s):
YES / NO
Page of:Report No: 10602741_1D36_R4_DTR
REVISION 4



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY - Affix Workorder/Login Label Here or List Pace Workorder Number or
MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC**

Billing Information: **Bill to MMSD (see po)**

Address: **700 Heartland Trail, Suite 3000 Madison, WI**

Report To: **Mike Ursin**
Email To: **MURSIN Mike.ursin@trccompanies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address: **1610 Moorland Rd.**

Customer Project Name/Number:
MMSD PFAS

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Phone:
Email:

Site/Facility ID #:
Compliance Monitoring?
 Yes No

Collected By (print):
Lydia Auner

Purchase Order #: **2200666**
Quote #:

Collected By (signature):
Lydia Auner

DW PWS ID #:
DW Location Code:

Sample Disposal:
 Dispose as appropriate Return
 Archive: _____
 Hold: _____

Turnaround Date Required:
Standard TAT

Rush:
 Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
(Expedite Charges Apply)

Immediately Packed on Ice:
 Yes No

Field Filtered (if applicable):
 Yes No

Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TOP ASSAY	ANALYSES	ANALYSES	ANALYSES	ANALYSES	ANALYSES	ANALYSES	ANALYSES	ANALYSES			
			Date	Time	Date	Time															
DUP01-20220329	SL	G	3/29/22	-				1	X	X											
DUP02-20220330	SL	C	3/30/22	-				1	X	X											
EB01-20220330	W	G	3/30/22	9:55				1	X												

Container Preservative Type **
U U

Lab Project Manager:
** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses
Lab Profile/Line: **43476**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips:			
Sample pH Acceptable	Y	N	NA
pH Strips:			
Sulfide Present	Y	N	NA
Lead Acetate Strips:			

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
Type of Ice Used: **Wet** Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: **2743976**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: **FEDEX** UPS Client Courier Pace Courier

Relinquished by/Company: (Signature)
Lydia Auner (TRC)

Date/Time:
3/30/22 15:30

Received by/Company: (Signature)

Date/Time:

MTJL LAB USE ONLY

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Table #:

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Acctnum:

Lab Sample Temperature Info:

Temp Blank Received: **D** N NA
Therm ID#: **12**
Cooler 1 Temp Upon Receipt: **8.14** °C
Cooler 1 Therm Corr. Factor: **Five** °C
Cooler 1 Corrected Temp: **3.14** °C
Comments:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO
Page: **2** of: **2**

Sample Condition Upon Receipt	Client Name: <u>TRC</u>	Project #:	WO#: 10602741 PM: NEG Due Date: 04/07/22 CLIENT: TRC-WI
Courier:	<input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input type="checkbox"/> Pace <input type="checkbox"/> Speedee <input type="checkbox"/> Commercial		

Tracking Number: _____ See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No *CSM3-31-22* **Seals Intact?** Yes No **Biological Tissue Frozen?** Yes No N/A

Packing Material: Bubble Wrap Bubble Bags None Other: Plastic Bags **Temp Blank?** Yes No

Thermometer: T1(0461) T2(1336) T3(0459) T4(0254) **Type of Ice:** Wet Blue None Dry Melted
 T5(0489) 01339252/1710 122639816 140792808

Did Samples Originate in West Virginia? Yes No **Were All Container Temps Taken?** Yes No N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 1.8 1.4 °C **Average Corrected Temp (no temp blank only):** _____ °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 1.8 1.4 °C See Exceptions ENV-FRM-MIN4-0142 1 Container

USDA Regulated Soil: (N/A water sample/Other: Sludge) **Date/Initials of Person Examining Contents:** CSM3-31-22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If Fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8hr, <24 hrs, <input type="checkbox"/> >24 hrs
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8. <u>Extra GSE received not on COC Sample</u> <u>10:30 BIOSOLIDS-Pre Therm</u> <u>20220329</u>
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input checked="" type="checkbox"/> Other: <u>Sludge</u>	11. If no, write ID/ Date/Time on Container Below: See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142 Chlorine? <input type="checkbox"/> No pH Paper Lot# Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: *Mia Gilbert* **Date:** 3/31/22



Document Name:
Sample Condition Upon Receipt (SCUR) Exception Form
 Document No.:
ENV-FRM-MIN4-0142 Rev.01

Document Revised: 04Jun2020
Page 1 of 1
 Pace Analytical Services -
Minneapolis

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No																		
			If yes, indicate who was contacted/date/time. If no, indicate reason why.																		
			Multiple Cooler Project? <input type="checkbox"/> Yes <input type="checkbox"/> No If you answered yes, fill out information to the left.																		
			<table border="1"> <thead> <tr> <th colspan="3">No Temp Blank</th> </tr> <tr> <th>Read Temp</th> <th>Corrected Temp</th> <th>Average Temp</th> </tr> </thead> <tbody> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </tbody> </table>	No Temp Blank			Read Temp	Corrected Temp	Average Temp												
No Temp Blank																					
Read Temp	Corrected Temp	Average Temp																			

Tracking Number/Temperature	
5405 1818 1672	1.8
5405 1818 1683	1.4

Issue Type:	Container Type	# of Containers
Sample ID		

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition? <input type="checkbox"/> Yes <input type="checkbox"/> No	Initials
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10602741001	INFLUENT-02-20220328	SW3535	32810	PFAS-36	Q220407C_03
10602741002	INFLUENT-07-20220328	SW3535	32810	PFAS-36	Q220407C_03
10602741003	INFLUENT-08-20220328	SW3535	32810	PFAS-36	Q220407C_03
10602741004	INFLUENT-11-20220328	SW3535	32810	PFAS-36	Q220407C_03
10602741005	INFLUENT-18-20220328	SW3535	32810	PFAS-36	Q220407C_03
10602741006	EFFLUENT-20220329	SW3535	32810	PFAS-36	Q220407C_03
10602741007	BIOSOLIDS-PRE-THERM-20220329	SW3535	32815	PFAS-36	Q220412C_03
10602741008	BIOSOLIDS-POST-THERM-20220329	SW3535	32815	PFAS-36	Q220412C_03
10602741009	BIOSOLIDS-A-20220330	SW3535	32815	PFAS-36	Q220412C_03
10602741010	BIOSOLIDS-B-20220329	SW3535	32815	PFAS-36	Q220412C_05
10602741011	DUP01-20220329	SW3535	32815	PFAS-36	Q220412C_03
10602741012	DUP02-20220330	SW3535	32815	PFAS-36	Q220412C_03
10602741013	EB01-20220330	SW3535	32810	PFAS-36	Q220414A_01

Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix B

Sample Analysis Summary



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-02-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741001	Total Amount Extracted	240mL
Lab File ID	Q220408A_005	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.5	2.1	0.46	0.46	1	375-22-4		04/08/2022 16:46
PFPeA	3.4	2.1	0.46	0.46	1	2706-90-3		04/08/2022 16:46
HFPO-DA	ND	2.1	0.55	0.55	1	13252-13-6		04/08/2022 16:46
PFBS	1.9	1.8	0.49	0.49	1	375-73-5		04/08/2022 16:46
PFHxA	3.8	2.1	0.46	0.46	1	307-24-4		04/08/2022 16:46
4:2 FTS	ND	1.9	0.58	0.58	1	757124-72-4		04/08/2022 16:46
PFPeS	ND	2.0	0.49	0.49	1	2706-91-4		04/08/2022 16:46
PFHpA	1.7 J	2.1	0.57	0.57	1	375-85-9		04/08/2022 16:46
DONA	ND	2.0	0.53	0.53	1	919005-14-4		04/08/2022 16:46
PFHxS	5.0	1.9	0.53	0.53	1	355-46-4		04/08/2022 16:46
PFOA	2.7	2.1	0.61	0.61	1	335-67-1		04/08/2022 16:46
6:2 FTS	ND	2.0	0.67	0.67	1	27619-97-2		04/08/2022 16:46
PFHpS	ND	2.0	0.43	0.43	1	375-92-8		04/08/2022 16:46
PFNA	ND	2.1	0.77	0.77	1	375-95-1		04/08/2022 16:46
PFOSAm	ND	2.1	0.85	0.85	1	754-91-6		04/08/2022 16:46
PFOS	4.9	1.9	0.57	0.57	1	1763-23-1		04/08/2022 16:46
MeFOSA	ND	2.1	0.53	0.53	1	31506-32-8		04/08/2022 16:46
PFDA	ND	2.1	0.59	0.59	1	335-76-2		04/08/2022 16:46
EtFOSAm	ND	2.1	0.63	0.63	1	4151-50-2		04/08/2022 16:46
8:2 FTS	ND	2.0	0.68	0.68	1	39108-34-4		04/08/2022 16:46
9-CI-PF3ON	ND	1.9	0.32	0.32	1	756426-58-1		04/08/2022 16:46
PFNS	ND	2.0	0.46	0.46	1	68259-12-1		04/08/2022 16:46
PFUnDA	ND	2.1	0.56	0.56	1	2058-94-8		04/08/2022 16:46
NMeFOSAA	ND	2.1	0.45	0.45	1	2355-31-9		04/08/2022 16:46
NEtFOSAA	ND	2.1	0.58	0.58	1	2991-50-6		04/08/2022 16:46
PFDS	ND	2.0	0.47	0.47	1	335-77-3		04/08/2022 16:46
PFDOA	ND	2.1	0.50	0.50	1	307-55-1		04/08/2022 16:46
MeFOSE	0.84 J	2.1	0.34	0.34	1	24448-09-7		04/08/2022 16:46
EtFOSE	ND	2.1	0.52	0.52	1	1691-99-2		04/08/2022 16:46
11-CI-PF3OUdS	ND	2.0	0.45	0.45	1	763051-92-9		04/08/2022 16:46
PFTTrDA	ND	2.1	0.65	0.65	1	72629-94-8		04/08/2022 16:46
PFDoS	ND	2.0	0.48	0.48	1	79780-39-5		04/08/2022 16:46
PFTDA	ND	2.1	0.49	0.49	1	376-06-7		04/08/2022 16:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-02-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741001	Total Amount Extracted	240mL
Lab File ID	Q220408A_005	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	21	18	88	50-150		04/08/2022 16:46
13C4 PFOA	21	19	94	50-150		04/08/2022 16:46
13C2 PFDA	21	23	111	50-150		04/08/2022 16:46
13C4 PFOS	20	22	111	50-150		04/08/2022 16:46

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	21	17	81	25-150		04/08/2022 16:46
13C5 PFPeA	21	18	85	25-150		04/08/2022 16:46
13C3 PFBS	19	19	101	25-150		04/08/2022 16:46
13C2 4:2FTS	19	70	358	25-150	R	04/08/2022 16:46
13C5 PFHxA	21	17	84	25-150		04/08/2022 16:46
13C4 PFHpA	21	17	82	25-150		04/08/2022 16:46
13C3 PFHxS	20	21	106	25-150		04/08/2022 16:46
13C2 6:2FTS	20	98	495	25-150	R	04/08/2022 16:46
13C8 PFOA	21	19	93	25-150		04/08/2022 16:46
13C9 PFNA	21	23	110	25-150		04/08/2022 16:46
13C8 PFOS	20	20	101	25-150		04/08/2022 16:46
13C2 8:2FTS	20	61	304	25-150	R	04/08/2022 16:46
13C6 PFDA	21	23	108	25-150		04/08/2022 16:46
d3-MeFOSAA	21	14	66	25-150		04/08/2022 16:46
13C8 PFOSA	21	8.1	39	25-150		04/08/2022 16:46
d5-EtFOSAA	21	15	73	25-150		04/08/2022 16:46
13C7 PFUdA	21	19	90	25-150		04/08/2022 16:46
13C2 PFDoA	21	13	63	25-150		04/08/2022 16:46
13C2 PFTeDA	21	10	50	25-150		04/08/2022 16:46
13C3 HFPO-DA	21	16	75	25-150		04/08/2022 16:46
d7-N-MeFOSE	21	10	49	10-150		04/08/2022 16:46
d9-N-EtFOSE	21	8.8	42	10-150		04/08/2022 16:46
d3-N-MeFOSA	21	8.9	43	10-150		04/08/2022 16:46
d5-N-EtFOSA	21	6.4	31	10-150		04/08/2022 16:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID INFLUENT-07-20220328
 Lab Sample ID 10602741002
 Lab File ID Q220408A_006
 Matrix Water
 Collected 03/28/2022 23:59
 Received 03/31/2022 08:50

Extraction Date 04/06/2022 15:26
 Total Amount Extracted 261mL
 Ical ID 220407A01
 CCal File Q220407C_034
 Ending CCal File Q220408A_012
 Blank File Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	1.9	0.42	0.42	1	375-22-4		04/08/2022 17:04
PFPeA	5.9	1.9	0.42	0.42	1	2706-90-3		04/08/2022 17:04
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		04/08/2022 17:04
PFBS	3.6	1.7	0.45	0.45	1	375-73-5		04/08/2022 17:04
PFHxA	11	1.9	0.42	0.42	1	307-24-4		04/08/2022 17:04
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		04/08/2022 17:04
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		04/08/2022 17:04
PFHpA	3.0	1.9	0.53	0.53	1	375-85-9		04/08/2022 17:04
DONA	ND	1.8	0.49	0.49	1	919005-14-4		04/08/2022 17:04
PFHxS	4.5	1.7	0.49	0.49	1	355-46-4		04/08/2022 17:04
PFOA	5.2	1.9	0.56	0.56	1	335-67-1		04/08/2022 17:04
6:2 FTS	0.88 J	1.8	0.62	0.62	1	27619-97-2		04/08/2022 17:04
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		04/08/2022 17:04
PFNA	14	1.9	0.71	0.71	1	375-95-1		04/08/2022 17:04
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		04/08/2022 17:04
PFOS	2.8	1.8	0.53	0.53	1	1763-23-1		04/08/2022 17:04
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		04/08/2022 17:04
PFDA	0.63 J	1.9	0.54	0.54	1	335-76-2		04/08/2022 17:04
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		04/08/2022 17:04
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		04/08/2022 17:04
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		04/08/2022 17:04
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		04/08/2022 17:04
PFUnDA	1.7 J	1.9	0.52	0.52	1	2058-94-8		04/08/2022 17:04
NMeFOSAA	1.4 J	1.9	0.42	0.42	1	2355-31-9		04/08/2022 17:04
NEtFOSAA	12	1.9	0.53	0.53	1	2991-50-6		04/08/2022 17:04
PFDS	ND	1.8	0.43	0.43	1	335-77-3		04/08/2022 17:04
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		04/08/2022 17:04
MeFOSE	2.1	1.9	0.32	0.32	1	24448-09-7		04/08/2022 17:04
EtFOSE	0.59 J	1.9	0.48	0.48	1	1691-99-2		04/08/2022 17:04
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		04/08/2022 17:04
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		04/08/2022 17:04
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		04/08/2022 17:04
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		04/08/2022 17:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-07-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741002	Total Amount Extracted	261mL
Lab File ID	Q220408A_006	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	16	81	50-150		04/08/2022 17:04
13C4 PFOA	19	19	100	50-150		04/08/2022 17:04
13C2 PFDA	19	24	125	50-150		04/08/2022 17:04
13C4 PFOS	18	19	104	50-150		04/08/2022 17:04

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	16	82	25-150		04/08/2022 17:04
13C5 PFPeA	19	16	81	25-150		04/08/2022 17:04
13C3 PFBS	18	17	96	25-150		04/08/2022 17:04
13C2 4:2FTS	18	65	361	25-150	R	04/08/2022 17:04
13C5 PFHxA	19	15	77	25-150		04/08/2022 17:04
13C4 PFHpA	19	14	74	25-150		04/08/2022 17:04
13C3 PFHxS	18	19	107	25-150		04/08/2022 17:04
13C2 6:2FTS	18	88	482	25-150	R	04/08/2022 17:04
13C8 PFOA	19	18	96	25-150		04/08/2022 17:04
13C9 PFNA	19	20	102	25-150		04/08/2022 17:04
13C8 PFOS	18	18	100	25-150		04/08/2022 17:04
13C2 8:2FTS	18	76	416	25-150	R	04/08/2022 17:04
13C6 PFDA	19	22	113	25-150		04/08/2022 17:04
d3-MeFOSAA	19	16	83	25-150		04/08/2022 17:04
13C8 PFOSA	19	8.1	42	25-150		04/08/2022 17:04
d5-EtFOSAA	19	20	107	25-150		04/08/2022 17:04
13C7 PFUdA	19	16	84	25-150		04/08/2022 17:04
13C2 PFDoA	19	12	63	25-150		04/08/2022 17:04
13C2 PFTeDA	19	9.8	51	25-150		04/08/2022 17:04
13C3 HFPO-DA	19	12	62	25-150		04/08/2022 17:04
d7-N-MeFOSE	19	7.9	41	10-150		04/08/2022 17:04
d9-N-EtFOSE	19	9.6	50	10-150		04/08/2022 17:04
d3-N-MeFOSA	19	7.3	38	10-150		04/08/2022 17:04
d5-N-EtFOSA	19	5.1	27	10-150		04/08/2022 17:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-08-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741003	Total Amount Extracted	249mL
Lab File ID	Q220408A_007	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.4	2.0	0.44	0.44	1	375-22-4		04/08/2022 17:23
PFPeA	3.0	2.0	0.44	0.44	1	2706-90-3		04/08/2022 17:23
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		04/08/2022 17:23
PFBS	1.7 J	1.8	0.48	0.48	1	375-73-5		04/08/2022 17:23
PFHxA	3.7	2.0	0.44	0.44	1	307-24-4		04/08/2022 17:23
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		04/08/2022 17:23
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		04/08/2022 17:23
PFHpA	1.6 J	2.0	0.55	0.55	1	375-85-9		04/08/2022 17:23
DONA	ND	1.9	0.52	0.52	1	919005-14-4		04/08/2022 17:23
PFHxS	3.5	1.8	0.51	0.51	1	355-46-4		04/08/2022 17:23
PFOA	2.0 J	2.0	0.59	0.59	1	335-67-1		04/08/2022 17:23
6:2 FTS	1.5 J	1.9	0.65	0.65	1	27619-97-2		04/08/2022 17:23
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		04/08/2022 17:23
PFNA	ND	2.0	0.74	0.74	1	375-95-1		04/08/2022 17:23
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		04/08/2022 17:23
PFOS	5.0 I	1.9	0.55	0.55	1	1763-23-1		04/08/2022 17:23
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		04/08/2022 17:23
PFDA	ND	2.0	0.57	0.57	1	335-76-2		04/08/2022 17:23
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		04/08/2022 17:23
8:2 FTS	0.73 J	1.9	0.66	0.66	1	39108-34-4		04/08/2022 17:23
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		04/08/2022 17:23
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		04/08/2022 17:23
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		04/08/2022 17:23
NMeFOSAA	ND	2.0	0.44	0.44	1	2355-31-9		04/08/2022 17:23
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		04/08/2022 17:23
PFDS	ND	1.9	0.45	0.45	1	335-77-3		04/08/2022 17:23
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		04/08/2022 17:23
MeFOSE	1.3 J	2.0	0.33	0.33	1	24448-09-7		04/08/2022 17:23
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		04/08/2022 17:23
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		04/08/2022 17:23
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		04/08/2022 17:23
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		04/08/2022 17:23
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		04/08/2022 17:23

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-08-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741003	Total Amount Extracted	249mL
Lab File ID	Q220408A_007	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	17	84	50-150		04/08/2022 17:23
13C4 PFOA	20	19	96	50-150		04/08/2022 17:23
13C2 PFDA	20	21	103	50-150		04/08/2022 17:23
13C4 PFOS	19	21	110	50-150		04/08/2022 17:23

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	16	80	25-150		04/08/2022 17:23
13C5 PFPeA	20	16	78	25-150		04/08/2022 17:23
13C3 PFBS	19	17	89	25-150		04/08/2022 17:23
13C2 4:2FTS	19	71	379	25-150	R	04/08/2022 17:23
13C5 PFHxA	20	16	80	25-150		04/08/2022 17:23
13C4 PFHpA	20	15	75	25-150		04/08/2022 17:23
13C3 PFHxS	19	20	104	25-150		04/08/2022 17:23
13C2 6:2FTS	19	99	521	25-150	R	04/08/2022 17:23
13C8 PFOA	20	19	95	25-150		04/08/2022 17:23
13C9 PFNA	20	20	99	25-150		04/08/2022 17:23
13C8 PFOS	19	21	107	25-150		04/08/2022 17:23
13C2 8:2FTS	19	99	516	25-150	R	04/08/2022 17:23
13C6 PFDA	20	26	128	25-150		04/08/2022 17:23
d3-MeFOSAA	20	17	86	25-150		04/08/2022 17:23
13C8 PFOSA	20	8.3	41	25-150		04/08/2022 17:23
d5-EtFOSAA	20	28	140	25-150		04/08/2022 17:23
13C7 PFUdA	20	19	94	25-150		04/08/2022 17:23
13C2 PFDoA	20	12	62	25-150		04/08/2022 17:23
13C2 PFTeDA	20	8.5	42	25-150		04/08/2022 17:23
13C3 HFPO-DA	20	12	62	25-150		04/08/2022 17:23
d7-N-MeFOSE	20	8.3	41	10-150		04/08/2022 17:23
d9-N-EtFOSE	20	9.0	45	10-150		04/08/2022 17:23
d3-N-MeFOSA	20	8.4	42	10-150		04/08/2022 17:23
d5-N-EtFOSA	20	5.6	28	10-150		04/08/2022 17:23

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-11-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741004	Total Amount Extracted	247mL
Lab File ID	Q220408A_008	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.8	2.0	0.45	0.45	1	375-22-4		04/08/2022 17:41
PFPeA	2.1	2.0	0.44	0.44	1	2706-90-3		04/08/2022 17:41
HFPO-DA	ND	2.0	0.54	0.54	1	13252-13-6		04/08/2022 17:41
PFBS	0.85 J	1.8	0.48	0.48	1	375-73-5		04/08/2022 17:41
PFHxA	3.0	2.0	0.44	0.44	1	307-24-4		04/08/2022 17:41
4:2 FTS	ND	1.9	0.57	0.57	1	757124-72-4		04/08/2022 17:41
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		04/08/2022 17:41
PFHpA	1.4 IJ	2.0	0.56	0.56	1	375-85-9		04/08/2022 17:41
DONA	ND	1.9	0.52	0.52	1	919005-14-4		04/08/2022 17:41
PFHxS	2.8 I	1.8	0.52	0.52	1	355-46-4		04/08/2022 17:41
PFOA	1.8 J	2.0	0.59	0.59	1	335-67-1		04/08/2022 17:41
6:2 FTS	ND	1.9	0.65	0.65	1	27619-97-2		04/08/2022 17:41
PFHpS	ND	1.9	0.42	0.42	1	375-92-8		04/08/2022 17:41
PFNA	ND	2.0	0.75	0.75	1	375-95-1		04/08/2022 17:41
PFOSAm	ND	2.0	0.83	0.83	1	754-91-6		04/08/2022 17:41
PFOS	1.4 J	1.9	0.56	0.56	1	1763-23-1		04/08/2022 17:41
MeFOSA	ND	2.0	0.52	0.52	1	31506-32-8		04/08/2022 17:41
PFDA	ND	2.0	0.57	0.57	1	335-76-2		04/08/2022 17:41
EtFOSAm	ND	2.0	0.62	0.62	1	4151-50-2		04/08/2022 17:41
8:2 FTS	ND	1.9	0.66	0.66	1	39108-34-4		04/08/2022 17:41
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		04/08/2022 17:41
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		04/08/2022 17:41
PFUnDA	ND	2.0	0.55	0.55	1	2058-94-8		04/08/2022 17:41
NMeFOSAA	0.45 J	2.0	0.44	0.44	1	2355-31-9		04/08/2022 17:41
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		04/08/2022 17:41
PFDS	ND	2.0	0.46	0.46	1	335-77-3		04/08/2022 17:41
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		04/08/2022 17:41
MeFOSE	1.3 J	2.0	0.33	0.33	1	24448-09-7		04/08/2022 17:41
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		04/08/2022 17:41
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		04/08/2022 17:41
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		04/08/2022 17:41
PFDoS	ND	2.0	0.47	0.47	1	79780-39-5		04/08/2022 17:41
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		04/08/2022 17:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-11-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741004	Total Amount Extracted	247mL
Lab File ID	Q220408A_008	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	16	77	50-150		04/08/2022 17:41
13C4 PFOA	20	18	89	50-150		04/08/2022 17:41
13C2 PFDA	20	22	107	50-150		04/08/2022 17:41
13C4 PFOS	19	19	99	50-150		04/08/2022 17:41

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	15	73	25-150		04/08/2022 17:41
13C5 PFPeA	20	14	71	25-150		04/08/2022 17:41
13C3 PFBS	19	15	82	25-150		04/08/2022 17:41
13C2 4:2FTS	19	63	334	25-150	R	04/08/2022 17:41
13C5 PFHxA	20	14	71	25-150		04/08/2022 17:41
13C4 PFHpA	20	14	71	25-150		04/08/2022 17:41
13C3 PFHxS	19	19	100	25-150		04/08/2022 17:41
13C2 6:2FTS	19	91	474	25-150	R	04/08/2022 17:41
13C8 PFOA	20	19	93	25-150		04/08/2022 17:41
13C9 PFNA	20	20	99	25-150		04/08/2022 17:41
13C8 PFOS	19	18	92	25-150		04/08/2022 17:41
13C2 8:2FTS	19	76	391	25-150	R	04/08/2022 17:41
13C6 PFDA	20	20	101	25-150		04/08/2022 17:41
d3-MeFOSAA	20	13	67	25-150		04/08/2022 17:41
13C8 PFOSA	20	6.6	32	25-150		04/08/2022 17:41
d5-EtFOSAA	20	19	95	25-150		04/08/2022 17:41
13C7 PFUdA	20	18	86	25-150		04/08/2022 17:41
13C2 PFDoA	20	10	50	25-150		04/08/2022 17:41
13C2 PFTeDA	20	8.7	43	25-150		04/08/2022 17:41
13C3 HFPO-DA	20	13	62	25-150		04/08/2022 17:41
d7-N-MeFOSE	20	8.6	42	10-150		04/08/2022 17:41
d9-N-EtFOSE	20	8.5	42	10-150		04/08/2022 17:41
d3-N-MeFOSA	20	6.9	34	10-150		04/08/2022 17:41
d5-N-EtFOSA	20	5.0	25	10-150		04/08/2022 17:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID INFLUENT-18-20220328
 Lab Sample ID 10602741005
 Lab File ID Q220408A_009
 Matrix Water
 Collected 03/28/2022 23:59
 Received 03/31/2022 08:50

Extraction Date 04/06/2022 15:26
 Total Amount Extracted 245mL
 Ical ID 220407A01
 CCal File Q220407C_034
 Ending CCal File Q220408A_012
 Blank File Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.6	2.0	0.45	0.45	1	375-22-4		04/08/2022 18:00
PFPeA	6.3	2.0	0.45	0.45	1	2706-90-3		04/08/2022 18:00
HFPO-DA	ND	2.0	0.54	0.54	1	13252-13-6		04/08/2022 18:00
PFBS	3.1	1.8	0.48	0.48	1	375-73-5		04/08/2022 18:00
PFHxA	7.3	2.0	0.45	0.45	1	307-24-4		04/08/2022 18:00
4:2 FTS	ND	1.9	0.57	0.57	1	757124-72-4		04/08/2022 18:00
PFPeS	1.5 J	1.9	0.49	0.49	1	2706-91-4		04/08/2022 18:00
PFHpA	3.0	2.0	0.56	0.56	1	375-85-9		04/08/2022 18:00
DONA	ND	1.9	0.53	0.53	1	919005-14-4		04/08/2022 18:00
PFHxS	17	1.9	0.52	0.52	1	355-46-4		04/08/2022 18:00
PFOA	7.9	2.0	0.60	0.60	1	335-67-1		04/08/2022 18:00
6:2 FTS	2.2	1.9	0.66	0.66	1	27619-97-2		04/08/2022 18:00
PFHpS	ND	1.9	0.42	0.42	1	375-92-8		04/08/2022 18:00
PFNA	ND	2.0	0.76	0.76	1	375-95-1		04/08/2022 18:00
PFOSAm	ND	2.0	0.84	0.84	1	754-91-6		04/08/2022 18:00
PFOS	6.7	1.9	0.56	0.56	1	1763-23-1		04/08/2022 18:00
MeFOSA	ND	2.0	0.52	0.52	1	31506-32-8		04/08/2022 18:00
PFDA	ND	2.0	0.58	0.58	1	335-76-2		04/08/2022 18:00
EtFOSAm	ND	2.0	0.62	0.62	1	4151-50-2		04/08/2022 18:00
8:2 FTS	ND	2.0	0.67	0.67	1	39108-34-4		04/08/2022 18:00
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		04/08/2022 18:00
PFNS	ND	2.0	0.46	0.46	1	68259-12-1		04/08/2022 18:00
PFUnDA	ND	2.0	0.55	0.55	1	2058-94-8		04/08/2022 18:00
NMeFOSAA	0.67 J	2.0	0.44	0.44	1	2355-31-9		04/08/2022 18:00
NEtFOSAA	1.3 J	2.0	0.57	0.57	1	2991-50-6		04/08/2022 18:00
PFDS	ND	2.0	0.46	0.46	1	335-77-3		04/08/2022 18:00
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		04/08/2022 18:00
MeFOSE	1.5 J	2.0	0.34	0.34	1	24448-09-7		04/08/2022 18:00
EtFOSE	ND	2.0	0.51	0.51	1	1691-99-2		04/08/2022 18:00
11-CI-PF3OUdS	ND	1.9	0.45	0.45	1	763051-92-9		04/08/2022 18:00
PFTTrDA	ND	2.0	0.64	0.64	1	72629-94-8		04/08/2022 18:00
PFDoS	ND	2.0	0.47	0.47	1	79780-39-5		04/08/2022 18:00
PFTDA	ND	2.0	0.49	0.49	1	376-06-7		04/08/2022 18:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-18-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741005	Total Amount Extracted	245mL
Lab File ID	Q220408A_009	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	15	75	50-150		04/08/2022 18:00
13C4 PFOA	20	18	89	50-150		04/08/2022 18:00
13C2 PFDA	20	25	125	50-150		04/08/2022 18:00
13C4 PFOS	20	18	94	50-150		04/08/2022 18:00

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	19	91	25-150		04/08/2022 18:00
13C5 PFPeA	20	15	73	25-150		04/08/2022 18:00
13C3 PFBS	19	13	66	25-150		04/08/2022 18:00
13C2 4:2FTS	19	53	278	25-150	R	04/08/2022 18:00
13C5 PFHxA	20	15	72	25-150		04/08/2022 18:00
13C4 PFHpA	20	13	64	25-150		04/08/2022 18:00
13C3 PFHxS	19	17	87	25-150		04/08/2022 18:00
13C2 6:2FTS	19	85	438	25-150	R	04/08/2022 18:00
13C8 PFOA	20	19	91	25-150		04/08/2022 18:00
13C9 PFNA	20	22	106	25-150		04/08/2022 18:00
13C8 PFOS	20	18	91	25-150		04/08/2022 18:00
13C2 8:2FTS	20	74	377	25-150	R	04/08/2022 18:00
13C6 PFDA	20	24	115	25-150		04/08/2022 18:00
d3-MeFOSAA	20	15	75	25-150		04/08/2022 18:00
13C8 PFOSA	20	8.2	40	25-150		04/08/2022 18:00
d5-EtFOSAA	20	22	110	25-150		04/08/2022 18:00
13C7 PFUdA	20	19	95	25-150		04/08/2022 18:00
13C2 PFDoA	20	13	64	25-150		04/08/2022 18:00
13C2 PFTeDA	20	8.8	43	25-150		04/08/2022 18:00
13C3 HFPO-DA	20	12	60	25-150		04/08/2022 18:00
d7-N-MeFOSE	20	9.6	47	10-150		04/08/2022 18:00
d9-N-EtFOSE	20	8.9	44	10-150		04/08/2022 18:00
d3-N-MeFOSA	20	8.2	40	10-150		04/08/2022 18:00
d5-N-EtFOSA	20	6.0	29	10-150		04/08/2022 18:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Page 1 of 2

Client Sample ID EFFLUENT-20220329
 Lab Sample ID 10602741006
 Lab File ID Q220408A_010
 Matrix Water
 Collected 03/29/2022 23:59
 Received 03/31/2022 08:50

Extraction Date 04/06/2022 15:26
 Total Amount Extracted 266mL
 Ical ID 220407A01
 CCal File Q220407C_034
 Ending CCal File Q220408A_012
 Blank File Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	7.7	1.9	0.41	0.41	1	375-22-4		04/08/2022 18:19
PFPeA	12	1.9	0.41	0.41	1	2706-90-3		04/08/2022 18:19
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		04/08/2022 18:19
PFBS	2.7	1.7	0.44	0.44	1	375-73-5		04/08/2022 18:19
PFHxA	17	1.9	0.41	0.41	1	307-24-4		04/08/2022 18:19
4:2 FTS	ND	1.8	0.52	0.52	1	757124-72-4		04/08/2022 18:19
PFPeS	0.73 J	1.8	0.45	0.45	1	2706-91-4		04/08/2022 18:19
PFHpA	2.4	1.9	0.52	0.52	1	375-85-9		04/08/2022 18:19
DONA	ND	1.8	0.48	0.48	1	919005-14-4		04/08/2022 18:19
PFHxS	7.5	1.7	0.48	0.48	1	355-46-4		04/08/2022 18:19
PFOA	9.0	1.9	0.55	0.55	1	335-67-1		04/08/2022 18:19
6:2 FTS	2.1	1.8	0.61	0.61	1	27619-97-2		04/08/2022 18:19
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		04/08/2022 18:19
PFNA	1.3 J	1.9	0.70	0.70	1	375-95-1		04/08/2022 18:19
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		04/08/2022 18:19
PFOS	3.8	1.7	0.51	0.51	1	1763-23-1		04/08/2022 18:19
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		04/08/2022 18:19
PFDA	0.90 J	1.9	0.53	0.53	1	335-76-2		04/08/2022 18:19
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		04/08/2022 18:19
8:2 FTS	ND	1.8	0.61	0.61	1	39108-34-4		04/08/2022 18:19
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		04/08/2022 18:19
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		04/08/2022 18:19
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		04/08/2022 18:19
NMeFOSAA	0.84 J	1.9	0.41	0.41	1	2355-31-9		04/08/2022 18:19
NEtFOSAA	0.53 J	1.9	0.52	0.52	1	2991-50-6		04/08/2022 18:19
PFDS	ND	1.8	0.42	0.42	1	335-77-3		04/08/2022 18:19
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		04/08/2022 18:19
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7		04/08/2022 18:19
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		04/08/2022 18:19
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		04/08/2022 18:19
PFTTrDA	ND	1.9	0.58	0.58	1	72629-94-8		04/08/2022 18:19
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		04/08/2022 18:19
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		04/08/2022 18:19

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	EFFLUENT-20220329	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741006	Total Amount Extracted	266mL
Lab File ID	Q220408A_010	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/29/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	19	101	50-150		04/08/2022 18:19
13C4 PFOA	19	24	126	50-150		04/08/2022 18:19
13C2 PFDA	19	27	145	50-150		04/08/2022 18:19
13C4 PFOS	18	18	100	50-150		04/08/2022 18:19

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	16	83	25-150		04/08/2022 18:19
13C5 PFPeA	19	16	87	25-150		04/08/2022 18:19
13C3 PFBS	17	18	102	25-150		04/08/2022 18:19
13C2 4:2FTS	18	56	318	25-150	R	04/08/2022 18:19
13C5 PFHxA	19	17	89	25-150		04/08/2022 18:19
13C4 PFHpA	19	18	98	25-150		04/08/2022 18:19
13C3 PFHxS	18	19	109	25-150		04/08/2022 18:19
13C2 6:2FTS	18	83	465	25-150	R	04/08/2022 18:19
13C8 PFOA	19	21	113	25-150		04/08/2022 18:19
13C9 PFNA	19	21	111	25-150		04/08/2022 18:19
13C8 PFOS	18	17	95	25-150		04/08/2022 18:19
13C2 8:2FTS	18	110	607	25-150	R	04/08/2022 18:19
13C6 PFDA	19	29	155	25-150	R	04/08/2022 18:19
d3-MeFOSAA	19	40	215	25-150	R	04/08/2022 18:19
13C8 PFOSA	19	13	71	25-150		04/08/2022 18:19
d5-EtFOSAA	19	45	242	25-150	R	04/08/2022 18:19
13C7 PFUdA	19	24	130	25-150		04/08/2022 18:19
13C2 PFDoA	19	21	111	25-150		04/08/2022 18:19
13C2 PFTeDA	19	14	72	25-150		04/08/2022 18:19
13C3 HFPO-DA	19	16	86	25-150		04/08/2022 18:19
d7-N-MeFOSE	19	7.0	37	10-150		04/08/2022 18:19
d9-N-EtFOSE	19	9.3	49	10-150		04/08/2022 18:19
d3-N-MeFOSA	19	0.44	2	10-150	R	04/08/2022 18:19
d5-N-EtFOSA	19	0.52	3	10-150	R	04/08/2022 18:19

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-PRE-THERM-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741007	Total Amount Extracted	5.04g
Lab File ID	Q220412C_039	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/29/2022 11:30	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	3.8	0.91	0.91	1	375-22-4		04/13/2022 04:03
PFPeA	ND	3.8	1.0	1.0	1	2706-90-3		04/13/2022 04:03
HFPO-DA	ND	3.8	1.1	1.1	1	13252-13-6		04/13/2022 04:03
PFBS	ND	3.4	0.85	0.85	1	375-73-5		04/13/2022 04:03
PFHxA	4.9	3.8	1.2	1.2	1	307-24-4		04/13/2022 04:03
4:2 FTS	ND	3.6	1.2	1.2	1	757124-72-4		04/13/2022 04:03
PFPeS	ND	3.6	0.72	0.72	1	2706-91-4		04/13/2022 04:03
PFHpA	ND	3.8	0.87	0.87	1	375-85-9		04/13/2022 04:03
DONA	ND	3.6	1.5	1.5	1	919005-14-4		04/13/2022 04:03
PFHxS	1.0 J	3.5	0.85	0.85	1	355-46-4		04/13/2022 04:03
PFOA	1.9 J	3.8	0.87	0.87	1	335-67-1		04/13/2022 04:03
6:2 FTS	ND	3.7	1.2	1.2	1	27619-97-2		04/13/2022 04:03
PFHpS	ND	3.7	0.96	0.96	1	375-92-8		04/13/2022 04:03
PFNA	ND	3.8	1.1	1.1	1	375-95-1		04/13/2022 04:03
PFOSAm	0.97 J	3.8	0.90	0.90	1	754-91-6		04/13/2022 04:03
PFOS	6.8	3.6	1.1	1.1	1	1763-23-1		04/13/2022 04:03
MeFOSA	ND	3.8	0.96	0.96	1	31506-32-8		04/13/2022 04:03
PFDA	3.8 J	3.8	0.83	0.83	1	335-76-2		04/13/2022 04:03
EtFOSAm	ND	3.8	0.91	0.91	1	4151-50-2		04/13/2022 04:03
8:2 FTS	ND	3.7	1.00	1.00	1	39108-34-4		04/13/2022 04:03
9-CI-PF3ON	ND	3.6	0.56	0.56	1	756426-58-1		04/13/2022 04:03
PFNS	ND	3.7	0.69	0.69	1	68259-12-1		04/13/2022 04:03
PFUnDA	ND	3.8	1.1	1.1	1	2058-94-8		04/13/2022 04:03
NMeFOSAA	10	3.8	0.90	0.90	1	2355-31-9		04/13/2022 04:03
NEtFOSAA	5.7	3.8	0.95	0.95	1	2991-50-6		04/13/2022 04:03
PFDS	1.1 J	3.7	0.97	0.97	1	335-77-3		04/13/2022 04:03
PFDOA	1.7 J	3.8	1.0	1.0	1	307-55-1		04/13/2022 04:03
MeFOSE	7.1	3.8	0.91	0.91	1	24448-09-7		04/13/2022 04:03
EtFOSE	1.8 J	3.8	0.96	0.96	1	1691-99-2		04/13/2022 04:03
11-CI-PF3OUdS	ND	3.6	0.62	0.62	1	763051-92-9		04/13/2022 04:03
PFTTrDA	ND	3.8	0.82	0.82	1	72629-94-8		04/13/2022 04:03
PFDoS	ND	3.7	1.2	1.2	1	79780-39-5		04/13/2022 04:03
PFTDA	ND	3.8	1.2	1.2	1	376-06-7		04/13/2022 04:03

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-PRE-THERM-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741007	Total Amount Extracted	5.04g
Lab File ID	Q220412C_039	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/29/2022 11:30	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	38	31	82	50-150		04/13/2022 04:03
13C4 PFOA	38	35	91	50-150		04/13/2022 04:03
13C2 PFDA	38	32	83	50-150		04/13/2022 04:03
13C4 PFOS	37	37	100	50-150		04/13/2022 04:03

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	38	26	69	25-150		04/13/2022 04:03
13C5 PFPeA	38	32	84	25-150		04/13/2022 04:03
13C3 PFBS	36	33	93	25-150		04/13/2022 04:03
13C2 4:2FTS	36	74	205	25-150	R	04/13/2022 04:03
13C5 PFHxA	38	32	84	25-150		04/13/2022 04:03
13C4 PFHpA	38	31	82	25-150		04/13/2022 04:03
13C3 PFHxS	36	34	94	25-150		04/13/2022 04:03
13C2 6:2FTS	37	85	233	25-150	R	04/13/2022 04:03
13C8 PFOA	38	28	73	25-150		04/13/2022 04:03
13C9 PFNA	38	32	83	25-150		04/13/2022 04:03
13C8 PFOS	37	37	101	25-150		04/13/2022 04:03
13C2 8:2FTS	37	100	281	25-150	R	04/13/2022 04:03
13C6 PFDA	38	31	81	25-150		04/13/2022 04:03
d3-MeFOSAA	38	40	105	25-150		04/13/2022 04:03
13C8 PFOSA	38	23	60	25-150		04/13/2022 04:03
d5-EtFOSAA	38	44	113	25-150		04/13/2022 04:03
13C7 PFUdA	38	32	83	25-150		04/13/2022 04:03
13C2 PFDoA	38	21	55	25-150		04/13/2022 04:03
13C2 PFTeDA	38	9.8	25	25-150		04/13/2022 04:03
13C3 HFPO-DA	38	28	73	25-150		04/13/2022 04:03
d7-N-MeFOSE	38	9.4	24	10-150		04/13/2022 04:03
d9-N-EtFOSE	38	9.4	25	10-150		04/13/2022 04:03
d3-N-MeFOSA	38	3.9	10	10-150		04/13/2022 04:03
d5-N-EtFOSA	38	3.9	10	10-150		04/13/2022 04:03

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-POST-THERM-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741008	Total Amount Extracted	5.13g
Lab File ID	Q220412C_033	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/30/2022 09:40	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	1.7 J	5.1	1.2	1.2	1	375-22-4		04/13/2022 02:12
PFPeA	1.4 J	5.1	1.3	1.3	1	2706-90-3		04/13/2022 02:12
HFPO-DA	ND	5.1	1.5	1.5	1	13252-13-6		04/13/2022 02:12
PFBS	ND	4.5	1.1	1.1	1	375-73-5		04/13/2022 02:12
PFHxA	9.7	5.1	1.5	1.5	1	307-24-4		04/13/2022 02:12
4:2 FTS	ND	4.8	1.6	1.6	1	757124-72-4		04/13/2022 02:12
PFPeS	ND	4.8	0.95	0.95	1	2706-91-4		04/13/2022 02:12
PFHpA	ND	5.1	1.1	1.1	1	375-85-9		04/13/2022 02:12
DONA	ND	4.8	2.0	2.0	1	919005-14-4		04/13/2022 02:12
PFHxS	2.3 J	4.6	1.1	1.1	1	355-46-4		04/13/2022 02:12
PFOA	4.6 J	5.1	1.1	1.1	1	335-67-1		04/13/2022 02:12
6:2 FTS	ND	4.8	1.6	1.6	1	27619-97-2		04/13/2022 02:12
PFHpS	ND	4.8	1.3	1.3	1	375-92-8		04/13/2022 02:12
PFNA	ND	5.1	1.5	1.5	1	375-95-1		04/13/2022 02:12
PFOSAm	1.2 J	5.1	1.2	1.2	1	754-91-6		04/13/2022 02:12
PFOS	8.7	4.7	1.4	1.4	1	1763-23-1		04/13/2022 02:12
MeFOSA	ND	5.1	1.3	1.3	1	31506-32-8		04/13/2022 02:12
PFDA	5.4	5.1	1.1	1.1	1	335-76-2		04/13/2022 02:12
EtFOSAm	ND	5.1	1.2	1.2	1	4151-50-2		04/13/2022 02:12
8:2 FTS	ND	4.9	1.3	1.3	1	39108-34-4		04/13/2022 02:12
9-CI-PF3ON	ND	4.7	0.74	0.74	1	756426-58-1		04/13/2022 02:12
PFNS	ND	4.9	0.91	0.91	1	68259-12-1		04/13/2022 02:12
PFUnDA	1.5 J	5.1	1.4	1.4	1	2058-94-8		04/13/2022 02:12
NMeFOSAA	21	5.1	1.2	1.2	1	2355-31-9		04/13/2022 02:12
NEtFOSAA	7.9	5.1	1.3	1.3	1	2991-50-6		04/13/2022 02:12
PFDS	ND	4.9	1.3	1.3	1	335-77-3		04/13/2022 02:12
PFDOA	3.5 J	5.1	1.4	1.4	1	307-55-1		04/13/2022 02:12
MeFOSE	15	5.1	1.2	1.2	1	24448-09-7		04/13/2022 02:12
EtFOSE	3.6 J	5.1	1.3	1.3	1	1691-99-2		04/13/2022 02:12
11-CI-PF3OUdS	ND	4.8	0.82	0.82	1	763051-92-9		04/13/2022 02:12
PFTTrDA	ND	5.1	1.1	1.1	1	72629-94-8		04/13/2022 02:12
PFDoS	ND	4.9	1.5	1.5	1	79780-39-5		04/13/2022 02:12
PFTDA	ND	5.1	1.6	1.6	1	376-06-7		04/13/2022 02:12

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-POST-THERM-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741008	Total Amount Extracted	5.13g
Lab File ID	Q220412C_033	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/30/2022 09:40	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	51	43	84	50-150		04/13/2022 02:12
13C4 PFOA	51	43	85	50-150		04/13/2022 02:12
13C2 PFDA	51	48	94	50-150		04/13/2022 02:12
13C4 PFOS	49	48	98	50-150		04/13/2022 02:12

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	51	37	73	25-150		04/13/2022 02:12
13C5 PFPeA	51	36	70	25-150		04/13/2022 02:12
13C3 PFBS	47	36	76	25-150		04/13/2022 02:12
13C2 4:2FTS	48	72	152	25-150	R	04/13/2022 02:12
13C5 PFHxA	51	36	71	25-150		04/13/2022 02:12
13C4 PFHpA	51	37	73	25-150		04/13/2022 02:12
13C3 PFHxS	48	39	81	25-150		04/13/2022 02:12
13C2 6:2FTS	48	89	185	25-150	R	04/13/2022 02:12
13C8 PFOA	51	35	69	25-150		04/13/2022 02:12
13C9 PFNA	51	39	76	25-150		04/13/2022 02:12
13C8 PFOS	49	44	90	25-150		04/13/2022 02:12
13C2 8:2FTS	49	110	226	25-150	R	04/13/2022 02:12
13C6 PFDA	51	45	89	25-150		04/13/2022 02:12
d3-MeFOSAA	51	49	97	25-150		04/13/2022 02:12
13C8 PFOSA	51	29	58	25-150		04/13/2022 02:12
d5-EtFOSAA	51	54	107	25-150		04/13/2022 02:12
13C7 PFUdA	51	39	77	25-150		04/13/2022 02:12
13C2 PFDoA	51	25	50	25-150		04/13/2022 02:12
13C2 PFTeDA	51	14	27	25-150		04/13/2022 02:12
13C3 HFPO-DA	51	31	61	25-150		04/13/2022 02:12
d7-N-MeFOSE	51	14	28	10-150		04/13/2022 02:12
d9-N-EtFOSE	51	16	31	10-150		04/13/2022 02:12
d3-N-MeFOSA	51	1.7	3	10-150	R	04/13/2022 02:12
d5-N-EtFOSA	51	2.0	4	10-150	R	04/13/2022 02:12

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-A-20220330	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741009	Total Amount Extracted	5.02g
Lab File ID	Q220412C_045	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/30/2022 10:00	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	0.46	0.11	0.11	1	375-22-4		04/13/2022 05:54
PFPeA	0.18 J	0.46	0.12	0.12	1	2706-90-3		04/13/2022 05:54
HFPO-DA	ND	0.46	0.14	0.14	1	13252-13-6		04/13/2022 05:54
PFBS	ND	0.40	0.10	0.10	1	375-73-5		04/13/2022 05:54
PFHxA	1.7	0.46	0.14	0.14	1	307-24-4		04/13/2022 05:54
4:2 FTS	ND	0.43	0.14	0.14	1	757124-72-4		04/13/2022 05:54
PFPeS	ND	0.43	0.08	0.08	1	2706-91-4		04/13/2022 05:54
PFHpA	ND	0.46	0.10	0.10	1	375-85-9		04/13/2022 05:54
DONA	ND	0.43	0.17	0.17	1	919005-14-4		04/13/2022 05:54
PFHxS	1.0	0.41	0.10	0.10	1	355-46-4		04/13/2022 05:54
PFOA	1.7	0.46	0.10	0.10	1	335-67-1		04/13/2022 05:54
6:2 FTS	0.31 J	0.43	0.15	0.15	1	27619-97-2		04/13/2022 05:54
PFHpS	0.76 I	0.43	0.11	0.11	1	375-92-8		04/13/2022 05:54
PFNA	0.74	0.46	0.13	0.13	1	375-95-1		04/13/2022 05:54
PFOSAm	1.2	0.46	0.11	0.11	1	754-91-6		04/13/2022 05:54
PFOS	9.9	0.42	0.13	0.13	1	1763-23-1		04/13/2022 05:54
MeFOSA	0.25 J	0.46	0.11	0.11	1	31506-32-8		04/13/2022 05:54
PFDA	5.7	0.46	0.09	0.09	1	335-76-2		04/13/2022 05:54
EtFOSAm	0.51	0.46	0.11	0.11	1	4151-50-2		04/13/2022 05:54
8:2 FTS	0.89	0.44	0.12	0.12	1	39108-34-4		04/13/2022 05:54
9-CI-PF3ON	ND	0.42	0.06	0.06	1	756426-58-1		04/13/2022 05:54
PFNS	ND	0.44	0.08	0.08	1	68259-12-1		04/13/2022 05:54
PFUnDA	1.4	0.46	0.13	0.13	1	2058-94-8		04/13/2022 05:54
NMeFOSAA	21	0.46	0.11	0.11	1	2355-31-9		04/13/2022 05:54
NEtFOSAA	7.3	0.46	0.11	0.11	1	2991-50-6		04/13/2022 05:54
PFDS	1.6	0.44	0.11	0.11	1	335-77-3		04/13/2022 05:54
PFDOA	3.1	0.46	0.12	0.12	1	307-55-1		04/13/2022 05:54
MeFOSE	17	0.46	0.11	0.11	1	24448-09-7		04/13/2022 05:54
EtFOSE	3.4	0.46	0.11	0.11	1	1691-99-2		04/13/2022 05:54
11-CI-PF3OUdS	ND	0.43	0.07	0.07	1	763051-92-9		04/13/2022 05:54
PFTTrDA	0.56	0.46	0.09	0.09	1	72629-94-8		04/13/2022 05:54
PFDoS	ND	0.44	0.14	0.14	1	79780-39-5		04/13/2022 05:54
PFTDA	0.73	0.46	0.15	0.15	1	376-06-7		04/13/2022 05:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-A-20220330	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741009	Total Amount Extracted	5.02g
Lab File ID	Q220412C_045	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/30/2022 10:00	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	4.6	3.6	80	50-150		04/13/2022 05:54
13C4 PFOA	4.6	3.0	66	50-150		04/13/2022 05:54
13C2 PFDA	4.6	2.8	62	50-150		04/13/2022 05:54
13C4 PFOS	4.4	3.4	79	50-150		04/13/2022 05:54

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	4.6	2.0	44	25-150		04/13/2022 05:54
13C5 PFPeA	4.6	2.0	43	25-150		04/13/2022 05:54
13C3 PFBS	4.2	2.0	47	25-150		04/13/2022 05:54
13C2 4:2FTS	4.3	6.3	149	25-150		04/13/2022 05:54
13C5 PFHxA	4.6	1.9	42	25-150		04/13/2022 05:54
13C4 PFHpA	4.6	1.8	40	25-150		04/13/2022 05:54
13C3 PFHxS	4.3	1.9	45	25-150		04/13/2022 05:54
13C2 6:2FTS	4.3	7.2	167	25-150	R	04/13/2022 05:54
13C8 PFOA	4.6	1.6	36	25-150		04/13/2022 05:54
13C9 PFNA	4.6	1.8	39	25-150		04/13/2022 05:54
13C8 PFOS	4.4	1.7	39	25-150		04/13/2022 05:54
13C2 8:2FTS	4.4	7.4	170	25-150	R	04/13/2022 05:54
13C6 PFDA	4.6	1.9	42	25-150		04/13/2022 05:54
d3-MeFOSAA	4.6	1.4	31	25-150		04/13/2022 05:54
13C8 PFOSA	4.6	1.5	33	25-150		04/13/2022 05:54
d5-EtFOSAA	4.6	2.1	46	25-150		04/13/2022 05:54
13C7 PFUdA	4.6	1.3	29	25-150		04/13/2022 05:54
13C2 PFDoA	4.6	0.89	20	25-150	R	04/13/2022 05:54
13C2 PFTeDA	4.6	0.61	13	25-150	R	04/13/2022 05:54
13C3 HFPO-DA	4.6	1.5	34	25-150		04/13/2022 05:54
d7-N-MeFOSE	4.6	0.84	18	10-150		04/13/2022 05:54
d9-N-EtFOSE	4.6	0.85	19	10-150		04/13/2022 05:54
d3-N-MeFOSA	4.6	0.52	11	10-150		04/13/2022 05:54
d5-N-EtFOSA	4.6	0.33	7	10-150	R	04/13/2022 05:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-B-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741010	Total Amount Extracted	5.12g
Lab File ID	Q220412C_057	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_056
Collected	03/29/2022 10:10	Ending CCal File	Q220412C_064
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.8	0.42	0.42	1	375-22-4		04/13/2022 09:37
PFPeA	ND	1.8	0.46	0.46	1	2706-90-3		04/13/2022 09:37
HFPO-DA	ND	1.8	0.52	0.52	1	13252-13-6		04/13/2022 09:37
PFBS	2.2 I	1.6	0.39	0.39	1	375-73-5		04/13/2022 09:37
PFHxA	2.6 I	1.8	0.53	0.53	1	307-24-4		04/13/2022 09:37
4:2 FTS	ND	1.6	0.56	0.56	1	757124-72-4		04/13/2022 09:37
PFPeS	ND	1.7	0.33	0.33	1	2706-91-4		04/13/2022 09:37
PFHpA	ND	1.8	0.40	0.40	1	375-85-9		04/13/2022 09:37
DONA	ND	1.7	0.68	0.68	1	919005-14-4		04/13/2022 09:37
PFHxS	1.3 J	1.6	0.39	0.39	1	355-46-4		04/13/2022 09:37
PFOA	1.4 J	1.8	0.40	0.40	1	335-67-1		04/13/2022 09:37
6:2 FTS	ND	1.7	0.56	0.56	1	27619-97-2		04/13/2022 09:37
PFHpS	ND	1.7	0.44	0.44	1	375-92-8		04/13/2022 09:37
PFNA	ND	1.8	0.50	0.50	1	375-95-1		04/13/2022 09:37
PFOSAm	0.98 J	1.8	0.41	0.41	1	754-91-6		04/13/2022 09:37
PFOS	6.5	1.6	0.49	0.49	1	1763-23-1		04/13/2022 09:37
MeFOSA	ND	1.8	0.44	0.44	1	31506-32-8		04/13/2022 09:37
PFDA	2.9	1.8	0.38	0.38	1	335-76-2		04/13/2022 09:37
EtFOSAm	ND	1.8	0.42	0.42	1	4151-50-2		04/13/2022 09:37
8:2 FTS	0.77 J	1.7	0.46	0.46	1	39108-34-4		04/13/2022 09:37
9-CI-PF3ON	ND	1.6	0.26	0.26	1	756426-58-1		04/13/2022 09:37
PFNS	ND	1.7	0.31	0.31	1	68259-12-1		04/13/2022 09:37
PFUnDA	1.1 J	1.8	0.49	0.49	1	2058-94-8		04/13/2022 09:37
NMeFOSAA	9.9	1.8	0.41	0.41	1	2355-31-9		04/13/2022 09:37
NEtFOSAA	3.5	1.8	0.43	0.43	1	2991-50-6		04/13/2022 09:37
PFDS	0.56 J	1.7	0.44	0.44	1	335-77-3		04/13/2022 09:37
PFDOA	1.6 J	1.8	0.47	0.47	1	307-55-1		04/13/2022 09:37
MeFOSE	7.9	1.8	0.42	0.42	1	24448-09-7		04/13/2022 09:37
EtFOSE	2.2	1.8	0.44	0.44	1	1691-99-2		04/13/2022 09:37
11-CI-PF3OUdS	ND	1.7	0.28	0.28	1	763051-92-9		04/13/2022 09:37
PFTTrDA	ND	1.8	0.38	0.38	1	72629-94-8		04/13/2022 09:37
PFDoS	ND	1.7	0.53	0.53	1	79780-39-5		04/13/2022 09:37
PFTDA	ND	1.8	0.56	0.56	1	376-06-7		04/13/2022 09:37

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-B-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741010	Total Amount Extracted	5.12g
Lab File ID	Q220412C_057	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_056
Collected	03/29/2022 10:10	Ending CCal File	Q220412C_064
Received	03/31/2022 08:50	Blank File	Q220412C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	18	15	83	50-150		04/13/2022 09:37
13C4 PFOA	18	15	83	50-150		04/13/2022 09:37
13C2 PFDA	18	11	65	50-150		04/13/2022 09:37
13C4 PFOS	17	15	91	50-150		04/13/2022 09:37

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	18	9.3	53	25-150		04/13/2022 09:37
13C5 PFPeA	18	9.4	53	25-150		04/13/2022 09:37
13C3 PFBS	16	9.8	60	25-150		04/13/2022 09:37
13C2 4:2FTS	16	33	199	25-150	R	04/13/2022 09:37
13C5 PFHxA	18	10	58	25-150		04/13/2022 09:37
13C4 PFHpA	18	11	60	25-150		04/13/2022 09:37
13C3 PFHxS	17	12	70	25-150		04/13/2022 09:37
13C2 6:2FTS	17	27	160	25-150	R	04/13/2022 09:37
13C8 PFOA	18	10	60	25-150		04/13/2022 09:37
13C9 PFNA	18	12	66	25-150		04/13/2022 09:37
13C8 PFOS	17	12	69	25-150		04/13/2022 09:37
13C2 8:2FTS	17	35	207	25-150	R	04/13/2022 09:37
13C6 PFDA	18	12	66	25-150		04/13/2022 09:37
d3-MeFOSAA	18	12	67	25-150		04/13/2022 09:37
13C8 PFOSA	18	11	62	25-150		04/13/2022 09:37
d5-EtFOSAA	18	17	94	25-150		04/13/2022 09:37
13C7 PFUdA	18	8.5	48	25-150		04/13/2022 09:37
13C2 PFDoA	18	6.5	37	25-150		04/13/2022 09:37
13C2 PFTeDA	18	6.2	35	25-150		04/13/2022 09:37
13C3 HFPO-DA	18	8.5	48	25-150		04/13/2022 09:37
d7-N-MeFOSE	18	4.3	25	10-150		04/13/2022 09:37
d9-N-EtFOSE	18	4.2	24	10-150		04/13/2022 09:37
d3-N-MeFOSA	18	2.5	14	10-150		04/13/2022 09:37
d5-N-EtFOSA	18	2.2	13	10-150		04/13/2022 09:37

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID DUP01-20220329
 Lab Sample ID 10602741011
 Lab File ID Q220412C_035
 Matrix Solid
 Collected 03/29/2022 00:00
 Received 03/31/2022 08:50

Extraction Date 04/07/2022 10:00
 Total Amount Extracted 5.07g
 Ical ID 220412B01
 CCal File Q220412C_032
 Ending CCal File Q220412C_056
 Blank File Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.8	0.43	0.43	1	375-22-4		04/13/2022 02:49
PFPeA	ND	1.8	0.48	0.48	1	2706-90-3		04/13/2022 02:49
HFPO-DA	ND	1.8	0.54	0.54	1	13252-13-6		04/13/2022 02:49
PFBS	ND	1.6	0.40	0.40	1	375-73-5		04/13/2022 02:49
PFHxA	2.4	1.8	0.55	0.55	1	307-24-4		04/13/2022 02:49
4:2 FTS	ND	1.7	0.58	0.58	1	757124-72-4		04/13/2022 02:49
PFPeS	ND	1.7	0.34	0.34	1	2706-91-4		04/13/2022 02:49
PFHpA	ND	1.8	0.41	0.41	1	375-85-9		04/13/2022 02:49
DONA	ND	1.7	0.70	0.70	1	919005-14-4		04/13/2022 02:49
PFHxS	0.82 J	1.7	0.40	0.40	1	355-46-4		04/13/2022 02:49
PFOA	1.3 J	1.8	0.41	0.41	1	335-67-1		04/13/2022 02:49
6:2 FTS	ND	1.7	0.58	0.58	1	27619-97-2		04/13/2022 02:49
PFHpS	ND	1.7	0.45	0.45	1	375-92-8		04/13/2022 02:49
PFNA	0.56 J	1.8	0.52	0.52	1	375-95-1		04/13/2022 02:49
PFOSAm	0.94 J	1.8	0.43	0.43	1	754-91-6		04/13/2022 02:49
PFOS	6.3	1.7	0.51	0.51	1	1763-23-1		04/13/2022 02:49
MeFOSA	ND	1.8	0.45	0.45	1	31506-32-8		04/13/2022 02:49
PFDA	3.4	1.8	0.39	0.39	1	335-76-2		04/13/2022 02:49
EtFOSAm	ND	1.8	0.43	0.43	1	4151-50-2		04/13/2022 02:49
8:2 FTS	0.72 IJ	1.7	0.47	0.47	1	39108-34-4		04/13/2022 02:49
9-CI-PF3ON	ND	1.7	0.26	0.26	1	756426-58-1		04/13/2022 02:49
PFNS	ND	1.7	0.33	0.33	1	68259-12-1		04/13/2022 02:49
PFUnDA	0.88 J	1.8	0.51	0.51	1	2058-94-8		04/13/2022 02:49
NMeFOSAA	9.7	1.8	0.42	0.42	1	2355-31-9		04/13/2022 02:49
NEtFOSAA	3.5	1.8	0.45	0.45	1	2991-50-6		04/13/2022 02:49
PFDS	0.73 J	1.8	0.46	0.46	1	335-77-3		04/13/2022 02:49
PFDOA	1.6 J	1.8	0.48	0.48	1	307-55-1		04/13/2022 02:49
MeFOSE	8.5	1.8	0.43	0.43	1	24448-09-7		04/13/2022 02:49
EtFOSE	1.8 J	1.8	0.45	0.45	1	1691-99-2		04/13/2022 02:49
11-CI-PF3OUdS	ND	1.7	0.29	0.29	1	763051-92-9		04/13/2022 02:49
PFTTrDA	ND	1.8	0.39	0.39	1	72629-94-8		04/13/2022 02:49
PFDoS	ND	1.8	0.54	0.54	1	79780-39-5		04/13/2022 02:49
PFTDA	ND	1.8	0.58	0.58	1	376-06-7		04/13/2022 02:49

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	DUP01-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741011	Total Amount Extracted	5.07g
Lab File ID	Q220412C_035	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/29/2022 00:00	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	18	14	76	50-150		04/13/2022 02:49
13C4 PFOA	18	14	75	50-150		04/13/2022 02:49
13C2 PFDA	18	15	81	50-150		04/13/2022 02:49
13C4 PFOS	17	16	90	50-150		04/13/2022 02:49

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	18	9.9	54	25-150		04/13/2022 02:49
13C5 PFPeA	18	11	60	25-150		04/13/2022 02:49
13C3 PFBS	17	11	63	25-150		04/13/2022 02:49
13C2 4:2FTS	17	35	208	25-150	R	04/13/2022 02:49
13C5 PFHxA	18	12	65	25-150		04/13/2022 02:49
13C4 PFHpA	18	11	60	25-150		04/13/2022 02:49
13C3 PFHxS	17	11	66	25-150		04/13/2022 02:49
13C2 6:2FTS	17	33	191	25-150	R	04/13/2022 02:49
13C8 PFOA	18	9.8	54	25-150		04/13/2022 02:49
13C9 PFNA	18	11	61	25-150		04/13/2022 02:49
13C8 PFOS	17	12	72	25-150		04/13/2022 02:49
13C2 8:2FTS	17	36	208	25-150	R	04/13/2022 02:49
13C6 PFDA	18	13	69	25-150		04/13/2022 02:49
d3-MeFOSAA	18	13	72	25-150		04/13/2022 02:49
13C8 PFOSA	18	8.5	47	25-150		04/13/2022 02:49
d5-EtFOSAA	18	17	93	25-150		04/13/2022 02:49
13C7 PFUdA	18	9.8	54	25-150		04/13/2022 02:49
13C2 PFDoA	18	7.1	39	25-150		04/13/2022 02:49
13C2 PFTeDA	18	5.5	30	25-150		04/13/2022 02:49
13C3 HFPO-DA	18	10	56	25-150		04/13/2022 02:49
d7-N-MeFOSE	18	3.2	18	10-150		04/13/2022 02:49
d9-N-EtFOSE	18	3.6	20	10-150		04/13/2022 02:49
d3-N-MeFOSA	18	1.7	9	10-150	R	04/13/2022 02:49
d5-N-EtFOSA	18	1.5	8	10-150	R	04/13/2022 02:49

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID DUP02-20220330
 Lab Sample ID 10602741012
 Lab File ID Q220412C_037
 Matrix Solid
 Collected 03/30/2022 00:00
 Received 03/31/2022 08:50

Extraction Date 04/07/2022 10:00
 Total Amount Extracted 5.09g
 Ical ID 220412B01
 CCal File Q220412C_032
 Ending CCal File Q220412C_056
 Blank File Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	0.11 J	0.45	0.11	0.11	1	375-22-4		04/13/2022 03:26
PFPeA	0.14 J	0.45	0.12	0.12	1	2706-90-3		04/13/2022 03:26
HFPO-DA	ND	0.45	0.13	0.13	1	13252-13-6		04/13/2022 03:26
PFBS	ND	0.40	0.09	0.09	1	375-73-5		04/13/2022 03:26
PFHxA	1.6	0.45	0.13	0.13	1	307-24-4		04/13/2022 03:26
4:2 FTS	ND	0.42	0.14	0.14	1	757124-72-4		04/13/2022 03:26
PFPeS	ND	0.42	0.08	0.08	1	2706-91-4		04/13/2022 03:26
PFHpA	ND	0.45	0.10	0.10	1	375-85-9		04/13/2022 03:26
DONA	ND	0.42	0.17	0.17	1	919005-14-4		04/13/2022 03:26
PFHxS	0.98	0.41	0.10	0.10	1	355-46-4		04/13/2022 03:26
PFOA	1.7	0.45	0.10	0.10	1	335-67-1		04/13/2022 03:26
6:2 FTS	0.25 IJ	0.43	0.14	0.14	1	27619-97-2		04/13/2022 03:26
PFHpS	0.44 I	0.43	0.11	0.11	1	375-92-8		04/13/2022 03:26
PFNA	0.73	0.45	0.13	0.13	1	375-95-1		04/13/2022 03:26
PFOSAm	1.1	0.45	0.11	0.11	1	754-91-6		04/13/2022 03:26
PFOS	9.7	0.42	0.12	0.12	1	1763-23-1		04/13/2022 03:26
MeFOSA	ND	0.45	0.11	0.11	1	31506-32-8		04/13/2022 03:26
PFDA	5.6	0.45	0.09	0.09	1	335-76-2		04/13/2022 03:26
EtFOSAm	0.60	0.45	0.11	0.11	1	4151-50-2		04/13/2022 03:26
8:2 FTS	0.84	0.43	0.12	0.12	1	39108-34-4		04/13/2022 03:26
9-CI-PF3ON	ND	0.42	0.06	0.06	1	756426-58-1		04/13/2022 03:26
PFNS	ND	0.43	0.08	0.08	1	68259-12-1		04/13/2022 03:26
PFUnDA	1.4	0.45	0.13	0.13	1	2058-94-8		04/13/2022 03:26
NMeFOSAA	22	0.45	0.10	0.10	1	2355-31-9		04/13/2022 03:26
NEtFOSAA	7.9	0.45	0.11	0.11	1	2991-50-6		04/13/2022 03:26
PFDS	1.5	0.43	0.11	0.11	1	335-77-3		04/13/2022 03:26
PFDOA	3.7	0.45	0.12	0.12	1	307-55-1		04/13/2022 03:26
MeFOSE	16	0.45	0.11	0.11	1	24448-09-7		04/13/2022 03:26
EtFOSE	3.2	0.45	0.11	0.11	1	1691-99-2		04/13/2022 03:26
11-CI-PF3OUdS	ND	0.42	0.07	0.07	1	763051-92-9		04/13/2022 03:26
PFTTrDA	0.56	0.45	0.09	0.09	1	72629-94-8		04/13/2022 03:26
PFDoS	ND	0.43	0.13	0.13	1	79780-39-5		04/13/2022 03:26
PFTDA	0.66	0.45	0.14	0.14	1	376-06-7		04/13/2022 03:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	DUP02-20220330	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741012	Total Amount Extracted	5.09g
Lab File ID	Q220412C_037	Ical ID	220412B01
Matrix	Solid	CCal File	Q220412C_032
Collected	03/30/2022 00:00	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	4.5	4.0	88	50-150		04/13/2022 03:26
13C4 PFOA	4.5	3.5	78	50-150		04/13/2022 03:26
13C2 PFDA	4.5	3.3	74	50-150		04/13/2022 03:26
13C4 PFOS	4.3	3.2	74	50-150		04/13/2022 03:26

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	4.5	2.0	45	25-150		04/13/2022 03:26
13C5 PFPeA	4.5	2.0	45	25-150		04/13/2022 03:26
13C3 PFBS	4.2	1.9	45	25-150		04/13/2022 03:26
13C2 4:2FTS	4.2	6.2	147	25-150		04/13/2022 03:26
13C5 PFHxA	4.5	2.0	44	25-150		04/13/2022 03:26
13C4 PFHpA	4.5	1.7	39	25-150		04/13/2022 03:26
13C3 PFHxS	4.3	1.8	42	25-150		04/13/2022 03:26
13C2 6:2FTS	4.3	6.6	155	25-150	R	04/13/2022 03:26
13C8 PFOA	4.5	1.7	37	25-150		04/13/2022 03:26
13C9 PFNA	4.5	1.8	39	25-150		04/13/2022 03:26
13C8 PFOS	4.3	1.6	38	25-150		04/13/2022 03:26
13C2 8:2FTS	4.3	7.1	164	25-150	R	04/13/2022 03:26
13C6 PFDA	4.5	2.1	46	25-150		04/13/2022 03:26
d3-MeFOSAA	4.5	1.4	32	25-150		04/13/2022 03:26
13C8 PFOSA	4.5	1.5	32	25-150		04/13/2022 03:26
d5-EtFOSAA	4.5	2.1	46	25-150		04/13/2022 03:26
13C7 PFUdA	4.5	1.4	30	25-150		04/13/2022 03:26
13C2 PFDoA	4.5	0.84	19	25-150	R	04/13/2022 03:26
13C2 PFTeDA	4.5	0.58	13	25-150	R	04/13/2022 03:26
13C3 HFPO-DA	4.5	1.5	33	25-150		04/13/2022 03:26
d7-N-MeFOSE	4.5	0.91	20	10-150		04/13/2022 03:26
d9-N-EtFOSE	4.5	0.80	18	10-150		04/13/2022 03:26
d3-N-MeFOSA	4.5	0.55	12	10-150		04/13/2022 03:26
d5-N-EtFOSA	4.5	0.37	8	10-150	R	04/13/2022 03:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID EB01-20220330
 Lab Sample ID 10602741013
 Lab File ID Q220414A_011
 Matrix Non_Potable_Water
 Collected 03/30/2022 09:55
 Received 03/31/2022 08:50

Extraction Date 04/06/2022 15:26
 Total Amount Extracted 265mL
 Ical ID 220412B01
 CCal File Q220414A_010
 Ending CCal File Q220414A_017
 Blank File Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.42	0.42	1	375-22-4		04/14/2022 12:06
PFPeA	ND	1.9	0.41	0.41	1	2706-90-3		04/14/2022 12:06
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		04/14/2022 12:06
PFBS	ND	1.7	0.45	0.45	1	375-73-5		04/14/2022 12:06
PFHxA	ND	1.9	0.41	0.41	1	307-24-4		04/14/2022 12:06
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		04/14/2022 12:06
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		04/14/2022 12:06
PFHpA	ND	1.9	0.52	0.52	1	375-85-9		04/14/2022 12:06
DONA	ND	1.8	0.48	0.48	1	919005-14-4		04/14/2022 12:06
PFHxS	ND	1.7	0.48	0.48	1	355-46-4		04/14/2022 12:06
PFOA	ND	1.9	0.55	0.55	1	335-67-1		04/14/2022 12:06
6:2 FTS	ND	1.8	0.61	0.61	1	27619-97-2		04/14/2022 12:06
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		04/14/2022 12:06
PFNA	ND	1.9	0.70	0.70	1	375-95-1		04/14/2022 12:06
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		04/14/2022 12:06
PFOS	ND	1.7	0.52	0.52	1	1763-23-1		04/14/2022 12:06
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		04/14/2022 12:06
PFDA	ND	1.9	0.53	0.53	1	335-76-2		04/14/2022 12:06
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		04/14/2022 12:06
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		04/14/2022 12:06
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		04/14/2022 12:06
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		04/14/2022 12:06
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		04/14/2022 12:06
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9		04/14/2022 12:06
NEtFOSAA	ND	1.9	0.52	0.52	1	2991-50-6		04/14/2022 12:06
PFDS	ND	1.8	0.42	0.42	1	335-77-3		04/14/2022 12:06
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		04/14/2022 12:06
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7		04/14/2022 12:06
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		04/14/2022 12:06
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		04/14/2022 12:06
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		04/14/2022 12:06
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		04/14/2022 12:06
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		04/14/2022 12:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	EB01-20220330	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741013	Total Amount Extracted	265mL
Lab File ID	Q220414A_011	Ical ID	220412B01
Matrix	Non_Potable_Water	CCal File	Q220414A_010
Collected	03/30/2022 09:55	Ending CCal File	Q220414A_017
Received	03/31/2022 08:50	Blank File	Q220408A_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	21	110	50-150		04/14/2022 12:06
13C4 PFOA	19	20	107	50-150		04/14/2022 12:06
13C2 PFDA	19	20	107	50-150		04/14/2022 12:06
13C4 PFOS	18	21	116	50-150		04/14/2022 12:06

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	21	113	25-150		04/14/2022 12:06
13C5 PFPeA	19	21	112	25-150		04/14/2022 12:06
13C3 PFBS	18	19	108	25-150		04/14/2022 12:06
13C2 4:2FTS	18	19	105	25-150		04/14/2022 12:06
13C5 PFHxA	19	19	99	25-150		04/14/2022 12:06
13C4 PFHpA	19	19	102	25-150		04/14/2022 12:06
13C3 PFHxS	18	19	106	25-150		04/14/2022 12:06
13C2 6:2FTS	18	19	105	25-150		04/14/2022 12:06
13C8 PFOA	19	20	109	25-150		04/14/2022 12:06
13C9 PFNA	19	19	103	25-150		04/14/2022 12:06
13C8 PFOS	18	20	110	25-150		04/14/2022 12:06
13C2 8:2FTS	18	17	93	25-150		04/14/2022 12:06
13C6 PFDA	19	19	101	25-150		04/14/2022 12:06
d3-MeFOSAA	19	16	87	25-150		04/14/2022 12:06
13C8 PFOSA	19	17	89	25-150		04/14/2022 12:06
d5-EtFOSAA	19	18	98	25-150		04/14/2022 12:06
13C7 PFUdA	19	17	90	25-150		04/14/2022 12:06
13C2 PFDoA	19	18	97	25-150		04/14/2022 12:06
13C2 PFTeDA	19	16	83	25-150		04/14/2022 12:06
13C3 HFPO-DA	19	19	102	25-150		04/14/2022 12:06
d7-N-MeFOSE	19	17	89	10-150		04/14/2022 12:06
d9-N-EtFOSE	19	16	85	10-150		04/14/2022 12:06
d3-N-MeFOSA	19	13	68	10-150		04/14/2022 12:06
d5-N-EtFOSA	19	14	75	10-150		04/14/2022 12:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKGB	Extraction Date	04/06/2022 15:26
Lab Sample ID	BLANK-97832	Total Amount Extracted	250mL
Lab File ID	Q220408A_002	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	04/04/2022 14:15	Ending CCal File	Q220408A_012
Received	04/04/2022 14:15	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.44	0.44	1	375-22-4		04/08/2022 15:50
PFPeA	ND	2.0	0.44	0.44	1	2706-90-3		04/08/2022 15:50
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		04/08/2022 15:50
PFBS	ND	1.8	0.47	0.47	1	375-73-5		04/08/2022 15:50
PFHxA	ND	2.0	0.44	0.44	1	307-24-4		04/08/2022 15:50
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		04/08/2022 15:50
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		04/08/2022 15:50
PFHpA	ND	2.0	0.55	0.55	1	375-85-9		04/08/2022 15:50
DONA	ND	1.9	0.51	0.51	1	919005-14-4		04/08/2022 15:50
PFHxS	ND	1.8	0.51	0.51	1	355-46-4		04/08/2022 15:50
PFOA	ND	2.0	0.58	0.58	1	335-67-1		04/08/2022 15:50
6:2 FTS	ND	1.9	0.64	0.64	1	27619-97-2		04/08/2022 15:50
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		04/08/2022 15:50
PFNA	ND	2.0	0.74	0.74	1	375-95-1		04/08/2022 15:50
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		04/08/2022 15:50
PFOS	ND	1.8	0.55	0.55	1	1763-23-1		04/08/2022 15:50
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		04/08/2022 15:50
PFDA	ND	2.0	0.56	0.56	1	335-76-2		04/08/2022 15:50
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		04/08/2022 15:50
8:2 FTS	ND	1.9	0.65	0.65	1	39108-34-4		04/08/2022 15:50
9-CI-PF3ON	ND	1.9	0.30	0.30	1	756426-58-1		04/08/2022 15:50
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		04/08/2022 15:50
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		04/08/2022 15:50
NMeFOSAA	ND	2.0	0.43	0.43	1	2355-31-9		04/08/2022 15:50
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		04/08/2022 15:50
PFDS	ND	1.9	0.45	0.45	1	335-77-3		04/08/2022 15:50
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		04/08/2022 15:50
MeFOSE	ND	2.0	0.33	0.33	1	24448-09-7		04/08/2022 15:50
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		04/08/2022 15:50
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		04/08/2022 15:50
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		04/08/2022 15:50
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		04/08/2022 15:50
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		04/08/2022 15:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKGB	Extraction Date	04/06/2022 15:26
Lab Sample ID	BLANK-97832	Total Amount Extracted	250mL
Lab File ID	Q220408A_002	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	04/04/2022 14:15	Ending CCal File	Q220408A_012
Received	04/04/2022 14:15	Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	24	121	50-150		04/08/2022 15:50
13C4 PFOA	20	25	125	50-150		04/08/2022 15:50
13C2 PFDA	20	25	126	50-150		04/08/2022 15:50
13C4 PFOS	19	21	109	50-150		04/08/2022 15:50

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	22	112	50-150		04/08/2022 15:50
13C5 PFPeA	20	22	112	50-150		04/08/2022 15:50
13C3 PFBS	19	22	118	50-150		04/08/2022 15:50
13C2 4:2FTS	19	20	105	50-150		04/08/2022 15:50
13C5 PFHxA	20	22	111	50-150		04/08/2022 15:50
13C4 PFHpA	20	21	106	50-150		04/08/2022 15:50
13C3 PFHxS	19	22	115	50-150		04/08/2022 15:50
13C2 6:2FTS	19	20	105	50-150		04/08/2022 15:50
13C8 PFOA	20	21	106	50-150		04/08/2022 15:50
13C9 PFNA	20	21	107	50-150		04/08/2022 15:50
13C8 PFOS	19	20	103	50-150		04/08/2022 15:50
13C2 8:2FTS	19	21	108	50-150		04/08/2022 15:50
13C6 PFDA	20	19	97	50-150		04/08/2022 15:50
d3-MeFOSAA	20	15	76	50-150		04/08/2022 15:50
13C8 PFOSA	20	17	85	50-150		04/08/2022 15:50
d5-EtFOSAA	20	17	84	50-150		04/08/2022 15:50
13C7 PFUdA	20	17	86	50-150		04/08/2022 15:50
13C2 PFDoA	20	18	90	50-150		04/08/2022 15:50
13C2 PFTeDA	20	19	94	50-150		04/08/2022 15:50
13C3 HFPO-DA	20	23	114	50-150		04/08/2022 15:50
d7-N-MeFOSE	20	17	87	20-150		04/08/2022 15:50
d9-N-EtFOSE	20	17	86	20-150		04/08/2022 15:50
d3-N-MeFOSA	20	14	72	20-150		04/08/2022 15:50
d5-N-EtFOSA	20	14	72	20-150		04/08/2022 15:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKGP	Extraction Date	04/07/2022 10:00
Lab Sample ID	BLANK-97853	Total Amount Extracted	5.10g
Lab File ID	Q220412C_008	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_001
Collected	04/05/2022 10:29	Ending CCal File	Q220412C_013
Received	04/05/2022 10:29	Blank File	

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	0.09	0.02	0.02	1	375-22-4		04/12/2022 18:27
PFPeA	ND	0.09	0.02	0.02	1	2706-90-3		04/12/2022 18:27
HFPO-DA	ND	0.09	0.02	0.02	1	13252-13-6		04/12/2022 18:27
PFBS	ND	0.08	0.02	0.02	1	375-73-5		04/12/2022 18:27
PFHxA	ND	0.09	0.02	0.02	1	307-24-4		04/12/2022 18:27
4:2 FTS	ND	0.09	0.03	0.03	1	757124-72-4		04/12/2022 18:27
PFPeS	ND	0.09	0.01	0.01	1	2706-91-4		04/12/2022 18:27
PFHpA	ND	0.09	0.02	0.02	1	375-85-9		04/12/2022 18:27
DONA	ND	0.09	0.03	0.03	1	919005-14-4		04/12/2022 18:27
PFHxS	ND	0.08	0.02	0.02	1	355-46-4		04/12/2022 18:27
PFOA	ND	0.09	0.02	0.02	1	335-67-1		04/12/2022 18:27
6:2 FTS	ND	0.09	0.03	0.03	1	27619-97-2		04/12/2022 18:27
PFHpS	ND	0.09	0.02	0.02	1	375-92-8		04/12/2022 18:27
PFNA	ND	0.09	0.02	0.02	1	375-95-1		04/12/2022 18:27
PFOSAm	ND	0.09	0.02	0.02	1	754-91-6		04/12/2022 18:27
PFOS	ND	0.09	0.02	0.02	1	1763-23-1		04/12/2022 18:27
MeFOSA	ND	0.09	0.02	0.02	1	31506-32-8		04/12/2022 18:27
PFDA	ND	0.09	0.02	0.02	1	335-76-2		04/12/2022 18:27
EtFOSAm	ND	0.09	0.02	0.02	1	4151-50-2		04/12/2022 18:27
8:2 FTS	ND	0.09	0.02	0.02	1	39108-34-4		04/12/2022 18:27
9-CI-PF3ON	ND	0.09	0.01	0.01	1	756426-58-1		04/12/2022 18:27
PFNS	ND	0.09	0.01	0.01	1	68259-12-1		04/12/2022 18:27
PFUnDA	ND	0.09	0.02	0.02	1	2058-94-8		04/12/2022 18:27
NMeFOSAA	ND	0.09	0.02	0.02	1	2355-31-9		04/12/2022 18:27
NEtFOSAA	ND	0.09	0.02	0.02	1	2991-50-6		04/12/2022 18:27
PFDS	ND	0.09	0.02	0.02	1	335-77-3		04/12/2022 18:27
PFDOA	ND	0.09	0.02	0.02	1	307-55-1		04/12/2022 18:27
MeFOSE	ND	0.09	0.02	0.02	1	24448-09-7		04/12/2022 18:27
EtFOSE	ND	0.09	0.02	0.02	1	1691-99-2		04/12/2022 18:27
11-CI-PF3OUdS	ND	0.09	0.01	0.01	1	763051-92-9		04/12/2022 18:27
PFTTrDA	ND	0.09	0.02	0.02	1	72629-94-8		04/12/2022 18:27
PFDoS	ND	0.09	0.02	0.02	1	79780-39-5		04/12/2022 18:27
PFTDA	ND	0.09	0.03	0.03	1	376-06-7		04/12/2022 18:27

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKGP	Extraction Date	04/07/2022 10:00
Lab Sample ID	BLANK-97853	Total Amount Extracted	5.10g
Lab File ID	Q220412C_008	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_001
Collected	04/05/2022 10:29	Ending CCal File	Q220412C_013
Received	04/05/2022 10:29	Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	0.98	1.1	108	50-150		04/12/2022 18:27
13C4 PFOA	0.98	1.0	107	50-150		04/12/2022 18:27
13C2 PFDA	0.98	1.2	120	50-150		04/12/2022 18:27
13C4 PFOS	0.94	1.0	109	50-150		04/12/2022 18:27

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	0.98	0.80	82	50-150		04/12/2022 18:27
13C5 PFPeA	0.98	0.82	83	50-150		04/12/2022 18:27
13C3 PFBS	0.91	0.80	88	50-150		04/12/2022 18:27
13C2 4:2FTS	0.92	0.85	92	50-150		04/12/2022 18:27
13C5 PFHxA	0.98	0.84	86	50-150		04/12/2022 18:27
13C4 PFHpA	0.98	0.84	86	50-150		04/12/2022 18:27
13C3 PFHxS	0.93	0.79	85	50-150		04/12/2022 18:27
13C2 6:2FTS	0.93	0.97	104	50-150		04/12/2022 18:27
13C8 PFOA	0.98	0.84	86	50-150		04/12/2022 18:27
13C9 PFNA	0.98	0.90	92	50-150		04/12/2022 18:27
13C8 PFOS	0.94	0.91	97	50-150		04/12/2022 18:27
13C2 8:2FTS	0.94	0.85	91	50-150		04/12/2022 18:27
13C6 PFDA	0.98	0.82	83	50-150		04/12/2022 18:27
d3-MeFOSAA	0.98	0.87	89	50-150		04/12/2022 18:27
13C8 PFOSA	0.98	0.99	101	50-150		04/12/2022 18:27
d5-EtFOSAA	0.98	0.90	92	50-150		04/12/2022 18:27
13C7 PFUdA	0.98	0.95	97	50-150		04/12/2022 18:27
13C2 PFDoA	0.98	1.00	102	50-150		04/12/2022 18:27
13C2 PFTeDA	0.98	1.3	127	50-150		04/12/2022 18:27
13C3 HFPO-DA	0.98	0.84	86	50-150		04/12/2022 18:27
d7-N-MeFOSE	0.98	0.87	89	20-150		04/12/2022 18:27
d9-N-EtFOSE	0.98	0.84	86	20-150		04/12/2022 18:27
d3-N-MeFOSA	0.98	0.83	84	20-150		04/12/2022 18:27
d5-N-EtFOSA	0.98	0.78	80	20-150		04/12/2022 18:27

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-97833	Instrument ID	10LCMS01
Run File Name	Q220411C_003	Column ID	118AB10133
Analyzed	04/11/2022 18:11	Ical ID	220411B01
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	21	107	50-150	
13C4_PFOA	20	20	98	50-150	
13C2_PFDA	20	20	100	50-150	
13C4_PFOS	19	20	104	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	20	19	97	50-150	
13C5_PFPeA	20	20	101	50-150	
13C3_PFBFS	19	18	98	50-150	
13C2_4:2FTS	19	20	107	50-150	
13C5_PFHxA	20	21	105	50-150	
13C4_PFHpA	20	21	107	50-150	
13C3_PFHxS	19	19	102	50-150	
13C2_6:2FTS	19	21	112	50-150	
13C8_PFOA	20	21	103	50-150	
13C9_PFNA	20	21	103	50-150	
13C8_PFOS	19	16	86	50-150	
13C2_8:2FTS	19	16	85	50-150	
13C6_PFDA	20	14	72	50-150	
d3-MeFOSAA	20	13	67	50-150	
13C8_PFOA	20	6.2	31	50-150	R
d5-EtFOSAA	20	14	69	50-150	
13C7_PFUdA	20	17	84	50-150	
13C2_PFDaA	20	13	63	50-150	
13C2_PFTeDA	20	12	59	50-150	
13C3_HFPO-DA	20	22	109	50-150	
d7-N-MeFOSE	20	4.4	22	20-150	
d9-N-EtFOSE	20	4.0	20	20-150	
d3-N-MeFOSA	20	4.0	20	20-150	
d5-N-EtFOSA	20	3.8	19	20-150	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-97833
 Run File Name Q220411C_003
 Analyzed 04/11/2022 18:11
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220411B01
 Level L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.0	4.4	111	50-150		375-22-4
PFPeA	4.0	4.4	109	50-150		2706-90-3
HFPO-DA	4.0	4.3	107	50-150		13252-13-6
PFBS	3.5	3.5	99	50-150		375-73-5
PFHxA	4.0	4.3	108	50-150		307-24-4
4:2 FTS	3.7	3.7	100	50-150		757124-72-4
PFPeS	3.8	4.2	112	50-150		2706-91-4
PFHpA	4.0	3.5	87	50-150		375-85-9
DONA	3.8	4.4	117	50-150		919005-14-4
PFHxS	3.6	3.8	105	50-150		355-46-4
PFOA	4.0	4.0	100	50-150		335-67-1
6:2 FTS	3.8	3.3	88	50-150		27619-97-2
PFHpS	3.8	4.7	124	50-150		375-92-8
PFNA	4.0	4.3	109	50-150		375-95-1
PFOSAm	4.0	4.1	103	50-150		754-91-6
PFOS	3.7	4.0	107	50-150		1763-23-1
MeFOSA	4.0	3.3	83	50-150		31506-32-8
PFDA	4.0	5.2	130	50-150		335-76-2
EtFOSAm	4.0	4.0	100	50-150		4151-50-2
8:2 FTS	3.8	3.4	90	50-150		39108-34-4
9-CI-PF3ON	3.7	3.3	88	50-150		756426-58-1
PFNS	3.8	3.1	80	50-150		68259-12-1
PFUnDA	4.0	3.4	84	50-150		2058-94-8
NMeFOSAA	4.0	4.0	99	50-150		2355-31-9
NEtFOSAA	4.0	4.0	99	50-150		2991-50-6
PFDS	3.9	2.4	63	50-150		335-77-3
PFDOA	4.0	3.7	92	50-150		307-55-1
MeFOSE	4.0	3.9	97	50-150		24448-09-7
EtFOSE	4.0	4.1	102	50-150		1691-99-2
11-CI-PF3OUdS	3.8	2.3	62	50-150		763051-92-9
PFTrDA	4.0	3.3	81	50-150		72629-94-8
PFDoS	3.9	2.5	66	50-150		79780-39-5
PFTDA	4.0	3.7	93	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-97833
 Run File Name Q220411C_003
 Analyzed 04/11/2022 18:11
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220411B01
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.17	6.17	
13C4 PFOA	N/A	N/A	7.43	7.43	
13C2 PFDA	N/A	N/A	8.72	8.67	
13C4 PFOS	N/A	N/A	9.23	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.79	4.79	
13C5 PFPeA	N/A	N/A	5.55	5.54	
13C3 PFBS	N/A	N/A	6.47	6.45	
13C2 4:2FTS	N/A	N/A	5.91	5.89	
13C5 PFHxA	N/A	N/A	6.18	6.15	
13C4 PFHpA	N/A	N/A	6.80	6.80	
13C3 PFHxS	N/A	N/A	7.88	7.89	
13C2 6:2FTS	N/A	N/A	7.09	7.09	
13C8 PFOA	N/A	N/A	7.43	7.43	
13C9 PFNA	N/A	N/A	8.07	8.07	
13C8 PFOS	N/A	N/A	9.24	9.25	
13C2 8:2FTS	N/A	N/A	8.34	8.35	
13C6 PFDA	N/A	N/A	8.72	8.73	
d3-MeFOSAA	N/A	N/A	8.61	8.61	
13C8 PFOSA	N/A	N/A	11.41	11.40	R
d5-EtFOSAA	N/A	N/A	8.91	8.92	
13C7 PFUdA	N/A	N/A	9.38	9.39	
13C2 PFDoA	N/A	N/A	10.05	10.07	
13C2 PFTeDA	N/A	N/A	11.37	11.39	
13C3 HFPO-DA	N/A	N/A	6.43	6.43	
d7-N-MeFOSE	N/A	N/A	13.07	13.06	
d9-N-EtFOSE	N/A	N/A	13.56	13.54	
d3-N-MeFOSA	N/A	N/A	13.28	13.26	
d5-N-EtFOSA	N/A	N/A	13.72	13.70	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-97833
 Run File Name Q220411C_003
 Analyzed 04/11/2022 18:11
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220411B01
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.80	4.79	
PFPeA	N/A	N/A	5.55	5.55	
HFPO-DA	0.48	0.71	6.45	6.45	
PFBS	0.35	0.39	6.48	6.48	
PFHxA	0.06	0.07	6.18	6.18	
4:2 FTS	0.85	1.10	5.92	5.91	
PFPeS	0.38	0.44	7.20	7.21	
PFHpA	0.49	0.49	6.81	6.81	
DONA	0.46	0.49	7.04	7.04	
PFHxS	0.32	0.32	7.89	7.90	
PFOA	0.32	0.32	7.44	7.44	
6:2 FTS	1.50	1.50	7.09	7.10	
PFHpS	0.35	0.36	8.58	8.59	
PFNA	0.27	0.31	8.08	8.08	
PFOSAm	N/A	N/A	11.42	11.41	
PFOS	0.22	0.25	9.25	9.26	
MeFOSA	0.61	0.47	13.30	13.29	
PFDA	0.15	0.15	8.74	8.74	
EtFOSAm	0.41	0.45	13.74	13.72	
8:2 FTS	1.60	1.30	8.35	8.35	
9-Cl-PF3ON	0.03	0.03	9.73	9.75	
PFNS	0.21	0.23	9.91	9.93	
PFUnDA	0.16	0.11	9.39	9.40	
NMeFOSAA	0.52	0.52	8.61	8.62	
NEtFOSAA	0.61	0.48	8.92	8.87	
PFDS	0.29	0.30	10.57	10.59	
PFDOA	0.21	0.20	10.06	10.08	
MeFOSE	N/A	N/A	13.11	13.09	
EtFOSE	0.00	0.00	13.60	13.58	
11-Cl-PF3OUdS	0.03	0.02	11.03	11.06	
PFTrDA	0.18	0.22	10.72	10.74	
PFDoS	0.24	0.24	11.79	11.81	
PFTDA	0.14	0.18	11.37	11.39	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-97854	Instrument ID	10LCMS01
Run File Name	Q220412C_009	Column ID	118AB10133
Analyzed	04/12/2022 18:46	Ical ID	220412B01
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	0.98	1.0	105	50-150	
13C4_PFOA	0.98	1.0	105	50-150	
13C2_PFDA	0.98	1.2	122	50-150	
13C4_PFOS	0.93	1.0	109	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	0.98	0.83	85	50-150	
13C5_PFPeA	0.98	0.85	87	50-150	
13C3_PFBs	0.91	0.76	84	50-150	
13C2_4:2Fts	0.91	0.83	91	50-150	
13C5_PFHxA	0.98	0.91	93	50-150	
13C4_PFHpA	0.98	0.92	94	50-150	
13C3_PFHxS	0.92	0.77	83	50-150	
13C2_6:2Fts	0.93	1.0	109	50-150	
13C8_PFOA	0.98	0.83	85	50-150	
13C9_PFNA	0.98	0.87	89	50-150	
13C8_PFOS	0.93	0.85	91	50-150	
13C2_8:2Fts	0.94	0.74	79	50-150	
13C6_PFDA	0.98	0.93	95	50-150	
d3-MeFOSAA	0.98	0.89	91	50-150	
13C8_PFOsA	0.98	0.92	94	50-150	
d5-EtFOSAA	0.98	0.83	85	50-150	
13C7_PFUdA	0.98	0.96	99	50-150	
13C2_PFDoA	0.98	0.99	102	50-150	
13C2_PFTeDA	0.98	1.1	110	50-150	
13C3_HFPO-DA	0.98	0.93	96	50-150	
d7-N-MeFOSE	0.98	0.73	75	20-150	
d9-N-EtFOSE	0.98	0.71	72	20-150	
d3-N-MeFOSA	0.98	0.64	65	20-150	
d5-N-EtFOSA	0.98	0.64	65	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-97854
 Run File Name Q220412C_009
 Analyzed 04/12/2022 18:46
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.20	0.22	114	50-150		375-22-4
PFPeA	0.20	0.22	110	50-150		2706-90-3
HFPO-DA	0.20	0.19	95	50-150		13252-13-6
PFBS	0.17	0.21	124	50-150		375-73-5
PFHxA	0.20	0.20	104	50-150		307-24-4
4:2 FTS	0.18	0.19	103	50-150		757124-72-4
PFPeS	0.18	0.21	115	50-150		2706-91-4
PFHpA	0.20	0.18	94	50-150		375-85-9
DONA	0.18	0.20	110	50-150		919005-14-4
PFHxS	0.18	0.19	109	50-150		355-46-4
PFOA	0.20	0.24	122	50-150		335-67-1
6:2 FTS	0.19	0.18	99	50-150		27619-97-2
PFHpS	0.19	0.21	115	50-150		375-92-8
PFNA	0.20	0.22	114	50-150		375-95-1
PFOSAm	0.20	0.22	110	50-150		754-91-6
PFOS	0.18	0.19	104	50-150		1763-23-1
MeFOSA	0.20	0.21	106	50-150		31506-32-8
PFDA	0.20	0.18	91	50-150		335-76-2
EtFOSAm	0.20	0.22	114	50-150		4151-50-2
8:2 FTS	0.19	0.20	106	50-150	I	39108-34-4
9-CI-PF3ON	0.18	0.18	98	50-150		756426-58-1
PFNS	0.19	0.21	111	50-150		68259-12-1
PFUnDA	0.20	0.19	95	50-150		2058-94-8
NMeFOSAA	0.20	0.16	82	50-150		2355-31-9
NEtFOSAA	0.20	0.22	111	50-150		2991-50-6
PFDS	0.19	0.18	98	50-150		335-77-3
PFDOA	0.20	0.20	104	50-150		307-55-1
MeFOSE	0.20	0.20	102	50-150		24448-09-7
EtFOSE	0.20	0.22	112	50-150		1691-99-2
11-CI-PF3OUdS	0.18	0.18	98	50-150		763051-92-9
PFTrDA	0.20	0.21	107	50-150		72629-94-8
PFDoS	0.19	0.20	106	50-150		79780-39-5
PFTDA	0.20	0.20	104	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-97854
 Run File Name Q220412C_009
 Analyzed 04/12/2022 18:46
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.16	6.17	
13C4 PFOA	N/A	N/A	7.42	7.43	
13C2 PFDA	N/A	N/A	8.72	8.67	
13C4 PFOS	N/A	N/A	9.21	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.78	4.79	
13C5 PFPeA	N/A	N/A	5.54	5.54	
13C3 PFBS	N/A	N/A	6.45	6.45	
13C2 4:2FTS	N/A	N/A	5.90	5.89	
13C5 PFHxA	N/A	N/A	6.16	6.15	
13C4 PFHpA	N/A	N/A	6.79	6.80	
13C3 PFHxS	N/A	N/A	7.86	7.89	
13C2 6:2FTS	N/A	N/A	7.09	7.09	
13C8 PFOA	N/A	N/A	7.42	7.43	
13C9 PFNA	N/A	N/A	8.06	8.07	
13C8 PFOS	N/A	N/A	9.22	9.22	
13C2 8:2FTS	N/A	N/A	8.33	8.35	
13C6 PFDA	N/A	N/A	8.71	8.73	
d3-MeFOSAA	N/A	N/A	8.60	8.61	
13C8 PFOSA	N/A	N/A	11.38	11.40	
d5-EtFOSAA	N/A	N/A	8.90	8.92	
13C7 PFUdA	N/A	N/A	9.37	9.39	
13C2 PFDoA	N/A	N/A	10.04	10.07	
13C2 PFTeDA	N/A	N/A	11.34	11.39	
13C3 HFPO-DA	N/A	N/A	6.42	6.43	
d7-N-MeFOSE	N/A	N/A	13.04	13.06	
d9-N-EtFOSE	N/A	N/A	13.53	13.54	
d3-N-MeFOSA	N/A	N/A	13.25	13.26	
d5-N-EtFOSA	N/A	N/A	13.69	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-97854
 Run File Name Q220412C_009
 Analyzed 04/12/2022 18:46
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.78	4.79	
PFPeA	N/A	N/A	5.54	5.55	
HFPO-DA	0.55	0.47	6.44	6.45	
PFBS	0.33	0.29	6.46	6.48	
PFHxA	0.07	0.06	6.17	6.18	
4:2 FTS	1.00	0.99	5.91	5.91	
PFPeS	0.35	0.37	7.18	7.21	
PFHpA	0.52	0.49	6.80	6.81	
DONA	0.50	0.50	7.03	7.04	
PFHxS	0.33	0.32	7.87	7.90	
PFOA	0.31	0.28	7.43	7.44	
6:2 FTS	1.30	1.30	7.09	7.10	
PFHpS	0.38	0.37	8.56	8.55	
PFNA	0.27	0.24	8.07	8.08	
PFOSAm	N/A	N/A	11.39	11.41	
PFOS	0.22	0.23	9.23	9.26	
MeFOSA	0.44	0.49	13.28	13.29	
PFDA	0.18	0.18	8.73	8.74	
EtFOSAm	0.39	0.38	13.72	13.72	
8:2 FTS	1.90	1.10	8.35	8.35	I
9-Cl-PF3ON	0.04	0.04	9.71	9.71	
PFNS	0.21	0.20	9.89	9.89	
PFUnDA	0.20	0.16	9.38	9.40	
NMeFOSAA	0.83	0.85	8.61	8.62	
NEtFOSAA	0.45	0.35	8.92	8.87	
PFDS	0.28	0.29	10.54	10.54	
PFDOA	0.18	0.21	10.04	10.08	
MeFOSE	N/A	N/A	13.08	13.09	
EtFOSE	0.00	0.00	13.57	13.56	
11-Cl-PF3OUdS	0.03	0.03	11.01	11.01	
PFTrDA	0.21	0.22	10.70	10.71	
PFDoS	0.23	0.25	11.76	11.75	
PFTDA	0.15	0.13	11.35	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MS
 Run File Name Q220412C_004
 Analyzed 04/12/2022 17:13
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	17	83	50-150	
13C4_PFOA	20	17	83	50-150	
13C2_PFDA	20	21	103	50-150	
13C4_PFOS	19	19	97	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	20	16	79	25-150	
13C5_PFPeA	20	17	82	25-150	
13C3_PFBFS	19	17	91	25-150	
13C2_4:2FTS	19	48	255	25-150	R
13C5_PFHxA	20	17	83	25-150	
13C4_PFHpA	20	16	78	25-150	
13C3_PFHxS	19	19	98	25-150	
13C2_6:2FTS	19	92	480	25-150	R
13C8_PFOA	20	17	86	25-150	
13C9_PFNA	20	19	94	25-150	
13C8_PFOS	19	20	104	25-150	
13C2_8:2FTS	19	52	271	25-150	R
13C6_PFDA	20	17	83	25-150	
d3-MeFOSAA	20	12	60	25-150	
13C8_PFOSA	20	7.2	36	25-150	
d5-EtFOSAA	20	14	71	25-150	
13C7_PFUdA	20	16	79	25-150	
13C2_PFDoA	20	11	53	25-150	
13C2_PFTeDA	20	8.5	42	25-150	
13C3_HFPO-DA	20	13	65	25-150	
d7-N-MeFOSE	20	10	50	10-150	
d9-N-EtFOSE	20	9.0	44	10-150	
d3-N-MeFOSA	20	7.8	39	10-150	
d5-N-EtFOSA	20	4.9	24	10-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MS
 Run File Name Q220412C_004
 Analyzed 04/12/2022 17:13
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	2.8	4.0	6.6	95	50-150		375-22-4
PFPeA	2.1	4.0	5.9	96	50-150		2706-90-3
HFPO-DA	0.00	4.0	2.9	73	50-150	I	13252-13-6
PFBS	0.85	3.6	4.9	114	50-150		375-73-5
PFHxA	3.0	4.0	7.6	116	50-150		307-24-4
4:2 FTS	0.00	3.8	3.7	97	50-150		757124-72-4
PFPeS	0.00	3.8	3.7	97	50-150		2706-91-4
PFHpA	1.4	4.0	5.7	106	50-150		375-85-9
DONA	0.00	3.8	3.4	90	50-150		919005-14-4
PFHxS	2.8	3.7	7.3	122	50-150		355-46-4
PFOA	1.8	4.0	6.0	103	50-150		335-67-1
6:2 FTS	0.00	3.8	4.2	110	50-150		27619-97-2
PFHpS	0.00	3.8	3.7	96	50-150		375-92-8
PFNA	0.00	4.0	5.0	125	50-150		375-95-1
PFOSAm	0.00	4.0	4.5	111	50-150		754-91-6
PFOS	1.4	3.7	6.2	130	50-150		1763-23-1
MeFOSA	0.00	4.0	3.8	95	50-150		31506-32-8
PFDA	0.00	4.0	4.2	103	50-150		335-76-2
EtFOSAm	0.00	4.0	3.2	80	50-150		4151-50-2
8:2 FTS	0.00	3.9	4.4	114	50-150		39108-34-4
9-CI-PF3ON	0.00	3.8	3.6	96	50-150		756426-58-1
PFNS	0.00	3.8	2.7	73	50-150		68259-12-1
PFUnDA	0.00	4.0	4.2	105	50-150		2058-94-8
NMeFOSAA	0.45	4.0	4.4	99	50-150		2355-31-9
NEtFOSAA	0.00	4.0	3.6	90	50-150	I	2991-50-6
PFDS	0.00	3.9	2.7	70	50-150		335-77-3
PFDOA	0.00	4.0	4.8	118	50-150		307-55-1
MeFOSE	1.3	4.0	5.4	103	50-150		24448-09-7
EtFOSE	0.00	4.0	4.2	104	50-150		1691-99-2
11-CI-PF3OUdS	0.00	3.8	2.5	67	50-150		763051-92-9
PFTTrDA	0.00	4.0	3.2	78	50-150		72629-94-8
PFDoS	0.00	3.9	1.3	32	50-150	JR	79780-39-5
PFTDA	0.00	4.0	3.6	90	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MS
 Run File Name Q220412C_004
 Analyzed 04/12/2022 17:13
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.15	6.17	
13C4 PFOA	N/A	N/A	7.40	7.43	
13C2 PFDA	N/A	N/A	8.66	8.67	
13C4 PFOS	N/A	N/A	9.10	9.10	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.77	4.79	
13C5 PFPeA	N/A	N/A	5.53	5.54	
13C3 PFBS	N/A	N/A	6.44	6.45	
13C2 4:2FTS	N/A	N/A	5.89	5.89	R
13C5 PFHxA	N/A	N/A	6.16	6.15	
13C4 PFHpA	N/A	N/A	6.78	6.80	
13C3 PFHxS	N/A	N/A	7.85	7.89	
13C2 6:2FTS	N/A	N/A	7.07	7.09	R
13C8 PFOA	N/A	N/A	7.40	7.43	
13C9 PFNA	N/A	N/A	8.04	8.07	
13C8 PFOS	N/A	N/A	9.10	9.10	
13C2 8:2FTS	N/A	N/A	8.31	8.35	R
13C6 PFDA	N/A	N/A	8.67	8.73	
d3-MeFOSAA	N/A	N/A	8.55	8.61	
13C8 PFOSA	N/A	N/A	11.35	11.40	
d5-EtFOSAA	N/A	N/A	8.85	8.92	
13C7 PFUdA	N/A	N/A	9.30	9.39	
13C2 PFDoA	N/A	N/A	9.97	10.07	
13C2 PFTeDA	N/A	N/A	11.29	11.39	
13C3 HFPO-DA	N/A	N/A	6.41	6.43	
d7-N-MeFOSE	N/A	N/A	13.03	13.06	
d9-N-EtFOSE	N/A	N/A	13.51	13.54	
d3-N-MeFOSA	N/A	N/A	13.24	13.26	
d5-N-EtFOSA	N/A	N/A	13.67	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MS
 Run File Name Q220412C_004
 Analyzed 04/12/2022 17:13
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.78	4.79	
PFPeA	N/A	N/A	5.54	5.55	
HFPO-DA	0.86	0.47	6.43	6.45	I
PFBS	0.35	0.29	6.45	6.48	
PFHxA	0.07	0.06	6.16	6.18	
4:2 FTS	0.99	0.99	5.90	5.91	
PFPeS	0.44	0.37	7.17	7.21	
PFHpA	0.37	0.49	6.79	6.81	
DONA	0.48	0.50	7.02	7.04	
PFHxS	0.39	0.32	7.85	7.90	
PFOA	0.31	0.28	7.41	7.44	
6:2 FTS	1.20	1.30	7.08	7.10	
PFHpS	0.41	0.37	8.51	8.55	
PFNA	0.23	0.24	8.05	8.08	
PFOSAm	N/A	N/A	11.36	11.41	
PFOS	0.20	0.23	9.11	9.26	
MeFOSA	0.37	0.49	13.26	13.29	
PFDA	0.16	0.18	8.67	8.74	
EtFOSAm	0.51	0.38	13.70	13.72	
8:2 FTS	1.40	1.10	8.32	8.35	
9-Cl-PF3ON	0.04	0.04	9.61	9.71	
PFNS	0.22	0.20	9.73	9.73	
PFUnDA	0.16	0.16	9.31	9.40	
NMeFOSAA	0.77	0.85	8.55	8.62	
NEtFOSAA	0.58	0.35	8.86	8.87	I
PFDS	0.29	0.29	10.47	10.54	
PFDOA	0.15	0.21	9.98	10.08	
MeFOSE	N/A	N/A	13.07	13.09	
EtFOSE	0.00	0.00	13.56	13.56	
11-Cl-PF3OUdS	0.02	0.03	10.97	11.01	
PFTrDA	0.18	0.22	10.66	10.71	
PFDoS	0.26	0.25	11.72	11.75	JR
PFTDA	0.15	0.13	11.29	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MSD
 Run File Name Q220412C_005
 Analyzed 04/12/2022 17:31
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2_PFHxA	20	16	79	50-150	4.3	
13C4_PFOA	20	18	89	50-150	7.2	
13C2_PFDA	20	22	113	50-150	8.7	
13C4_PFOS	19	21	110	50-150	12.4	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4_PFBFA	20	15	77	25-150	2.6	
13C5_PFPeA	20	16	81	25-150	1.7	
13C3_PFBFS	18	17	94	25-150	3.2	
13C2_4:2FTS	19	47	252	25-150	1.0	R
13C5_PFHxA	20	14	73	25-150	13.9	
13C4_PFHpA	20	16	80	25-150	2.7	
13C3_PFHxS	19	20	105	25-150	7.3	
13C2_6:2FTS	19	100	529	25-150	9.8	R
13C8_PFOA	20	20	102	25-150	17.0	
13C9_PFNA	20	21	104	25-150	9.1	
13C8_PFOS	19	20	107	25-150	3.1	
13C2_8:2FTS	19	64	334	25-150	21.0	R
13C6_PFDA	20	17	87	25-150	5.8	
d3-MeFOSAA	20	15	77	25-150	24.9	
13C8_PFOA	20	7.3	37	25-150	2.4	
d5-EtFOSAA	20	22	109	25-150	41.4	
13C7_PFUdA	20	17	87	25-150	8.6	
13C2_PFDaA	20	12	60	25-150	13.0	
13C2_PFTeDA	20	8.8	44	25-150	4.9	
13C3_HFPO-DA	20	14	71	25-150	8.0	
d7-N-MeFOSE	20	10	52	10-150	4.2	
d9-N-EtFOSE	20	11	58	10-150	25.7	
d3-N-MeFOSA	20	7.5	38	10-150	2.7	
d5-N-EtFOSA	20	4.7	24	10-150	2.2	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MSD
 Run File Name Q220412C_005
 Analyzed 04/12/2022 17:31
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	2.8	4.0	7.1	110	50-150	8.9		375-22-4
PFPeA	2.1	4.0	6.4	109	50-150	9.0		2706-90-3
HFPO-DA	0.00	4.0	3.4	85	50-150	16.2	I	13252-13-6
PFBS	0.85	3.5	4.8	112	50-150	1.1		375-73-5
PFHxA	3.0	4.0	8.8	148	50-150	16.1		307-24-4
4:2 FTS	0.00	3.7	3.9	104	50-150	6.8		757124-72-4
PFPeS	0.00	3.7	4.1	110	50-150	12.3		2706-91-4
PFHpA	1.4	4.0	5.9	115	50-150	6.3		375-85-9
DONA	0.00	3.8	3.1	83	50-150	7.8		919005-14-4
PFHxS	2.8	3.6	11	237	50-150	45.6	R	355-46-4
PFOA	1.8	4.0	6.1	107	50-150	3.1		335-67-1
6:2 FTS	0.00	3.8	4.2	112	50-150	1.3		27619-97-2
PFHpS	0.00	3.8	4.8	126	50-150	26.7		375-92-8
PFNA	0.00	4.0	5.5	139	50-150	10.3		375-95-1
PFOSAm	0.00	4.0	4.6	117	50-150	5.6		754-91-6
PFOS	1.4	3.7	9.3	214	50-150	40.3	R	1763-23-1
MeFOSA	0.00	4.0	3.5	89	50-150	6.9		31506-32-8
PFDA	0.00	4.0	4.8	121	50-150	16.3		335-76-2
EtFOSAm	0.00	4.0	4.0	100	50-150	22.2		4151-50-2
8:2 FTS	0.00	3.8	4.4	116	50-150	1.5		39108-34-4
9-CI-PF3ON	0.00	3.7	3.9	105	50-150	9.8		756426-58-1
PFNS	0.00	3.7	3.3	88	50-150	19.5		68259-12-1
PFUnDA	0.00	4.0	4.1	103	50-150	1.9		2058-94-8
NMeFOSAA	0.45	4.0	5.1	118	50-150	16.1		2355-31-9
NEtFOSAA	0.00	4.0	4.0	100	50-150	10.8	I	2991-50-6
PFDS	0.00	3.8	3.2	84	50-150	18.1		335-77-3
PFDOA	0.00	4.0	5.4	136	50-150	13.7		307-55-1
MeFOSE	1.3	4.0	5.5	107	50-150	3.4		24448-09-7
EtFOSE	0.00	4.0	3.1	78	50-150	28.2		1691-99-2
11-CI-PF3OUdS	0.00	3.7	2.8	74	50-150	10.5		763051-92-9
PFTTrDA	0.00	4.0	3.2	80	50-150	2.5		72629-94-8
PFDoS	0.00	3.8	1.4	36	50-150	9.6	JR	79780-39-5
PFTDA	0.00	4.0	3.8	96	50-150	6.8		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MSD
 Run File Name Q220412C_005
 Analyzed 04/12/2022 17:31
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.15	6.17	
13C4 PFOA	N/A	N/A	7.40	7.43	
13C2 PFDA	N/A	N/A	8.66	8.67	
13C4 PFOS	N/A	N/A	9.08	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.76	4.79	
13C5 PFPeA	N/A	N/A	5.53	5.54	
13C3 PFBS	N/A	N/A	6.44	6.45	
13C2 4:2FTS	N/A	N/A	5.89	5.89	R
13C5 PFHxA	N/A	N/A	6.15	6.15	
13C4 PFHpA	N/A	N/A	6.78	6.80	
13C3 PFHxS	N/A	N/A	7.84	7.89	
13C2 6:2FTS	N/A	N/A	7.07	7.09	R
13C8 PFOA	N/A	N/A	7.40	7.43	
13C9 PFNA	N/A	N/A	8.04	8.07	
13C8 PFOS	N/A	N/A	9.09	9.09	
13C2 8:2FTS	N/A	N/A	8.31	8.35	R
13C6 PFDA	N/A	N/A	8.66	8.73	
d3-MeFOSAA	N/A	N/A	8.54	8.61	
13C8 PFOSA	N/A	N/A	11.35	11.40	
d5-EtFOSAA	N/A	N/A	8.84	8.92	
13C7 PFUdA	N/A	N/A	9.29	9.39	
13C2 PFDoA	N/A	N/A	9.97	9.97	
13C2 PFTeDA	N/A	N/A	11.29	11.39	
13C3 HFPO-DA	N/A	N/A	6.41	6.43	
d7-N-MeFOSE	N/A	N/A	13.03	13.06	
d9-N-EtFOSE	N/A	N/A	13.51	13.54	
d3-N-MeFOSA	N/A	N/A	13.24	13.26	
d5-N-EtFOSA	N/A	N/A	13.67	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741004-MSD
 Run File Name Q220412C_005
 Analyzed 04/12/2022 17:31
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.77	4.79	
PFPeA	N/A	N/A	5.53	5.55	
HFPO-DA	0.74	0.47	6.43	6.45	I
PFBS	0.33	0.29	6.45	6.48	
PFHxA	0.07	0.06	6.16	6.18	
4:2 FTS	0.96	0.99	5.90	5.91	
PFPeS	0.38	0.37	7.17	7.21	
PFHpA	0.33	0.49	6.79	6.81	
DONA	0.49	0.50	7.02	7.04	
PFHxS	0.35	0.32	7.85	7.90	R
PFOA	0.34	0.28	7.41	7.44	
6:2 FTS	1.30	1.30	7.07	7.10	
PFHpS	0.35	0.37	8.51	8.55	
PFNA	0.26	0.24	8.05	8.08	
PFOSAm	N/A	N/A	11.36	11.41	
PFOS	0.24	0.23	9.09	9.26	R
MeFOSA	0.43	0.49	13.25	13.29	
PFDA	0.18	0.18	8.67	8.74	
EtFOSAm	0.34	0.38	13.70	13.72	
8:2 FTS	1.50	1.10	8.31	8.35	
9-Cl-PF3ON	0.04	0.04	9.60	9.60	
PFNS	0.22	0.20	9.71	9.71	
PFUnDA	0.17	0.16	9.30	9.40	
NMeFOSAA	0.61	0.85	8.56	8.62	
NEtFOSAA	0.56	0.35	8.85	8.87	I
PFDS	0.29	0.29	10.46	10.46	
PFDOA	0.14	0.21	9.97	10.08	
MeFOSE	N/A	N/A	13.07	13.09	
EtFOSE	0.00	0.00	13.56	13.56	
11-Cl-PF3OUdS	0.03	0.03	10.96	11.01	
PFTrDA	0.23	0.22	10.66	10.71	
PFDoS	0.28	0.25	11.72	11.75	JR
PFTDA	0.16	0.13	11.30	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MS
 Run File Name Q220413A_009
 Analyzed 04/13/2022 14:35
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	18	96	50-150	
13C4_PFOA	19	20	104	50-150	
13C2_PFDA	19	21	110	50-150	
13C4_PFOS	18	20	111	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	19	19	97	25-150	
13C5_PFPeA	19	18	94	25-150	
13C3_PFBFS	18	18	101	25-150	
13C2_4:2FTS	18	38	212	25-150	R
13C5_PFHxA	19	18	93	25-150	
13C4_PFHpA	19	18	95	25-150	
13C3_PFHxS	18	21	115	25-150	
13C2_6:2FTS	18	35	195	25-150	R
13C8_PFOA	19	22	117	25-150	
13C9_PFNA	19	20	107	25-150	
13C8_PFOS	18	21	114	25-150	
13C2_8:2FTS	18	39	210	25-150	R
13C6_PFDA	19	22	115	25-150	
d3-MeFOSAA	19	24	125	25-150	
13C8_PFOA	19	16	83	25-150	
d5-EtFOSAA	19	21	111	25-150	
13C7_PFUdA	19	19	97	25-150	
13C2_PFDoA	19	19	97	25-150	
13C2_PFTeDA	19	10	55	25-150	
13C3_HFPO-DA	19	16	85	25-150	
d7-N-MeFOSE	19	13	67	10-150	
d9-N-EtFOSE	19	11	58	10-150	
d3-N-MeFOSA	19	8.8	46	10-150	
d5-N-EtFOSA	19	8.8	46	10-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MS
 Run File Name Q220413A_009
 Analyzed 04/13/2022 14:35
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	7.7	3.8	11	78	50-150		375-22-4
PFPeA	12	3.8	15	62	50-150		2706-90-3
HFPO-DA	0.00	3.8	3.2	85	50-150	I	13252-13-6
PFBS	2.7	3.4	6.3	105	50-150		375-73-5
PFHxA	17	3.8	20	98	50-150		307-24-4
4:2 FTS	0.00	3.6	3.2	90	50-150		757124-72-4
PFPeS	0.73	3.6	4.1	94	50-150		2706-91-4
PFHpA	2.4	3.8	6.7	112	50-150		375-85-9
DONA	0.00	3.6	3.6	100	50-150		919005-14-4
PFHxS	7.5	3.5	11	97	50-150		355-46-4
PFOA	9.0	3.8	14	124	50-150		335-67-1
6:2 FTS	2.1	3.6	4.9	76	50-150		27619-97-2
PFHpS	0.00	3.6	4.2	116	50-150		375-92-8
PFNA	1.3	3.8	5.5	110	50-150		375-95-1
PFOSAm	0.00	3.8	4.1	108	50-150		754-91-6
PFOS	3.8	3.5	8.0	117	50-150		1763-23-1
MeFOSA	0.00	3.8	3.6	94	50-150		31506-32-8
PFDA	0.90	3.8	4.4	93	50-150		335-76-2
EtFOSAm	0.00	3.8	3.5	92	50-150		4151-50-2
8:2 FTS	0.00	3.7	3.5	94	50-150		39108-34-4
9-CI-PF3ON	0.00	3.6	3.0	85	50-150		756426-58-1
PFNS	0.00	3.6	3.4	95	50-150		68259-12-1
PFUnDA	0.00	3.8	4.3	113	50-150		2058-94-8
NMeFOSAA	0.84	3.8	4.6	98	50-150		2355-31-9
NEtFOSAA	0.53	3.8	3.4	76	50-150		2991-50-6
PFDS	0.00	3.7	2.8	75	50-150		335-77-3
PFDOA	0.00	3.8	3.8	100	50-150		307-55-1
MeFOSE	0.00	3.8	3.4	90	50-150		24448-09-7
EtFOSE	0.00	3.8	3.7	98	50-150		1691-99-2
11-CI-PF3OUdS	0.00	3.6	2.5	69	50-150		763051-92-9
PFTTrDA	0.00	3.8	3.1	81	50-150		72629-94-8
PFDoS	0.00	3.7	1.9	51	50-150		79780-39-5
PFTDA	0.00	3.8	4.0	106	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MS
 Run File Name Q220413A_009
 Analyzed 04/13/2022 14:35
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.17	6.17	
13C4 PFOA	N/A	N/A	7.40	7.43	
13C2 PFDA	N/A	N/A	8.68	8.67	
13C4 PFOS	N/A	N/A	9.22	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.81	4.79	
13C5 PFPeA	N/A	N/A	5.55	5.54	
13C3 PFBS	N/A	N/A	6.49	6.45	
13C2 4:2FTS	N/A	N/A	5.91	5.89	R
13C5 PFHxA	N/A	N/A	6.17	6.15	
13C4 PFHpA	N/A	N/A	6.78	6.80	
13C3 PFHxS	N/A	N/A	7.88	7.89	
13C2 6:2FTS	N/A	N/A	7.07	7.09	R
13C8 PFOA	N/A	N/A	7.40	7.43	
13C9 PFNA	N/A	N/A	8.03	8.07	
13C8 PFOS	N/A	N/A	9.22	9.25	
13C2 8:2FTS	N/A	N/A	8.30	8.35	R
13C6 PFDA	N/A	N/A	8.68	8.73	
d3-MeFOSAA	N/A	N/A	8.55	8.61	
13C8 PFOSA	N/A	N/A	11.44	11.40	
d5-EtFOSAA	N/A	N/A	8.86	8.92	
13C7 PFUdA	N/A	N/A	9.34	9.39	
13C2 PFDoA	N/A	N/A	10.01	10.07	
13C2 PFTeDA	N/A	N/A	11.33	11.39	
13C3 HFPO-DA	N/A	N/A	6.42	6.43	
d7-N-MeFOSE	N/A	N/A	13.10	13.06	
d9-N-EtFOSE	N/A	N/A	13.60	13.54	
d3-N-MeFOSA	N/A	N/A	13.31	13.26	
d5-N-EtFOSA	N/A	N/A	13.76	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MS
 Run File Name Q220413A_009
 Analyzed 04/13/2022 14:35
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.81	4.79	
PFPeA	N/A	N/A	5.56	5.55	
HFPO-DA	0.78	0.40	6.43	6.45	I
PFBS	0.30	0.33	6.50	6.48	
PFHxA	0.08	0.09	6.18	6.18	
4:2 FTS	1.20	1.00	5.91	5.91	
PFPeS	0.42	0.39	7.21	7.21	
PFHpA	0.39	0.43	6.79	6.81	
DONA	0.55	0.49	7.02	7.04	
PFHxS	0.33	0.33	7.88	7.90	
PFOA	0.33	0.35	7.41	7.44	
6:2 FTS	1.40	1.60	7.07	7.10	
PFHpS	0.33	0.38	8.56	8.59	
PFNA	0.25	0.23	8.04	8.08	
PFOSAm	N/A	N/A	11.45	11.41	
PFOS	0.19	0.22	9.23	9.26	
MeFOSA	0.45	0.40	13.34	13.29	
PFDA	0.21	0.17	8.69	8.74	
EtFOSAm	0.37	0.40	13.78	13.72	
8:2 FTS	1.70	1.90	8.31	8.35	
9-Cl-PF3ON	0.04	0.03	9.72	9.75	
PFNS	0.24	0.22	9.90	9.93	
PFUnDA	0.16	0.19	9.35	9.40	
NMeFOSAA	0.61	0.70	8.56	8.62	
NEtFOSAA	0.56	0.58	8.87	8.87	
PFDS	0.28	0.28	10.55	10.59	
PFDOA	0.21	0.17	10.01	10.08	
MeFOSE	N/A	N/A	13.14	13.09	
EtFOSE	0.00	0.00	13.64	13.56	
11-Cl-PF3OUdS	0.03	0.02	11.02	11.01	
PFTrDA	0.18	0.21	10.68	10.71	
PFDoS	0.23	0.21	11.79	11.75	
PFTDA	0.12	0.14	11.34	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MSD
 Run File Name Q220412C_007
 Analyzed 04/12/2022 18:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2_PFHxA	19	18	95	50-150	1.1	
13C4_PFOA	19	21	109	50-150	4.5	
13C2_PFDA	19	28	149	50-150	30.0	
13C4_PFOS	18	21	114	50-150	2.7	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4_PFBFA	19	16	87	25-150	11.1	
13C5_PFPeA	19	18	93	25-150	0.7	
13C3_PFBFS	18	19	110	25-150	8.4	
13C2_4:2FTS	18	41	231	25-150	8.5	R
13C5_PFHxA	19	19	102	25-150	9.2	
13C4_PFHpA	19	20	107	25-150	11.9	
13C3_PFHxS	18	19	106	25-150	8.1	
13C2_6:2FTS	18	49	273	25-150	33.4	R
13C8_PFOA	19	21	111	25-150	5.4	
13C9_PFNA	19	23	121	25-150	12.8	
13C8_PFOS	18	21	113	25-150	1.1	
13C2_8:2FTS	18	48	265	25-150	23.0	R
13C6_PFDA	19	21	113	25-150	1.5	
d3-MeFOSAA	19	27	141	25-150	12.7	
13C8_PFOA	19	21	109	25-150	27.2	
d5-EtFOSAA	19	28	149	25-150	29.7	
13C7_PFUdA	19	27	143	25-150	37.7	
13C2_PFDaA	19	22	116	25-150	17.1	
13C2_PFTeDA	19	15	77	25-150	34.2	
13C3_HFPO-DA	19	18	93	25-150	9.7	
d7-N-MeFOSE	19	15	81	10-150	19.2	
d9-N-EtFOSE	19	15	77	10-150	28.2	
d3-N-MeFOSA	19	10	55	10-150	18.8	
d5-N-EtFOSA	19	9.7	51	10-150	10.6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MSD
 Run File Name Q220412C_007
 Analyzed 04/12/2022 18:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	7.7	3.8	11	91	50-150	5.1		375-22-4
PFPeA	12	3.8	15	73	50-150	3.7		2706-90-3
HFPO-DA	0.00	3.8	3.3	87	50-150	2.5		13252-13-6
PFBS	2.7	3.4	6.5	111	50-150	3.8		375-73-5
PFHxA	17	3.8	21	105	50-150	2.2		307-24-4
4:2 FTS	0.00	3.5	3.3	92	50-150	2.3		757124-72-4
PFPeS	0.73	3.6	4.4	104	50-150	9.1		2706-91-4
PFHpA	2.4	3.8	6.8	116	50-150	2.8		375-85-9
DONA	0.00	3.6	3.3	93	50-150	6.7		919005-14-4
PFHxS	7.5	3.4	12	115	50-150	6.4		355-46-4
PFOA	9.0	3.8	14	130	50-150	2.2		335-67-1
6:2 FTS	2.1	3.6	5.6	98	50-150	15.1		27619-97-2
PFHpS	0.00	3.6	4.0	110	50-150	5.4		375-92-8
PFNA	1.3	3.8	5.2	103	50-150	4.4		375-95-1
PFOSAm	0.00	3.8	4.1	107	50-150	0.8		754-91-6
PFOS	3.8	3.5	7.9	116	50-150	0.4		1763-23-1
MeFOSA	0.00	3.8	3.5	92	50-150	2.7		31506-32-8
PFDA	0.90	3.8	5.3	116	50-150	18.6		335-76-2
EtFOSAm	0.00	3.8	3.1	82	50-150	10.7		4151-50-2
8:2 FTS	0.00	3.6	3.9	108	50-150	14.0		39108-34-4
9-CI-PF3ON	0.00	3.5	3.2	90	50-150	6.7		756426-58-1
PFNS	0.00	3.5	3.4	95	50-150	0.8		68259-12-1
PFUnDA	0.00	3.8	3.2	86	50-150	27.6		2058-94-8
NMeFOSAA	0.84	3.8	4.2	87	50-150	8.8		2355-31-9
NEtFOSAA	0.53	3.8	4.1	94	50-150	19.2		2991-50-6
PFDS	0.00	3.7	2.8	75	50-150	0.8		335-77-3
PFDOA	0.00	3.8	3.3	87	50-150	13.8		307-55-1
MeFOSE	0.00	3.8	3.9	104	50-150	14.6		24448-09-7
EtFOSE	0.00	3.8	3.8	100	50-150	2.6		1691-99-2
11-CI-PF3OUdS	0.00	3.6	2.4	68	50-150	2.6		763051-92-9
PFTTrDA	0.00	3.8	3.1	81	50-150	0.3		72629-94-8
PFDoS	0.00	3.7	1.7	47	50-150	8.9	JR	79780-39-5
PFTDA	0.00	3.8	3.7	97	50-150	9.0		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MSD
 Run File Name Q220412C_007
 Analyzed 04/12/2022 18:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.16	6.17	
13C4 PFOA	N/A	N/A	7.41	7.43	
13C2 PFDA	N/A	N/A	8.71	8.67	
13C4 PFOS	N/A	N/A	9.21	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.77	4.79	
13C5 PFPeA	N/A	N/A	5.53	5.54	
13C3 PFBS	N/A	N/A	6.45	6.45	
13C2 4:2FTS	N/A	N/A	5.89	5.89	R
13C5 PFHxA	N/A	N/A	6.16	6.15	
13C4 PFHpA	N/A	N/A	6.78	6.80	
13C3 PFHxS	N/A	N/A	7.86	7.89	
13C2 6:2FTS	N/A	N/A	7.08	7.09	R
13C8 PFOA	N/A	N/A	7.41	7.43	
13C9 PFNA	N/A	N/A	8.05	8.07	
13C8 PFOS	N/A	N/A	9.21	9.22	
13C2 8:2FTS	N/A	N/A	8.33	8.35	R
13C6 PFDA	N/A	N/A	8.71	8.73	
d3-MeFOSAA	N/A	N/A	8.59	8.61	
13C8 PFOSA	N/A	N/A	11.37	11.40	
d5-EtFOSAA	N/A	N/A	8.90	8.92	
13C7 PFUdA	N/A	N/A	9.37	9.39	
13C2 PFDoA	N/A	N/A	10.04	10.07	
13C2 PFTeDA	N/A	N/A	11.33	11.39	
13C3 HFPO-DA	N/A	N/A	6.42	6.43	
d7-N-MeFOSE	N/A	N/A	13.04	13.06	
d9-N-EtFOSE	N/A	N/A	13.53	13.54	
d3-N-MeFOSA	N/A	N/A	13.24	13.26	
d5-N-EtFOSA	N/A	N/A	13.69	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741006-MSD
 Run File Name Q220412C_007
 Analyzed 04/12/2022 18:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.78	4.79	
PFPeA	N/A	N/A	5.53	5.55	
HFPO-DA	0.64	0.47	6.43	6.45	
PFBS	0.34	0.29	6.46	6.48	
PFHxA	0.08	0.06	6.17	6.18	
4:2 FTS	1.20	0.99	5.90	5.91	
PFPeS	0.42	0.37	7.18	7.21	
PFHpA	0.46	0.49	6.79	6.81	
DONA	0.54	0.50	7.03	7.04	
PFHxS	0.32	0.32	7.87	7.90	
PFOA	0.31	0.28	7.42	7.44	
6:2 FTS	1.30	1.30	7.08	7.10	
PFHpS	0.39	0.37	8.55	8.55	
PFNA	0.29	0.24	8.06	8.08	
PFOSAm	N/A	N/A	11.38	11.41	
PFOS	0.21	0.23	9.22	9.26	
MeFOSA	0.40	0.49	13.27	13.29	
PFDA	0.19	0.18	8.72	8.74	
EtFOSAm	0.48	0.38	13.71	13.72	
8:2 FTS	1.40	1.10	8.33	8.35	
9-Cl-PF3ON	0.04	0.04	9.71	9.71	
PFNS	0.25	0.20	9.89	9.89	
PFUnDA	0.19	0.16	9.37	9.40	
NMeFOSAA	0.79	0.85	8.60	8.62	
NEtFOSAA	0.40	0.35	8.91	8.87	
PFDS	0.26	0.29	10.53	10.54	
PFDOA	0.20	0.21	10.04	10.08	
MeFOSE	N/A	N/A	13.08	13.09	
EtFOSE	0.00	0.00	13.57	13.56	
11-Cl-PF3OUdS	0.03	0.03	11.00	11.01	
PFTrDA	0.19	0.22	10.70	10.71	
PFDoS	0.23	0.25	11.75	11.75	JR
PFTDA	0.18	0.13	11.34	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MS
 Run File Name Q220412C_041
 Analyzed 04/13/2022 04:40
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	38	33	86	50-150	
13C4_PFOA	38	31	81	50-150	
13C2_PFDA	38	30	77	50-150	
13C4_PFOS	37	36	97	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	38	26	67	25-150	
13C5_PFPeA	38	29	75	25-150	
13C3_PFBFS	36	29	81	25-150	
13C2_4:2FTS	36	65	181	25-150	R
13C5_PFHxA	38	30	78	25-150	
13C4_PFHpA	38	27	71	25-150	
13C3_PFHxS	36	31	85	25-150	
13C2_6:2FTS	37	74	204	25-150	R
13C8_PFOA	38	28	72	25-150	
13C9_PFNA	38	29	74	25-150	
13C8_PFOS	37	35	95	25-150	
13C2_8:2FTS	37	91	247	25-150	R
13C6_PFDA	38	32	82	25-150	
d3-MeFOSAA	38	39	103	25-150	
13C8_PFOA	38	21	53	25-150	
d5-EtFOSAA	38	43	111	25-150	
13C7_PFUdA	38	31	80	25-150	
13C2_PFDaA	38	23	60	25-150	
13C2_PFTeDA	38	17	45	25-150	
13C3_HFPO-DA	38	21	54	25-150	
d7-N-MeFOSE	38	7.1	18	10-150	
d9-N-EtFOSE	38	8.0	21	10-150	
d3-N-MeFOSA	38	3.7	10	10-150	
d5-N-EtFOSA	38	3.4	9	10-150	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MS
 Run File Name Q220412C_041
 Analyzed 04/13/2022 04:40
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.00	7.7	8.7	113	50-150		375-22-4
PFPeA	0.00	7.7	9.1	118	50-150		2706-90-3
HFPO-DA	0.00	7.7	7.2	93	50-150	I	13252-13-6
PFBS	0.00	6.8	6.4	94	50-150		375-73-5
PFHxA	4.9	7.7	13	109	50-150		307-24-4
4:2 FTS	0.00	7.2	7.3	101	50-150		757124-72-4
PFPeS	0.00	7.2	7.4	102	50-150		2706-91-4
PFHpA	0.00	7.7	8.6	111	50-150		375-85-9
DONA	0.00	7.3	7.7	105	50-150		919005-14-4
PFHxS	1.0	7.0	10	134	50-150		355-46-4
PFOA	1.9	7.7	10.0	105	50-150		335-67-1
6:2 FTS	0.00	7.3	7.9	108	50-150		27619-97-2
PFHpS	0.00	7.3	7.9	109	50-150		375-92-8
PFNA	0.00	7.7	8.8	115	50-150		375-95-1
PFOSAm	0.97	7.7	9.6	113	50-150		754-91-6
PFOS	6.8	7.1	12	80	50-150		1763-23-1
MeFOSA	0.00	7.7	8.5	110	50-150		31506-32-8
PFDA	3.8	7.7	12	106	50-150		335-76-2
EtFOSAm	0.00	7.7	8.4	109	50-150		4151-50-2
8:2 FTS	0.00	7.4	9.0	121	50-150		39108-34-4
9-CI-PF3ON	0.00	7.2	6.0	84	50-150		756426-58-1
PFNS	0.00	7.2	6.1	86	50-150		68259-12-1
PFUnDA	0.00	7.7	9.1	118	50-150		2058-94-8
NMeFOSAA	10	7.7	19	106	50-150		2355-31-9
NEtFOSAA	5.7	7.7	13	95	50-150		2991-50-6
PFDS	1.1	7.4	6.3	71	50-150		335-77-3
PFDOA	1.7	7.7	8.6	89	50-150		307-55-1
MeFOSE	7.1	7.7	18	145	50-150		24448-09-7
EtFOSE	1.8	7.7	11	122	50-150		1691-99-2
11-CI-PF3OUdS	0.00	7.2	5.0	68	50-150		763051-92-9
PFTTrDA	0.00	7.7	7.8	101	50-150		72629-94-8
PFDoS	0.00	7.4	3.9	53	50-150		79780-39-5
PFTDA	0.00	7.7	8.7	113	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MS
 Run File Name Q220412C_041
 Analyzed 04/13/2022 04:40
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.17	6.17	
13C4 PFOA	N/A	N/A	7.41	7.43	
13C2 PFDA	N/A	N/A	8.69	8.67	
13C4 PFOS	N/A	N/A	9.19	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.78	4.79	
13C5 PFPeA	N/A	N/A	5.54	5.54	
13C3 PFBS	N/A	N/A	6.46	6.45	
13C2 4:2FTS	N/A	N/A	5.90	5.89	R
13C5 PFHxA	N/A	N/A	6.17	6.15	
13C4 PFHpA	N/A	N/A	6.79	6.80	
13C3 PFHxS	N/A	N/A	7.87	7.89	
13C2 6:2FTS	N/A	N/A	7.08	7.09	R
13C8 PFOA	N/A	N/A	7.41	7.43	
13C9 PFNA	N/A	N/A	8.05	8.07	
13C8 PFOS	N/A	N/A	9.19	9.22	
13C2 8:2FTS	N/A	N/A	8.32	8.35	R
13C6 PFDA	N/A	N/A	8.69	8.73	
d3-MeFOSAA	N/A	N/A	8.57	8.61	
13C8 PFOSA	N/A	N/A	11.38	11.40	
d5-EtFOSAA	N/A	N/A	8.88	8.92	
13C7 PFUdA	N/A	N/A	9.35	9.39	
13C2 PFDoA	N/A	N/A	10.01	10.07	
13C2 PFTeDA	N/A	N/A	11.33	11.39	
13C3 HFPO-DA	N/A	N/A	6.42	6.43	
d7-N-MeFOSE	N/A	N/A	13.04	13.06	
d9-N-EtFOSE	N/A	N/A	13.53	13.54	
d3-N-MeFOSA	N/A	N/A	13.25	13.26	
d5-N-EtFOSA	N/A	N/A	13.69	13.69	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MS
 Run File Name Q220412C_041
 Analyzed 04/13/2022 04:40
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.79	4.79	
PFPeA	N/A	N/A	5.55	5.55	
HFPO-DA	0.79	0.41	6.44	6.45	I
PFBS	0.39	0.36	6.47	6.48	
PFHxA	0.09	0.09	6.17	6.18	
4:2 FTS	0.99	1.10	5.91	5.91	
PFPeS	0.44	0.43	7.19	7.21	
PFHpA	0.50	0.42	6.79	6.81	
DONA	0.48	0.48	7.03	7.04	
PFHxS	0.27	0.29	7.87	7.90	
PFOA	0.32	0.35	7.42	7.44	
6:2 FTS	1.20	1.20	7.08	7.10	
PFHpS	0.39	0.41	8.55	8.55	
PFNA	0.27	0.29	8.06	8.08	
PFOSAm	N/A	N/A	11.39	11.41	
PFOS	0.24	0.22	9.20	9.26	
MeFOSA	0.36	0.52	13.27	13.29	
PFDA	0.18	0.16	8.70	8.74	
EtFOSAm	0.54	0.47	13.71	13.72	
8:2 FTS	1.70	1.50	8.32	8.35	
9-Cl-PF3ON	0.03	0.03	9.69	9.71	
PFNS	0.19	0.23	9.83	9.89	
PFUnDA	0.15	0.15	9.35	9.40	
NMeFOSAA	0.80	0.62	8.59	8.62	
NEtFOSAA	0.53	0.43	8.89	8.87	
PFDS	0.30	0.25	10.52	10.54	
PFDOA	0.17	0.19	10.02	10.08	
MeFOSE	N/A	N/A	13.08	13.09	
EtFOSE	0.00	0.00	13.57	13.56	
11-Cl-PF3OUdS	0.03	0.02	11.00	11.01	
PFTrDA	0.20	0.20	10.68	10.71	
PFDoS	0.23	0.23	11.75	11.75	
PFTDA	0.11	0.15	11.33	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MSD
 Run File Name Q220412C_043
 Analyzed 04/13/2022 05:17
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2_PFHxA	39	34	89	50-150	3.8	
13C4_PFOA	39	34	89	50-150	8.8	
13C2_PFDA	39	37	97	50-150	22.4	
13C4_PFOS	37	36	97	50-150	0.0	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4_PFBFA	39	25	64	25-150	5.2	
13C5_PFPeA	39	28	72	25-150	4.4	
13C3_PFBFS	36	26	73	25-150	10.5	
13C2_4:2FTS	36	59	162	25-150	10.8	R
13C5_PFHxA	39	27	69	25-150	12.5	
13C4_PFHpA	39	26	66	25-150	7.3	
13C3_PFHxS	37	28	78	25-150	8.4	
13C2_6:2FTS	37	61	166	25-150	20.4	R
13C8_PFOA	39	26	66	25-150	8.7	
13C9_PFNA	39	28	72	25-150	3.3	
13C8_PFOS	37	30	82	25-150	15.1	
13C2_8:2FTS	37	74	200	25-150	21.1	R
13C6_PFDA	39	32	82	25-150	1.0	
d3-MeFOSAA	39	38	98	25-150	4.2	
13C8_PFOA	39	21	54	25-150	1.0	
d5-EtFOSAA	39	44	113	25-150	2.1	
13C7_PFUdA	39	29	75	25-150	6.4	
13C2_PFDaA	39	20	52	25-150	14.8	
13C2_PFTeDA	39	16	41	25-150	9.8	
13C3_HFPO-DA	39	21	54	25-150	0.9	
d7-N-MeFOSE	39	8.4	22	10-150	16.4	
d9-N-EtFOSE	39	8.9	23	10-150	10.5	
d3-N-MeFOSA	39	2.7	7	10-150	32.3	R
d5-N-EtFOSA	39	3.1	8	10-150	9.7	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MSD
 Run File Name Q220412C_043
 Analyzed 04/13/2022 05:17
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	0.00	7.7	8.3	107	50-150	4.8		375-22-4
PFPeA	0.00	7.7	9.1	118	50-150	0.3		2706-90-3
HFPO-DA	0.00	7.7	8.1	105	50-150	12.0		13252-13-6
PFBS	0.00	6.8	6.2	90	50-150	3.7		375-73-5
PFHxA	4.9	7.7	13	110	50-150	0.3		307-24-4
4:2 FTS	0.00	7.2	6.7	93	50-150	7.8		757124-72-4
PFPeS	0.00	7.3	7.0	97	50-150	5.7		2706-91-4
PFHpA	0.00	7.7	9.1	118	50-150	6.1		375-85-9
DONA	0.00	7.3	7.6	104	50-150	1.2		919005-14-4
PFHxS	1.0	7.0	8.3	103	50-150	23.2		355-46-4
PFOA	1.9	7.7	9.1	93	50-150	10.0		335-67-1
6:2 FTS	0.00	7.3	7.8	106	50-150	1.3		27619-97-2
PFHpS	0.00	7.3	7.5	103	50-150	5.5		375-92-8
PFNA	0.00	7.7	8.8	114	50-150	0.1		375-95-1
PFOSAm	0.97	7.7	8.7	100	50-150	10.7		754-91-6
PFOS	6.8	7.1	13	89	50-150	4.7		1763-23-1
MeFOSA	0.00	7.7	8.5	110	50-150	0.8		31506-32-8
PFDA	3.8	7.7	10.0	79	50-150	19.3		335-76-2
EtFOSAm	0.00	7.7	8.1	104	50-150	4.6		4151-50-2
8:2 FTS	0.00	7.4	7.9	107	50-150	12.4		39108-34-4
9-CI-PF3ON	0.00	7.2	5.9	81	50-150	3.4		756426-58-1
PFNS	0.00	7.2	6.4	89	50-150	3.7		68259-12-1
PFUnDA	0.00	7.7	9.6	124	50-150	5.1		2058-94-8
NMeFOSAA	10	7.7	18	104	50-150	1.2		2355-31-9
NEtFOSAA	5.7	7.7	10	58	50-150	25.0		2991-50-6
PFDS	1.1	7.5	6.2	69	50-150	2.1		335-77-3
PFDOA	1.7	7.7	9.5	101	50-150	9.4		307-55-1
MeFOSE	7.1	7.7	16	115	50-150	13.4		24448-09-7
EtFOSE	1.8	7.7	11	118	50-150	2.9		1691-99-2
11-CI-PF3OUdS	0.00	7.3	5.1	70	50-150	1.7		763051-92-9
PFTTrDA	0.00	7.7	7.7	100	50-150	1.0		72629-94-8
PFDoS	0.00	7.5	3.6	49	50-150	7.7	JR	79780-39-5
PFTDA	0.00	7.7	7.2	93	50-150	19.0		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MSD
 Run File Name Q220412C_043
 Analyzed 04/13/2022 05:17
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.18	6.17	
13C4 PFOA	N/A	N/A	7.43	7.43	
13C2 PFDA	N/A	N/A	8.72	8.67	
13C4 PFOS	N/A	N/A	9.21	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.80	4.79	
13C5 PFPeA	N/A	N/A	5.55	5.54	
13C3 PFBS	N/A	N/A	6.48	6.45	
13C2 4:2FTS	N/A	N/A	5.92	5.89	R
13C5 PFHxA	N/A	N/A	6.18	6.15	
13C4 PFHpA	N/A	N/A	6.81	6.80	
13C3 PFHxS	N/A	N/A	7.88	7.89	
13C2 6:2FTS	N/A	N/A	7.10	7.09	R
13C8 PFOA	N/A	N/A	7.43	7.43	
13C9 PFNA	N/A	N/A	8.07	8.07	
13C8 PFOS	N/A	N/A	9.21	9.22	
13C2 8:2FTS	N/A	N/A	8.34	8.35	R
13C6 PFDA	N/A	N/A	8.72	8.73	
d3-MeFOSAA	N/A	N/A	8.60	8.61	
13C8 PFOSA	N/A	N/A	11.39	11.40	
d5-EtFOSAA	N/A	N/A	8.90	8.92	
13C7 PFUdA	N/A	N/A	9.36	9.39	
13C2 PFDoA	N/A	N/A	10.03	10.07	
13C2 PFTeDA	N/A	N/A	11.34	11.39	
13C3 HFPO-DA	N/A	N/A	6.44	6.43	
d7-N-MeFOSE	N/A	N/A	13.05	13.06	
d9-N-EtFOSE	N/A	N/A	13.54	13.54	
d3-N-MeFOSA	N/A	N/A	13.26	13.26	R
d5-N-EtFOSA	N/A	N/A	13.70	13.69	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741007-MSD
 Run File Name Q220412C_043
 Analyzed 04/13/2022 05:17
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.80	4.79	
PFPeA	N/A	N/A	5.56	5.55	
HFPO-DA	0.51	0.41	6.46	6.45	
PFBS	0.37	0.36	6.49	6.48	
PFHxA	0.09	0.09	6.19	6.18	
4:2 FTS	0.99	1.10	5.92	5.91	
PFPeS	0.38	0.43	7.20	7.21	
PFHpA	0.41	0.42	6.81	6.81	
DONA	0.44	0.48	7.04	7.04	
PFHxS	0.30	0.29	7.89	7.90	
PFOA	0.33	0.35	7.44	7.44	
6:2 FTS	1.20	1.20	7.10	7.10	
PFHpS	0.38	0.41	8.57	8.55	
PFNA	0.29	0.29	8.07	8.08	
PFOSAm	N/A	N/A	11.40	11.41	
PFOS	0.20	0.22	9.22	9.26	
MeFOSA	0.53	0.52	13.28	13.29	
PFDA	0.20	0.16	8.72	8.74	
EtFOSAm	0.44	0.47	13.72	13.72	
8:2 FTS	1.90	1.50	8.35	8.35	
9-Cl-PF3ON	0.04	0.03	9.71	9.71	
PFNS	0.22	0.23	9.85	9.89	
PFUnDA	0.17	0.15	9.37	9.40	
NMeFOSAA	0.76	0.62	8.60	8.62	
NEtFOSAA	0.60	0.43	8.92	8.87	
PFDS	0.27	0.25	10.54	10.54	
PFDOA	0.18	0.19	10.04	10.08	
MeFOSE	N/A	N/A	13.09	13.09	
EtFOSE	0.00	0.00	13.58	13.56	
11-Cl-PF3OUdS	0.02	0.02	11.01	11.01	
PFTrDA	0.18	0.20	10.70	10.71	
PFDoS	0.25	0.23	11.76	11.75	JR
PFTDA	0.16	0.15	11.35	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MS
 Run File Name Q220412C_047
 Analyzed 04/13/2022 06:32
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	4.5	4.0	87	50-150	
13C4_PFOA	4.5	3.4	75	50-150	
13C2_PFDA	4.5	3.0	67	50-150	
13C4_PFOS	4.3	3.6	83	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	4.5	2.2	49	25-150	
13C5_PFPeA	4.5	2.2	48	25-150	
13C3_PFBFS	4.2	2.2	52	25-150	
13C2_4:2FTS	4.2	7.8	185	25-150	R
13C5_PFHxA	4.5	2.2	49	25-150	
13C4_PFHpA	4.5	2.0	45	25-150	
13C3_PFHxS	4.3	2.3	53	25-150	
13C2_6:2FTS	4.3	8.5	197	25-150	R
13C8_PFOA	4.5	1.9	42	25-150	
13C9_PFNA	4.5	1.9	42	25-150	
13C8_PFOS	4.3	1.9	43	25-150	
13C2_8:2FTS	4.3	8.6	198	25-150	R
13C6_PFDA	4.5	1.8	39	25-150	
d3-MeFOSAA	4.5	1.5	33	25-150	
13C8_PFOSA	4.5	1.7	38	25-150	
d5-EtFOSAA	4.5	2.1	46	25-150	
13C7_PFUdA	4.5	1.5	33	25-150	
13C2_PFDaA	4.5	0.90	20	25-150	R
13C2_PFTeDA	4.5	0.65	14	25-150	R
13C3_HFPO-DA	4.5	1.3	30	25-150	
d7-N-MeFOSE	4.5	1.1	23	10-150	
d9-N-EtFOSE	4.5	0.85	19	10-150	
d3-N-MeFOSA	4.5	0.69	15	10-150	
d5-N-EtFOSA	4.5	0.43	9	10-150	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MS
 Run File Name Q220412C_047
 Analyzed 04/13/2022 06:32
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.00	0.91	1.2	136	50-150		375-22-4
PFPeA	0.18	0.91	1.1	107	50-150		2706-90-3
HFPO-DA	0.00	0.91	0.85	94	50-150	I	13252-13-6
PFBS	0.00	0.80	0.96	120	50-150		375-73-5
PFHxA	1.7	0.91	2.5	94	50-150		307-24-4
4:2 FTS	0.00	0.85	0.79	93	50-150		757124-72-4
PFPeS	0.00	0.85	0.91	107	50-150		2706-91-4
PFHpA	0.00	0.91	1.2	133	50-150		375-85-9
DONA	0.00	0.86	0.90	105	50-150		919005-14-4
PFHxS	1.0	0.82	2.0	124	50-150		355-46-4
PFOA	1.7	0.91	2.6	102	50-150		335-67-1
6:2 FTS	0.31	0.86	1.2	104	50-150		27619-97-2
PFHpS	0.76	0.86	1.6	102	50-150		375-92-8
PFNA	0.74	0.91	1.8	119	50-150		375-95-1
PFOSAm	1.2	0.91	2.2	117	50-150		754-91-6
PFOS	9.9	0.84	12	207	50-150	R	1763-23-1
MeFOSA	0.25	0.91	1.1	92	50-150		31506-32-8
PFDA	5.7	0.91	8.1	271	50-150	R	335-76-2
EtFOSAm	0.51	0.91	1.2	78	50-150		4151-50-2
8:2 FTS	0.89	0.87	1.8	100	50-150		39108-34-4
9-CI-PF3ON	0.00	0.84	0.84	100	50-150		756426-58-1
PFNS	0.00	0.84	1.1	126	50-150		68259-12-1
PFUnDA	1.4	0.91	2.3	96	50-150		2058-94-8
NMeFOSAA	21	0.91	24	234	50-150	R	2355-31-9
NEtFOSAA	7.3	0.91	8.9	186	50-150	R	2991-50-6
PFDS	1.6	0.87	2.3	85	50-150		335-77-3
PFDOA	3.1	0.91	4.3	134	50-150		307-55-1
MeFOSE	17	0.91	18	135	50-150		24448-09-7
EtFOSE	3.4	0.91	4.4	110	50-150		1691-99-2
11-CI-PF3OUdS	0.00	0.85	0.90	105	50-150	I	763051-92-9
PFTTrDA	0.56	0.91	1.6	117	50-150		72629-94-8
PFDoS	0.00	0.88	0.29	33	50-150	JR	79780-39-5
PFTDA	0.73	0.91	1.6	97	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MS
 Run File Name Q220412C_047
 Analyzed 04/13/2022 06:32
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.16	6.17	
13C4 PFOA	N/A	N/A	7.40	7.43	
13C2 PFDA	N/A	N/A	8.65	8.67	
13C4 PFOS	N/A	N/A	9.05	9.05	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.78	4.79	
13C5 PFPeA	N/A	N/A	5.54	5.54	
13C3 PFBS	N/A	N/A	6.46	6.45	
13C2 4:2FTS	N/A	N/A	5.90	5.89	R
13C5 PFHxA	N/A	N/A	6.16	6.15	
13C4 PFHpA	N/A	N/A	6.78	6.80	
13C3 PFHxS	N/A	N/A	7.86	7.89	
13C2 6:2FTS	N/A	N/A	7.07	7.09	R
13C8 PFOA	N/A	N/A	7.40	7.43	
13C9 PFNA	N/A	N/A	8.03	8.07	
13C8 PFOS	N/A	N/A	9.06	9.06	
13C2 8:2FTS	N/A	N/A	8.30	8.35	R
13C6 PFDA	N/A	N/A	8.65	8.73	
d3-MeFOSAA	N/A	N/A	8.53	8.53	
13C8 PFOSA	N/A	N/A	11.38	11.40	
d5-EtFOSAA	N/A	N/A	8.83	8.92	
13C7 PFUdA	N/A	N/A	9.23	9.39	
13C2 PFDoA	N/A	N/A	9.90	10.07	R
13C2 PFTeDA	N/A	N/A	11.32	11.39	R
13C3 HFPO-DA	N/A	N/A	6.42	6.43	
d7-N-MeFOSE	N/A	N/A	13.04	13.06	
d9-N-EtFOSE	N/A	N/A	13.53	13.54	
d3-N-MeFOSA	N/A	N/A	13.25	13.26	
d5-N-EtFOSA	N/A	N/A	13.69	13.69	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MS
 Run File Name Q220412C_047
 Analyzed 04/13/2022 06:32
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.79	4.79	
PFPeA	N/A	N/A	5.54	5.55	
HFPO-DA	1.10	0.41	6.43	6.45	I
PFBS	0.31	0.36	6.47	6.48	
PFHxA	0.12	0.09	6.17	6.18	
4:2 FTS	1.10	1.10	5.90	5.91	
PFPeS	0.38	0.43	7.18	7.21	
PFHpA	0.39	0.42	6.79	6.81	
DONA	0.48	0.48	7.02	7.04	
PFHxS	0.22	0.29	7.86	7.90	
PFOA	0.31	0.35	7.41	7.44	
6:2 FTS	1.30	1.20	7.08	7.10	
PFHpS	0.28	0.41	8.52	8.55	
PFNA	0.25	0.29	8.04	8.08	
PFOSAm	N/A	N/A	11.39	11.41	
PFOS	0.26	0.22	9.07	9.26	R
MeFOSA	0.55	0.52	13.27	13.29	
PFDA	0.17	0.16	8.65	8.74	R
EtFOSAm	0.54	0.47	13.71	13.72	
8:2 FTS	1.40	1.50	8.30	8.35	
9-Cl-PF3ON	0.04	0.03	9.48	9.71	
PFNS	0.17	0.23	9.58	9.58	
PFUnDA	0.16	0.15	9.24	9.40	
NMeFOSAA	0.74	0.62	8.54	8.62	R
NEtFOSAA	0.46	0.43	8.84	8.87	R
PFDS	0.28	0.25	10.42	10.54	
PFDOA	0.16	0.19	9.90	9.90	
MeFOSE	N/A	N/A	13.08	13.09	
EtFOSE	0.00	0.00	13.57	13.56	
11-Cl-PF3OUdS	0.03	0.02	10.99	11.01	I
PFTrDA	0.18	0.20	10.66	10.71	
PFDoS	0.23	0.23	11.75	11.75	JR
PFTDA	0.16	0.15	11.33	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MSD
 Run File Name Q220412C_049
 Analyzed 04/13/2022 07:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2_PFHxA	4.5	3.6	79	50-150	9.9	
13C4_PFOA	4.5	2.9	65	50-150	14.2	
13C2_PFDA	4.5	2.5	57	50-150	16.4	
13C4_PFOS	4.3	3.2	75	50-150	10.5	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4_PFBFA	4.5	1.6	36	25-150	31.2	
13C5_PFPeA	4.5	1.8	39	25-150	20.1	
13C3_PFBFS	4.2	2.1	50	25-150	4.3	
13C2_4:2FTS	4.2	6.6	157	25-150	16.2	R
13C5_PFHxA	4.5	1.8	39	25-150	21.7	
13C4_PFHpA	4.5	1.6	36	25-150	22.4	
13C3_PFHxS	4.3	2.0	46	25-150	15.5	
13C2_6:2FTS	4.3	6.7	157	25-150	22.8	R
13C8_PFOA	4.5	1.5	34	25-150	19.9	
13C9_PFNA	4.5	1.6	35	25-150	16.8	
13C8_PFOS	4.3	1.7	38	25-150	10.7	
13C2_8:2FTS	4.3	7.4	171	25-150	14.2	R
13C6_PFDA	4.5	1.6	35	25-150	13.1	
d3-MeFOSAA	4.5	1.4	31	25-150	6.6	
13C8_PFOSA	4.5	1.5	33	25-150	12.2	
d5-EtFOSAA	4.5	1.9	42	25-150	8.8	
13C7_PFUdA	4.5	1.1	25	25-150	24.4	
13C2_PFDaA	4.5	0.81	18	25-150	9.6	R
13C2_PFTeDA	4.5	0.53	12	25-150	20.4	R
13C3_HFPO-DA	4.5	1.4	31	25-150	4.9	
d7-N-MeFOSE	4.5	0.89	20	10-150	16.9	
d9-N-EtFOSE	4.5	0.72	16	10-150	15.7	
d3-N-MeFOSA	4.5	0.79	18	10-150	14.1	
d5-N-EtFOSA	4.5	0.50	11	10-150	14.7	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MSD
 Run File Name Q220412C_049
 Analyzed 04/13/2022 07:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	0.00	0.90	1.1	118	50-150	14.0		375-22-4
PFPeA	0.18	0.90	1.1	100	50-150	5.2		2706-90-3
HFPO-DA	0.00	0.90	0.68	76	50-150	20.9	I	13252-13-6
PFBS	0.00	0.80	0.63	79	50-150	41.5		375-73-5
PFHxA	1.7	0.90	2.9	136	50-150	14.5		307-24-4
4:2 FTS	0.00	0.84	0.73	86	50-150	7.6		757124-72-4
PFPeS	0.00	0.85	0.75	89	50-150	18.6		2706-91-4
PFHpA	0.00	0.90	1.0	113	50-150	15.6		375-85-9
DONA	0.00	0.85	0.80	94	50-150	11.1		919005-14-4
PFHxS	1.0	0.82	1.6	76	50-150	21.5		355-46-4
PFOA	1.7	0.90	2.6	101	50-150	0.1		335-67-1
6:2 FTS	0.31	0.86	0.96	76	50-150	22.1		27619-97-2
PFHpS	0.76	0.86	1.5	81	50-150	11.6		375-92-8
PFNA	0.74	0.90	1.7	102	50-150	8.8		375-95-1
PFOSAm	1.2	0.90	2.0	95	50-150	9.4		754-91-6
PFOS	9.9	0.83	11	147	50-150	3.9		1763-23-1
MeFOSA	0.25	0.90	1.1	93	50-150	0.4		31506-32-8
PFDA	5.7	0.90	8.3	291	50-150	2.6	R	335-76-2
EtFOSAm	0.51	0.90	1.2	82	50-150	2.7		4151-50-2
8:2 FTS	0.89	0.87	1.6	86	50-150	7.1		39108-34-4
9-CI-PF3ON	0.00	0.84	0.80	95	50-150	4.8		756426-58-1
PFNS	0.00	0.84	0.69	83	50-150	41.2		68259-12-1
PFUnDA	1.4	0.90	2.5	121	50-150	9.8		2058-94-8
NMeFOSAA	21	0.90	21	0	50-150	10.8	R	2355-31-9
NEtFOSAA	7.3	0.90	9.1	207	50-150	2.6	R	2991-50-6
PFDS	1.6	0.87	2.2	69	50-150	5.5		335-77-3
PFDOA	3.1	0.90	4.5	159	50-150	5.4	R	307-55-1
MeFOSE	17	0.90	18	111	50-150	0.7		24448-09-7
EtFOSE	3.4	0.90	4.4	114	50-150	1.3		1691-99-2
11-CI-PF3OUdS	0.00	0.85	0.83	97	50-150	7.9		763051-92-9
PFTTrDA	0.56	0.90	1.5	101	50-150	9.1		72629-94-8
PFDoS	0.00	0.87	0.23	26	50-150	23.4	JR	79780-39-5
PFTDA	0.73	0.90	1.6	92	50-150	2.8		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MSD
 Run File Name Q220412C_049
 Analyzed 04/13/2022 07:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.17	6.17	
13C4 PFOA	N/A	N/A	7.41	7.43	
13C2 PFDA	N/A	N/A	8.65	8.67	
13C4 PFOS	N/A	N/A	9.07	9.07	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.79	4.79	
13C5 PFPeA	N/A	N/A	5.55	5.54	
13C3 PFBS	N/A	N/A	6.46	6.45	
13C2 4:2FTS	N/A	N/A	5.91	5.89	R
13C5 PFHxA	N/A	N/A	6.17	6.15	
13C4 PFHpA	N/A	N/A	6.79	6.80	
13C3 PFHxS	N/A	N/A	7.86	7.89	
13C2 6:2FTS	N/A	N/A	7.08	7.09	R
13C8 PFOA	N/A	N/A	7.41	7.43	
13C9 PFNA	N/A	N/A	8.04	8.07	
13C8 PFOS	N/A	N/A	9.07	9.07	
13C2 8:2FTS	N/A	N/A	8.31	8.35	R
13C6 PFDA	N/A	N/A	8.66	8.73	
d3-MeFOSAA	N/A	N/A	8.54	8.54	
13C8 PFOSA	N/A	N/A	11.37	11.40	
d5-EtFOSAA	N/A	N/A	8.84	8.92	
13C7 PFUdA	N/A	N/A	9.25	9.39	
13C2 PFDoA	N/A	N/A	9.91	10.07	R
13C2 PFTeDA	N/A	N/A	11.32	11.39	R
13C3 HFPO-DA	N/A	N/A	6.43	6.43	
d7-N-MeFOSE	N/A	N/A	13.04	13.06	
d9-N-EtFOSE	N/A	N/A	13.53	13.54	
d3-N-MeFOSA	N/A	N/A	13.25	13.26	
d5-N-EtFOSA	N/A	N/A	13.70	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741009-MSD
 Run File Name Q220412C_049
 Analyzed 04/13/2022 07:09
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.79	4.79	
PFPeA	N/A	N/A	5.55	5.55	
HFPO-DA	0.94	0.41	6.44	6.45	I
PFBS	0.47	0.36	6.48	6.48	
PFHxA	0.10	0.09	6.18	6.18	
4:2 FTS	1.10	1.10	5.92	5.91	
PFPeS	0.41	0.43	7.19	7.21	
PFHpA	0.38	0.42	6.80	6.81	
DONA	0.50	0.48	7.03	7.04	
PFHxS	0.22	0.29	7.87	7.90	
PFOA	0.34	0.35	7.42	7.44	
6:2 FTS	1.70	1.20	7.08	7.10	
PFHpS	0.25	0.41	8.53	8.55	
PFNA	0.29	0.29	8.05	8.08	
PFOSAm	N/A	N/A	11.38	11.41	
PFOS	0.25	0.22	9.08	9.26	
MeFOSA	0.37	0.52	13.27	13.29	
PFDA	0.17	0.16	8.67	8.74	R
EtFOSAm	0.50	0.47	13.72	13.72	
8:2 FTS	1.50	1.50	8.31	8.35	
9-Cl-PF3ON	0.03	0.03	9.51	9.71	
PFNS	0.25	0.23	9.60	9.89	
PFUnDA	0.16	0.15	9.26	9.40	
NMeFOSAA	0.76	0.62	8.55	8.62	R
NEtFOSAA	0.40	0.43	8.85	8.87	R
PFDS	0.30	0.25	10.43	10.54	
PFDOA	0.14	0.19	9.92	10.08	R
MeFOSE	N/A	N/A	13.08	13.09	
EtFOSE	0.00	0.00	13.57	13.56	
11-Cl-PF3OUdS	0.01	0.02	10.99	11.01	
PFTrDA	0.19	0.20	10.66	10.71	
PFDoS	0.29	0.23	11.75	11.75	JR
PFTDA	0.13	0.15	11.32	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MS
 Run File Name Q220412C_059
 Analyzed 04/13/2022 10:15
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	18	15	86	50-150	
13C4_PFOA	18	16	89	50-150	
13C2_PFDA	18	14	81	50-150	
13C4_PFOS	17	18	106	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	18	10	57	25-150	
13C5_PFPeA	18	11	59	25-150	
13C3_PFBFS	17	11	66	25-150	
13C2_4:2FTS	17	38	226	25-150	R
13C5_PFHxA	18	11	60	25-150	
13C4_PFHpA	18	12	68	25-150	
13C3_PFHxS	17	12	72	25-150	
13C2_6:2FTS	17	30	179	25-150	R
13C8_PFOA	18	11	64	25-150	
13C9_PFNA	18	12	69	25-150	
13C8_PFOS	17	13	77	25-150	
13C2_8:2FTS	17	41	237	25-150	R
13C6_PFDA	18	11	64	25-150	
d3-MeFOSAA	18	13	74	25-150	
13C8_PFOSA	18	12	66	25-150	
d5-EtFOSAA	18	19	105	25-150	
13C7_PFUdA	18	11	60	25-150	
13C2_PFDaA	18	7.6	43	25-150	
13C2_PFTeDA	18	7.8	44	25-150	
13C3_HFPO-DA	18	7.9	45	25-150	
d7-N-MeFOSE	18	5.6	32	10-150	
d9-N-EtFOSE	18	5.9	33	10-150	
d3-N-MeFOSA	18	3.0	17	10-150	
d5-N-EtFOSA	18	2.8	16	10-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MS
 Run File Name Q220412C_059
 Analyzed 04/13/2022 10:15
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.00	3.6	3.6	101	50-150		375-22-4
PFPeA	0.00	3.6	4.2	117	50-150		2706-90-3
HFPO-DA	0.00	3.6	3.2	91	50-150	I	13252-13-6
PFBS	2.2	3.2	3.9	53	50-150		375-73-5
PFHxA	2.6	3.6	6.3	105	50-150		307-24-4
4:2 FTS	0.00	3.3	3.2	96	50-150		757124-72-4
PFPeS	0.00	3.4	3.3	100	50-150		2706-91-4
PFHpA	0.00	3.6	3.7	103	50-150		375-85-9
DONA	0.00	3.4	3.2	95	50-150		919005-14-4
PFHxS	1.3	3.2	5.1	120	50-150		355-46-4
PFOA	1.4	3.6	4.9	99	50-150		335-67-1
6:2 FTS	0.00	3.4	3.5	102	50-150		27619-97-2
PFHpS	0.00	3.4	3.8	113	50-150		375-92-8
PFNA	0.00	3.6	4.0	111	50-150		375-95-1
PFOSAm	0.98	3.6	4.6	101	50-150		754-91-6
PFOS	6.5	3.3	10	117	50-150		1763-23-1
MeFOSA	0.00	3.6	3.3	93	50-150		31506-32-8
PFDA	2.9	3.6	6.5	102	50-150		335-76-2
EtFOSAm	0.00	3.6	4.1	114	50-150		4151-50-2
8:2 FTS	0.77	3.4	4.2	101	50-150		39108-34-4
9-CI-PF3ON	0.00	3.3	2.7	80	50-150		756426-58-1
PFNS	0.00	3.3	2.8	84	50-150		68259-12-1
PFUnDA	1.1	3.6	4.7	101	50-150		2058-94-8
NMeFOSAA	9.9	3.6	14	122	50-150		2355-31-9
NEtFOSAA	3.5	3.6	7.4	108	50-150		2991-50-6
PFDS	0.56	3.4	2.8	65	50-150		335-77-3
PFDOA	1.6	3.6	5.9	122	50-150		307-55-1
MeFOSE	7.9	3.6	13	136	50-150		24448-09-7
EtFOSE	2.2	3.6	6.2	111	50-150		1691-99-2
11-CI-PF3OUdS	0.00	3.4	2.2	65	50-150		763051-92-9
PFTTrDA	0.00	3.6	4.1	116	50-150		72629-94-8
PFDoS	0.00	3.5	1.6	45	50-150	JR	79780-39-5
PFTDA	0.00	3.6	3.5	97	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MS
 Run File Name Q220412C_059
 Analyzed 04/13/2022 10:15
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.17	6.17	
13C4 PFOA	N/A	N/A	7.40	7.43	
13C2 PFDA	N/A	N/A	8.67	8.67	
13C4 PFOS	N/A	N/A	9.18	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.81	4.79	
13C5 PFPeA	N/A	N/A	5.56	5.54	
13C3 PFBS	N/A	N/A	6.50	6.45	
13C2 4:2FTS	N/A	N/A	5.91	5.89	R
13C5 PFHxA	N/A	N/A	6.17	6.15	
13C4 PFHpA	N/A	N/A	6.79	6.80	
13C3 PFHxS	N/A	N/A	7.88	7.89	
13C2 6:2FTS	N/A	N/A	7.07	7.09	R
13C8 PFOA	N/A	N/A	7.40	7.43	
13C9 PFNA	N/A	N/A	8.03	8.07	
13C8 PFOS	N/A	N/A	9.19	9.22	
13C2 8:2FTS	N/A	N/A	8.29	8.35	R
13C6 PFDA	N/A	N/A	8.67	8.73	
d3-MeFOSAA	N/A	N/A	8.53	8.61	
13C8 PFOSA	N/A	N/A	11.46	11.40	
d5-EtFOSAA	N/A	N/A	8.84	8.92	
13C7 PFUdA	N/A	N/A	9.31	9.39	
13C2 PFDoA	N/A	N/A	9.98	9.98	
13C2 PFTeDA	N/A	N/A	11.34	11.39	
13C3 HFPO-DA	N/A	N/A	6.43	6.43	
d7-N-MeFOSE	N/A	N/A	13.11	13.06	
d9-N-EtFOSE	N/A	N/A	13.61	13.54	
d3-N-MeFOSA	N/A	N/A	13.32	13.26	
d5-N-EtFOSA	N/A	N/A	13.77	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MS
 Run File Name Q220412C_059
 Analyzed 04/13/2022 10:15
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.82	4.79	
PFPeA	N/A	N/A	5.57	5.55	
HFPO-DA	0.99	0.48	6.44	6.45	I
PFBS	0.35	0.33	6.50	6.48	
PFHxA	0.09	0.08	6.19	6.18	
4:2 FTS	0.97	1.00	5.92	5.91	
PFPeS	0.41	0.41	7.21	7.21	
PFHpA	0.41	0.40	6.79	6.81	
DONA	0.51	0.48	7.02	7.04	
PFHxS	0.27	0.31	7.89	7.90	
PFOA	0.34	0.33	7.41	7.44	
6:2 FTS	1.30	1.40	7.07	7.10	
PFHpS	0.33	0.38	8.56	8.55	
PFNA	0.29	0.27	8.03	8.08	
PFOSAm	N/A	N/A	11.47	11.41	
PFOS	0.22	0.21	9.20	9.26	
MeFOSA	0.48	0.49	13.35	13.29	
PFDA	0.17	0.16	8.68	8.74	
EtFOSAm	0.36	0.41	13.79	13.72	
8:2 FTS	1.70	1.50	8.30	8.35	
9-Cl-PF3ON	0.04	0.04	9.67	9.71	
PFNS	0.24	0.26	9.81	9.89	
PFUnDA	0.15	0.17	9.32	9.40	
NMeFOSAA	0.70	0.81	8.55	8.62	
NEtFOSAA	0.44	0.41	8.86	8.87	
PFDS	0.28	0.25	10.53	10.54	
PFDOA	0.16	0.20	9.99	10.08	
MeFOSE	N/A	N/A	13.15	13.09	
EtFOSE	0.00	0.00	13.65	13.56	
11-Cl-PF3OUdS	0.04	0.03	11.03	11.01	
PFTrDA	0.22	0.19	10.67	10.71	
PFDoS	0.25	0.23	11.79	11.75	JR
PFTDA	0.19	0.16	11.34	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MSD
 Run File Name Q220412C_061
 Analyzed 04/13/2022 10:52
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2_PFHxA	18	14	79	50-150	9.4	
13C4_PFOA	18	13	72	50-150	21.6	
13C2_PFDA	18	13	71	50-150	13.4	
13C4_PFOS	17	17	99	50-150	6.5	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4_PFBFA	18	9.9	55	25-150	2.6	
13C5_PFPeA	18	10	56	25-150	4.6	
13C3_PFBFS	17	12	75	25-150	12.2	
13C2_4:2FTS	17	40	242	25-150	6.9	R
13C5_PFHxA	18	11	60	25-150	0.5	
13C4_PFHpA	18	9.8	55	25-150	21.0	
13C3_PFHxS	17	12	71	25-150	1.9	
13C2_6:2FTS	17	32	188	25-150	4.7	R
13C8_PFOA	18	11	61	25-150	6.0	
13C9_PFNA	18	11	64	25-150	8.5	
13C8_PFOS	17	12	73	25-150	4.6	
13C2_8:2FTS	17	40	235	25-150	0.9	R
13C6_PFDA	18	11	61	25-150	4.8	
d3-MeFOSAA	18	13	75	25-150	1.6	
13C8_PFOA	18	13	72	25-150	8.9	
d5-EtFOSAA	18	18	102	25-150	2.9	
13C7_PFUdA	18	10	56	25-150	5.9	
13C2_PFDaA	18	7.7	43	25-150	0.7	
13C2_PFTeDA	18	6.1	34	25-150	25.2	
13C3_HFPO-DA	18	8.5	48	25-150	7.1	
d7-N-MeFOSE	18	5.3	30	10-150	5.1	
d9-N-EtFOSE	18	4.9	28	10-150	18.0	
d3-N-MeFOSA	18	3.2	18	10-150	6.6	
d5-N-EtFOSA	18	2.9	16	10-150	1.3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MSD
 Run File Name Q220412C_061
 Analyzed 04/13/2022 10:52
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	0.00	3.6	3.8	106	50-150	4.9		375-22-4
PFPeA	0.00	3.6	4.1	115	50-150	2.2		2706-90-3
HFPO-DA	0.00	3.6	3.1	86	50-150	5.1	I	13252-13-6
PFBS	2.2	3.1	3.4	37	50-150	14.0	R	375-73-5
PFHxA	2.6	3.6	7.0	124	50-150	10.3		307-24-4
4:2 FTS	0.00	3.3	3.0	91	50-150	5.2		757124-72-4
PFPeS	0.00	3.3	3.3	100	50-150	0.1		2706-91-4
PFHpA	0.00	3.6	4.5	125	50-150	19.2		375-85-9
DONA	0.00	3.4	3.7	110	50-150	14.1		919005-14-4
PFHxS	1.3	3.2	4.8	109	50-150	6.8		355-46-4
PFOA	1.4	3.6	5.0	102	50-150	2.5		335-67-1
6:2 FTS	0.00	3.4	3.4	102	50-150	0.8		27619-97-2
PFHpS	0.00	3.4	3.6	106	50-150	6.1		375-92-8
PFNA	0.00	3.6	4.9	136	50-150	20.6		375-95-1
PFOSAm	0.98	3.6	4.5	100	50-150	0.7		754-91-6
PFOS	6.5	3.3	11	144	50-150	8.5		1763-23-1
MeFOSA	0.00	3.6	3.4	95	50-150	1.9		31506-32-8
PFDA	2.9	3.6	8.3	153	50-150	24.6	R	335-76-2
EtFOSAm	0.00	3.6	3.7	103	50-150	10.2		4151-50-2
8:2 FTS	0.77	3.4	4.0	95	50-150	4.9		39108-34-4
9-CI-PF3ON	0.00	3.3	3.1	93	50-150	14.8		756426-58-1
PFNS	0.00	3.3	2.9	89	50-150	5.3		68259-12-1
PFUnDA	1.1	3.6	4.4	94	50-150	5.3		2058-94-8
NMeFOSAA	9.9	3.6	15	136	50-150	3.7		2355-31-9
NEtFOSAA	3.5	3.6	8.1	129	50-150	9.4		2991-50-6
PFDS	0.56	3.4	2.8	66	50-150	1.3		335-77-3
PFDOA	1.6	3.6	5.3	106	50-150	10.2		307-55-1
MeFOSE	7.9	3.6	13	130	50-150	1.6		24448-09-7
EtFOSE	2.2	3.6	6.5	119	50-150	5.0		1691-99-2
11-CI-PF3OUdS	0.00	3.3	2.4	70	50-150	8.2		763051-92-9
PFTTrDA	0.00	3.6	4.0	113	50-150	2.7		72629-94-8
PFDoS	0.00	3.4	1.3	38	50-150	19.0	JR	79780-39-5
PFTDA	0.00	3.6	4.3	120	50-150	21.2		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MSD
 Run File Name Q220412C_061
 Analyzed 04/13/2022 10:52
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.17	6.17	
13C4 PFOA	N/A	N/A	7.39	7.43	
13C2 PFDA	N/A	N/A	8.67	8.67	
13C4 PFOS	N/A	N/A	9.17	9.19	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.80	4.79	
13C5 PFPeA	N/A	N/A	5.55	5.54	
13C3 PFBS	N/A	N/A	6.49	6.45	
13C2 4:2FTS	N/A	N/A	5.91	5.89	R
13C5 PFHxA	N/A	N/A	6.17	6.15	
13C4 PFHpA	N/A	N/A	6.78	6.80	
13C3 PFHxS	N/A	N/A	7.87	7.89	
13C2 6:2FTS	N/A	N/A	7.07	7.09	R
13C8 PFOA	N/A	N/A	7.40	7.43	
13C9 PFNA	N/A	N/A	8.03	8.07	
13C8 PFOS	N/A	N/A	9.18	9.22	
13C2 8:2FTS	N/A	N/A	8.29	8.35	R
13C6 PFDA	N/A	N/A	8.67	8.73	
d3-MeFOSAA	N/A	N/A	8.54	8.61	
13C8 PFOSA	N/A	N/A	11.44	11.40	
d5-EtFOSAA	N/A	N/A	8.84	8.92	
13C7 PFUdA	N/A	N/A	9.31	9.39	
13C2 PFDoA	N/A	N/A	9.98	10.07	
13C2 PFTeDA	N/A	N/A	11.33	11.39	
13C3 HFPO-DA	N/A	N/A	6.42	6.43	
d7-N-MeFOSE	N/A	N/A	13.09	13.06	
d9-N-EtFOSE	N/A	N/A	13.59	13.54	
d3-N-MeFOSA	N/A	N/A	13.31	13.26	
d5-N-EtFOSA	N/A	N/A	13.75	13.69	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10602741010-MSD
 Run File Name Q220412C_061
 Analyzed 04/13/2022 10:52
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220412B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.81	4.79	
PFPeA	N/A	N/A	5.56	5.55	
HFPO-DA	1.40	0.48	6.43	6.45	I
PFBS	0.28	0.33	6.49	6.48	R
PFHxA	0.08	0.08	6.18	6.18	
4:2 FTS	1.00	1.00	5.91	5.91	
PFPeS	0.43	0.41	7.20	7.21	
PFHpA	0.39	0.40	6.79	6.81	
DONA	0.47	0.48	7.02	7.04	
PFHxS	0.29	0.31	7.88	7.90	
PFOA	0.30	0.33	7.40	7.44	
6:2 FTS	1.40	1.40	7.07	7.10	
PFHpS	0.38	0.38	8.55	8.55	
PFNA	0.26	0.27	8.04	8.08	
PFOSAm	N/A	N/A	11.45	11.41	
PFOS	0.19	0.21	9.19	9.26	
MeFOSA	0.43	0.49	13.33	13.29	
PFDA	0.14	0.16	8.67	8.74	R
EtFOSAm	0.39	0.41	13.77	13.72	
8:2 FTS	1.80	1.50	8.30	8.35	
9-Cl-PF3ON	0.03	0.04	9.66	9.71	
PFNS	0.20	0.26	9.80	9.89	
PFUnDA	0.15	0.17	9.32	9.40	
NMeFOSAA	0.63	0.81	8.55	8.62	
NEtFOSAA	0.44	0.41	8.86	8.87	
PFDS	0.30	0.25	10.51	10.54	
PFDOA	0.19	0.20	9.98	10.08	
MeFOSE	N/A	N/A	13.14	13.09	
EtFOSE	0.00	0.00	13.63	13.56	
11-Cl-PF3OUdS	0.03	0.03	11.01	11.01	
PFTrDA	0.24	0.19	10.67	10.71	
PFDoS	0.26	0.23	11.78	11.75	JR
PFTDA	0.15	0.16	11.33	11.34	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

April 2022

June 14, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS-Revised Report
Pace Project No.: 10606351

Dear Mike Ursin:

Enclosed are the analytical results for sample(s) received by the laboratory on April 28, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

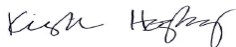
- Pace Analytical Services - Minneapolis

This report was revised June 14, 2022, to add additional narration to the PFAS report.

The TOP Assay analysis on sample EFFLUENT-20220426 was removed.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10606351001	INFLUENT-02-20220425	Water	04/25/22 23:59	04/28/22 08:50
10606351002	INFLUENT-07-20220425	Water	04/25/22 23:59	04/28/22 08:50
10606351003	INFLUENT-08-20220425	Water	04/25/22 23:59	04/28/22 08:50
10606351004	INFLUENT-11-20220425	Water	04/25/22 23:59	04/28/22 08:50
10606351005	INFLUENT-18-20220425	Water	04/25/22 23:59	04/28/22 08:50
10606351006	EFFLUENT-20220426	Water	04/26/22 23:59	04/28/22 08:50
10606351007	FB01-20220426	Water	04/26/22 09:59	04/28/22 08:50
10606351008	FB-20220427	Water	04/27/22 07:00	04/28/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10606351001	INFLUENT-02-20220425	SM 2540D	DP1	1
10606351002	INFLUENT-07-20220425	SM 2540D	DP1	1
10606351003	INFLUENT-08-20220425	SM 2540D	DP1	1
10606351004	INFLUENT-11-20220425	SM 2540D	DP1	1
10606351005	INFLUENT-18-20220425	SM 2540D	DP1	1
10606351006	EFFLUENT-20220426	SM 2540D	DP1	1

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: June 14, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Sample: INFLUENT-02-20220425 Lab ID: 10606351001 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	184	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-07-20220425 Lab ID: 10606351002 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	151	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-08-20220425 Lab ID: 10606351003 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	226	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-11-20220425 Lab ID: 10606351004 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	200	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-18-20220425 Lab ID: 10606351005 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	264	mg/L	33.3	16.7	1		05/02/22 19:38		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

Sample: EFFLUENT-20220426 **Lab ID: 10606351006** Collected: 04/26/22 23:59 Received: 04/28/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Pace Analytical Services - Minneapolis									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		05/03/22 10:32		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

QC Batch:	812663	Analysis Method:	SM 2540D
QC Batch Method:	SM 2540D	Analysis Description:	2540D Total Suspended Solids
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10606351001, 10606351002, 10606351003, 10606351004, 10606351005

METHOD BLANK: 4309220 Matrix: Water

Associated Lab Samples: 10606351001, 10606351002, 10606351003, 10606351004, 10606351005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	05/02/22 19:37	

LABORATORY CONTROL SAMPLE: 4309221

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	91.6	92	80-120	

SAMPLE DUPLICATE: 4309222

Parameter	Units	10605888001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	<5.0	ND		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

QC Batch: 812771

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10606351006

METHOD BLANK: 4309681

Matrix: Water

Associated Lab Samples: 10606351006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	05/03/22 10:30	

LABORATORY CONTROL SAMPLE: 4309682

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	99.4	99	80-120	

SAMPLE DUPLICATE: 4309683

Parameter	Units	10605971001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND			5

SAMPLE DUPLICATE: 4309684

Parameter	Units	10605972001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND			5

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10606351

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10606351001	INFLUENT-02-20220425	SM 2540D	812663		
10606351002	INFLUENT-07-20220425	SM 2540D	812663		
10606351003	INFLUENT-08-20220425	SM 2540D	812663		
10606351004	INFLUENT-11-20220425	SM 2540D	812663		
10606351005	INFLUENT-18-20220425	SM 2540D	812663		
10606351006	EFFLUENT-20220426	SM 2540D	812771		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: **TRC**

Billing Information: **Bill to MMSD (see PO)**

Address: **708 Heartland Trail Madison, WI 53717 Suite 3000**

Report To: **Mike Ursin**

Email To: **mursin@trccompanies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address: **1610 Moorland Rd**

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Phone: _____
Email: _____

Site/Facility ID #: _____

Compliance Monitoring? Yes No

Collected By (print): **Jenny Faust**

Purchase Order #: **2200666**
Quote #: _____

DW PWS ID #: _____
DW Location Code: _____

Collected By (signature): *Jenny Faust*

Turnaround Date Required: **Standard TAT**

Immediately Packed on Ice: Yes No

Sample Disposal: Dispose as appropriate Return Archive: _____ Hold: _____

Rush: Same Day Next Day 2 Day 3 Day 4 Day 5 Day (Expedite Charges Apply)

Field Filtered (if applicable): Yes No
Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
INFLUENT-02-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-07-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-08-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-11-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-18-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
EFFLUENT-20220426	WW	C	4/26/22	00:00	4/26/22	23:59	4	X
FB01-20220426	WT	G	-	-	4/26/22	09:59	1	X
FB-20220427	WT	G	-	-	4/27/22	07:00	1	X

LAB USE ONLY - Affix Workorder Number or
ALL SHADE
Container Preservative Type

WO#: **10606351**



** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zmc, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses									
PFAS	TSS	TOP	ASSAY						

Lab Profile/Line: **43476**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Present Y N NA
Bottles Intact Y N NA
Correct Bottles Y N NA
Sufficient Volume Y N NA
Samples Received on Ice Y N NA
VOA - Headspace Acceptable Y N NA
USDA Regulated Soils Y N NA
Samples in Holding Time Y N NA
Residual Chlorine Present Y N NA
Cl Strips: _____
Sample pH Acceptable Y N NA
pH Strips: _____
Sulfide Present Y N NA
Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

00)
01
02
03
04
05
06
07
08

Customer Remarks / Special Conditions / Possible Hazards:
For influent samples, follow EPA-821-A-001 (CII PFAS Method Expectations) Section VI.3 procedure for particulates in aqueous samples of configuration, if necessary, based on visual appearance

Type of Ice Used: Wet Blue Dry None

Packing Material Used: _____

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **2682618**

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA
Therm ID#: **T-3**
Cooler 1 Temp Upon Receipt: **2-9°C**
Cooler 1 Therm Corr. Factor: **7.0°C**
Cooler 1 Corrected Temp: **2.9°C**
Comments:

Relinquished by/Company: (Signature) *Carol Melke (MMSD)*

Date/Time: **4/27/2022**

Received by/Company: (Signature) *Rita Pace*

Date/Time: **4-28-22 8:55**

Table #: _____
Acctnum: _____
Template: _____
Prelogim: _____

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

PM: _____
PB: _____

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Non Conformance(s): _____
Page: _____ of: _____

Trip Blank Received: Y N NA
HCL MeOH TSP Other



DC# Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name: TRC

Project #:

WO#: 10606351

Courier:

Fed Ex, UPS, USPS, Pace, Speedee, Commercial

Client

PM: NEG

Due Date: 05/19/22

CLIENT: TRC-WI

Tracking Number:

5150 1600 6850

See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No

Seals Intact? Yes No

Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap, Bubble Bags, None, Other

Temp Blank? Yes No

Thermometer: T1(0461), T2(1336), T3(0459), T4(0254), T5(0489), T6(0235), T7(0042), 01339252/1710, 122639816, 140792808

Type of Ice: Wet, Blue, None, Dry, Melted

Did Samples Originate in West Virginia? Were All Container Temps Taken?

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 2-9 °C

Average Corrected Temp (no temp blank only): °C

Correction Factor: TRUE Cooler Temp Corrected w/temp blank: 2-9 °C

USDA Regulated Soil: N/A, water sample/Other

Date/Initials of Person Examining Contents: 4-28-22 RWF

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): Duluth, Minneapolis, Virginia. Chain of Custody Present and Filled Out? Chain of Custody Relinquished? Sampler Name and/or Signature on COC? Samples Arrived within Hold Time? Short Hold Time Analysis (<72 hr)? Rush Turn Around Time Requested? Sufficient Volume? Correct Containers Used? Pace Containers Used? Containers Intact? Field Filtered Volume Received for Dissolved Tests? Is sufficient information available to reconcile the samples to the COC? Matrix: Water, Soil, Oil, Other. All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS. Headspace in Methyl Mercury Container? Extra labels present on soil VOA or WIDRO containers? Headspace in VOA Vials (greater than 6mm)? Trip Blank Present? Trip Blank Custody Seals Present? COMMENTS: 1. 2. 3. 4. If Fecal: <8 hrs, >8hr, <24 hrs, >24 hrs. 5. Fecal Coliform, HPC, Total Coliform/E coli, BOD/cBOD, Hex Chrome, Turbidity, Nitrate, Nitrite, Orthophos, Other. 6. 7. 8. 9. 10. Is sediment visible in the dissolved container? 11. If no, write ID/ Date/Time on Container Below: See Exception ENV-FRM-MIN4-0142. 12. Sample #: NaOH, HNO3, H2SO4, Zinc Acetate. Positive for Res. Chlorine? pH Paper Lot#: Res. Chlorine, 0-6 Roll, 0-6 Strip, 0-14 Strip. 13. See Exception ENV-FRM-MIN4-0140. 14. Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION

Person Contacted:

Date/Time:

Field Data Required? Yes No

Comments/Resolution:

Project Manager Review:

Date: 4/29/22

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (if a part of hold, incorrect preservative, or out of temp, incorrect containers).

Labeled by: MUR

Pace Container Order #946315

Addresses		Ship To :	Return To:
Order By :		Company <u>Madison Metropolitan Sewerage District</u>	Company <u>Pace Analytical Minnesota</u>
Company <u>Madison Metropolitan Sewerage</u>	Contact <u>Carol Mielke</u>	Contact <u>Carol Mielke</u>	Contact <u>Gilmartin, Nicholas</u>
Email <u>CarolM@madsewer.org</u>	Email <u>CarolM@madsewer.org</u>	Email <u>nicholas.gilmartin@pacelabs.com</u>	
Address <u>1610 Moorland Road</u>	Address <u>1610 Moorland Road</u>	Address <u>1700 Elm Street</u>	
Address 2 _____	Address 2 _____	Address 2 <u>Suite 200</u>	
City <u>Madison</u>	City <u>Madison</u>	City <u>Minneapolis</u>	
State <u>WI</u> Zip <u>53713</u>	State <u>WI</u> Zip <u>53713</u>	State <u>MN</u> Zip <u>55414</u>	
Phone <u>(608) 222-1201</u>	Phone <u>(608) 222-1201</u>	Phone <u>(612)607-1700</u>	

Info			
Project Name <u>PFAS and TSS</u>	Due Date <u>04/15/2022</u>	Profile <u>43476</u>	Quote _____
Project Manager <u>Gilmartin, Nicholas</u>	Return Date _____	Carrier <u>FedEx Ground</u>	Location <u>WI</u>

Trip Blanks <input type="checkbox"/> Include Trip Blanks	Bottle Labels <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Pre-Printed No Sample IDs <input type="checkbox"/> Pre-Printed With Sample IDs	Bottles <input type="checkbox"/> Boxed Cases <input type="checkbox"/> Individually Wrapped <input checked="" type="checkbox"/> Grouped By Sample ID/Matrix
Return Shipping Labels <input type="checkbox"/> No Shipper <input checked="" type="checkbox"/> With Shipper	Misc <input type="checkbox"/> Sampling Instructions <input checked="" type="checkbox"/> Custody Seal <input checked="" type="checkbox"/> Temp. Blanks <input checked="" type="checkbox"/> Coolers _____ <input type="checkbox"/> Syringes _____	
COC Options <input checked="" type="checkbox"/> Number of Blanks <u>1</u> <input type="checkbox"/> Pre-Printed _____	<input type="checkbox"/> Extra Bubble Wrap <input type="checkbox"/> Short Hold/Rush Stickers <input checked="" type="checkbox"/> DI Water <u>6 PFAS Liter(s)</u> <input type="checkbox"/> USDA Regulated Soils	

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
6	WT	TSS	1 - 500 ml unpres	6	0	022122-2ADT	
6	WT	PFAS ID36W	2-250mL HDPE unpreserved	12	0	120621-2EOM	C&G round containers
2	WT	PFAS ID36W - EB / FB	1-250mL HDPE unpreserved, 1-250mL HDPE unpreserved w/ DI water	4	0	120621-2EOM PFAS DI WATER #214557	C&G round containers - 1 empty, 1 filled w/ DI water
2	SL	PFAS by ID36	1-90mL HDPE unpreserved jar	2	0	N114108BB	
2	SL	TOP Assay	1-90mL HDPE unpreserved jar	2	0	N114108BB	

<h3 style="text-align: center;">Hazard Shipping Placard In Place RETURN W/ SAMPLES</h3> <p>Sample receiving hours are Mon-Fri 7:30am-7:00pm and Sat 9:00am-1:00pm unless special arrangements are made with your project manager.</p> <p>Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.</p> <p>Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.</p> <p>Payment term are net 30 days.</p> <p>Please include the proposal number on the chain of custody to insure proper billing.</p>	LAB USE: Ship Date : <u>04/15/2022</u> Prepared By: <u>PC</u> Verified By: _____
--	---

Sample <div style="border: 1px solid black; height: 40px; width: 100%;"></div>	CLIENT USE (Optional): Date Rec'd: _____ Received By: _____ Verified By: _____
--	---

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Information:

Pace Project #: 10606351
Sample Receipt Date: 04/28/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nick Gilmartin, your Pace Project Manager.

This report has been reviewed by:



June 14, 2022

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

June 14, 2022

DISCUSSION

This report presents the results from the analyses performed on eight samples submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance for PFAS. Reporting limits were set to MDL levels. This report was revised June 13, 2022 to update report narrative.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of the target analyte 6:2 FTS. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" in the results tables and may be, at least partially, attributed to the background.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. This spike indicates that extraction performed as expected. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

Diminished/Elevated extracted internal standard (EIS) recovery ("R" flagged) were present in samples, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Values were flagged "I" where incorrect isotope ratios were obtained.

Samples INFLUENT-02-20220425, INFLUENT-07-20220425, INFLUENT-08-20220425, INFLUENT-11-20220425, and INFLUENT-18-20220425 required centrifugation prior to extraction due to excessive solids present in the

DISCUSSION

samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and centrifuged for 10 mins. Sample bottles were rinsed with methanol as normal. The bottle rinsate was added to the elution. Samples concentrated to <1mL and reconstituted to 1mL using methanol by transfer pipet.

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management



Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
INFLUENT-02-20220425	10606351001	04/28/2022	Water
INFLUENT-07-20220425	10606351002	04/28/2022	Water
INFLUENT-08-20220425	10606351003	04/28/2022	Water
INFLUENT-11-20220425	10606351004	04/28/2022	Water
INFLUENT-18-20220425	10606351005	04/28/2022	Water
EFFLUENT-20220426	10606351006	04/28/2022	Water
FB01-20220426	10606351007	04/28/2022	Water
FB-20220427	10606351008	04/28/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Report No: 10606351_D30_KT_DK

Revision: 10

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: **TRC**

Billing Information: **Bill to MMSD (see PO)**

Address: **708 Heartland Trail Madison, WI 53717 Suite 3000**

Report To: **Mike Ursin**

Email To: **mursin@trccompanies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address: **1610 Moorland Rd**

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Phone: _____
Email: _____

Site/Facility ID #: _____

Compliance Monitoring? Yes No

Collected By (print): **Jenny Faust**

Purchase Order #: **2200666**
Quote #: _____

DW PWS ID #: _____
DW Location Code: _____

Collected By (signature): *Jenny Faust*

Turnaround Date Required: **Standard TAT**

Immediately Packed on Ice: Yes No

Sample Disposal: Dispose as appropriate Return Archive: _____ Hold: _____

Rush: Same Day Next Day 2 Day 3 Day 4 Day 5 Day (Expedite Charges Apply)

Field Filtered (if applicable): Yes No
Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
INFLUENT-02-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-07-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-08-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-11-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
INFLUENT-18-20220425	WW	C	4/25/22	00:00	4/25/22	23:59	3	X
EFFLUENT-20220426	WW	C	4/26/22	00:00	4/26/22	23:59	4	X
FB01-20220426	WT	G	-	-	4/26/22	09:59	1	X
FB-20220427	WT	G	-	-	4/27/22	07:00	1	X

Analyses		Lab Profile/Line: 43476
PFAS	TSS	TOP ASSAY

LAB USE ONLY - Affix Workorder Number or
ALL SHADE
Container Preservative Type

WO#: **10606351**



** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zmc, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Present Y N NA
Bottles Intact Y N NA
Correct Bottles Y N NA
Sufficient Volume Y N NA
Samples Received on Ice Y N NA
VOA - Headspace Acceptable Y N NA
USDA Regulated Soils Y N NA
Samples in Holding Time Y N NA
Residual Chlorine Present Y N NA
Cl Strips: _____
Sample pH Acceptable Y N NA
pH Strips: _____
Sulfide Present Y N NA
Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

00)
01
02
03
04
05
06
07
08

Customer Remarks / Special Conditions / Possible Hazards:
For influent samples, follow EPA-8001 (CII PFAS Method Expectations) Section VI.3 procedure for particulates in aqueous samples of configuration, if necessary, based on visual appearance

Type of Ice Used: Wet Blue Dry None

Packing Material Used: _____

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **2682618**

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA
Therm ID#: **T-3**
Cooler 1 Temp Upon Receipt: **2-9°C**
Cooler 1 Therm Corr. Factor: **7.0°C**
Cooler 1 Corrected Temp: **2.9°C**
Comments:

Relinquished by/Company: (Signature) *Carol Melke (MMSD)*

Date/Time: **4/27/2022**

Received by/Company: (Signature) *Rita Pace*

Date/Time: **4-28-22 8:55**

MTJL LAB USE ONLY

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Table #:

Acctnum:

Template:

Prelogim:

PM:

PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO Page: _____ of: _____



DC# Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name: TRC

Project #:

WO#: 10606351

Courier:

Fed Ex, UPS, USPS, Pace, Speedee, Commercial

Client

PM: NEG

Due Date: 05/19/22

CLIENT: TRC-WI

Tracking Number:

5150 1600 6850

See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No

Seals Intact? Yes No

Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap, Bubble Bags, None, Other

Temp Blank? Yes No

Thermometer: T1(0461), T2(1336), T3(0459), T4(0254), T5(0489), T6(0235), T7(0042), 01339252/1710, 122639816, 140792808

Type of Ice: Wet, Blue, None, Dry, Melted

Did Samples Originate in West Virginia? Were All Container Temps Taken?

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 2-9 °C

Average Corrected Temp (no temp blank only): See Exceptions ENV-FRM-MIN4-0142 1 Container

Correction Factor: TRUE Cooler Temp Corrected w/temp blank: 2-9 °C

USDA Regulated Soil: N/A, water sample/Other

Date/Initials of Person Examining Contents: 4-28-22 RWF

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Table with 2 columns: Location (check one) and COMMENTS. Rows include Chain of Custody, Samples Arrived within Hold Time, Field Filtered Volume, etc.

CLIENT NOTIFICATION/RESOLUTION

Person Contacted:

Date/Time:

Field Data Required? Yes No

Comments/Resolution:

Project Manager Review:

Date: 4/29/22

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office...

Labeled by: MUR

Pace Container Order #946315

Addresses		Ship To :	Return To:
Order By :		Company <u>Madison Metropolitan Sewerage District</u>	Company <u>Pace Analytical Minnesota</u>
Company <u>Madison Metropolitan Sewerage</u>	Contact <u>Carol Mielke</u>	Contact <u>Carol Mielke</u>	Contact <u>Gilmartin, Nicholas</u>
Email <u>CarolM@madsewer.org</u>	Email <u>CarolM@madsewer.org</u>	Email <u>nicholas.gilmartin@pacelabs.com</u>	
Address <u>1610 Moorland Road</u>	Address <u>1610 Moorland Road</u>	Address <u>1700 Elm Street</u>	
Address 2 _____	Address 2 _____	Address 2 <u>Suite 200</u>	
City <u>Madison</u>	City <u>Madison</u>	City <u>Minneapolis</u>	
State <u>WI</u> Zip <u>53713</u>	State <u>WI</u> Zip <u>53713</u>	State <u>MN</u> Zip <u>55414</u>	
Phone <u>(608) 222-1201</u>	Phone <u>(608) 222-1201</u>	Phone <u>(612)607-1700</u>	

Info			
Project Name <u>PFAS and TSS</u>	Due Date <u>04/15/2022</u>	Profile <u>43476</u>	Quote _____
Project Manager <u>Gilmartin, Nicholas</u>	Return Date _____	Carrier <u>FedEx Ground</u>	Location <u>WI</u>

Trip Blanks

Include Trip Blanks

Bottle Labels

Blank

Pre-Printed No Sample IDs

Pre-Printed With Sample IDs

Bottles

Boxed Cases

Individually Wrapped

Grouped By Sample ID/Matrix

Return Shipping Labels

No Shipper

With Shipper

Misc

Sampling Instructions

Custody Seal

Temp. Blanks

Coolers _____

Syringes _____

Extra Bubble Wrap

Short Hold/Rush Stickers

DI Water 6 PFAS Liter(s)

USDA Regulated Soils

COC Options

Number of Blanks 1

Pre-Printed

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
6	WT	TSS	1 - 500 ml unpres	6	0	022122-2ADT	
6	WT	PFAS ID36W	2-250mL HDPE unpreserved	12	0	120621-2EOM	C&G round containers
2	WT	PFAS ID36W - EB / FB	1-250mL HDPE unpreserved, 1-250mL HDPE unpreserved w/ DI water	4	0	120621-2EOM PFAS DI WATER #214557	C&G round containers - 1 empty, 1 filled w/ DI water
2	SL	PFAS by ID36	1-90mL HDPE unpreserved jar	2	0	N114108BB	
2	SL	TOP Assay	1-90mL HDPE unpreserved jar	2	0	N114108BB	

Hazard Shipping Placard In Place RETURN W/ SAMPLES

Sample receiving hours are Mon-Fri 7:30am-7:00pm and Sat 9:00am-1:00pm unless special arrangements are made with your project manager.

Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.

Payment term are net 30 days.

Please include the proposal number on the chain of custody to insure proper billing.

LAB USE:

Ship Date : 04/15/2022

Prepared By: PC

Verified By:

Sample

CLIENT USE (Optional):

Date Rec'd:

Received By:

Verified By:

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10606351001	INFLUENT-02-20220425	SW3535	33021	PFAS-36	Q220509B_02
10606351002-R	INFLUENT-07-20220425	SW3535	33125	PFAS-36	B220530A_00
10606351003-R	INFLUENT-08-20220425	SW3535	33125	PFAS-36	B220530A_00
10606351004-R	INFLUENT-11-20220425	SW3535	33125	PFAS-36	B220530A_00
10606351005-R	INFLUENT-18-20220425	SW3535	33125	PFAS-36	B220530A_00
10606351006-R	EFFLUENT-20220426	SW3535	33125	PFAS-36	B220530A_00
10606351007	FB01-20220426	SW3535	33021	PFAS-36	Q220509B_03
10606351008	FB-20220427	SW3535	33021	PFAS-36	Q220509B_03

Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.
Revision 1

Appendix B

Sample Analysis Summary



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-02-20220425	Extraction Date	05/06/2022 12:20
Lab Sample ID	10606351001	Total Amount Extracted	234mL
Lab File ID	Q220509B_029	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220509A01
Collected	04/25/2022 23:59	CCal File	Q220509B_024
Received	04/28/2022 08:50	Ending CCal File	Q220509B_035
		Blank File	A220510B_006

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.2	2.1	0.47	0.47	1	375-22-4		05/09/2022 23:45
PFPeA	3.2	2.1	0.47	0.47	1	2706-90-3		05/09/2022 23:45
HFPO-DA	ND	2.1	0.56	0.56	1	13252-13-6		05/09/2022 23:45
PFBS	4.6	1.9	0.50	0.50	1	375-73-5		05/09/2022 23:45
PFHxA	3.2	2.1	0.47	0.47	1	307-24-4		05/09/2022 23:45
4:2 FTS	ND	2.0	0.60	0.60	1	757124-72-4		05/09/2022 23:45
PFPeS	ND	2.0	0.51	0.51	1	2706-91-4		05/09/2022 23:45
PFHpA	1.0 J	2.1	0.59	0.59	1	375-85-9		05/09/2022 23:45
DONA	ND	2.0	0.55	0.55	1	919005-14-4		05/09/2022 23:45
PFHxS	3.8	1.9	0.54	0.54	1	355-46-4		05/09/2022 23:45
PFOA	2.3	2.1	0.62	0.62	1	335-67-1		05/09/2022 23:45
6:2 FTS	ND	2.0	0.69	0.69	1	27619-97-2		05/09/2022 23:45
PFHpS	ND	2.0	0.44	0.44	1	375-92-8		05/09/2022 23:45
PFNA	ND	2.1	0.79	0.79	1	375-95-1		05/09/2022 23:45
PFOSAm	ND	2.1	0.87	0.87	1	754-91-6		05/09/2022 23:45
PFOS	4.1	2.0	0.58	0.58	1	1763-23-1		05/09/2022 23:45
MeFOSA	ND	2.1	0.55	0.55	1	31506-32-8		05/09/2022 23:45
PFDA	ND	2.1	0.60	0.60	1	335-76-2		05/09/2022 23:45
EtFOSAm	ND	2.1	0.65	0.65	1	4151-50-2		05/09/2022 23:45
8:2 FTS	ND	2.0	0.70	0.70	1	39108-34-4		05/09/2022 23:45
9-CI-PF3ON	ND	2.0	0.33	0.33	1	756426-58-1		05/09/2022 23:45
PFNS	ND	2.0	0.48	0.48	1	68259-12-1		05/09/2022 23:45
PFUnDA	ND	2.1	0.58	0.58	1	2058-94-8		05/09/2022 23:45
NMeFOSAA	ND	2.1	0.46	0.46	1	2355-31-9		05/09/2022 23:45
NEtFOSAA	ND	2.1	0.59	0.59	1	2991-50-6		05/09/2022 23:45
PFDS	ND	2.1	0.48	0.48	1	335-77-3		05/09/2022 23:45
PFDOA	ND	2.1	0.52	0.52	1	307-55-1		05/09/2022 23:45
MeFOSE	0.90 J	2.1	0.35	0.35	1	24448-09-7		05/09/2022 23:45
EtFOSE	ND	2.1	0.53	0.53	1	1691-99-2		05/09/2022 23:45
11-CI-PF3OUdS	ND	2.0	0.47	0.47	1	763051-92-9		05/09/2022 23:45
PFTTrDA	ND	2.1	0.66	0.66	1	72629-94-8		05/09/2022 23:45
PFDoS	ND	2.1	0.49	0.49	1	79780-39-5		05/09/2022 23:45
PFTDA	ND	2.1	0.51	0.51	1	376-06-7		05/09/2022 23:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-02-20220425	Extraction Date	05/06/2022 12:20
Lab Sample ID	10606351001	Total Amount Extracted	234mL
Lab File ID	Q220509B_029	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220509A01
Collected	04/25/2022 23:59	CCal File	Q220509B_024
Received	04/28/2022 08:50	Ending CCal File	Q220509B_035
		Blank File	A220510B_006

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	21	20	92	50-150		05/09/2022 23:45
13C4 PFOA	21	21	99	50-150		05/09/2022 23:45
13C2 PFDA	21	27	128	50-150		05/09/2022 23:45
13C4 PFOS	20	26	125	50-150		05/09/2022 23:45

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	21	20	94	25-150		05/09/2022 23:45
13C5 PFPeA	21	20	95	25-150		05/09/2022 23:45
13C3 PFBS	20	22	112	25-150		05/09/2022 23:45
13C2 4:2FTS	20	91	454	25-150	R	05/09/2022 23:45
13C5 PFHxA	21	21	99	25-150		05/09/2022 23:45
13C4 PFHpA	21	21	99	25-150		05/09/2022 23:45
13C3 PFHxS	20	24	118	25-150		05/09/2022 23:45
13C2 6:2FTS	20	78	386	25-150	R	05/09/2022 23:45
13C8 PFOA	21	21	97	25-150		05/09/2022 23:45
13C9 PFNA	21	24	110	25-150		05/09/2022 23:45
13C8 PFOS	20	20	97	25-150		05/09/2022 23:45
13C2 8:2FTS	20	63	307	25-150	R	05/09/2022 23:45
13C6 PFDA	21	22	101	25-150		05/09/2022 23:45
d3-MeFOSAA	21	16	76	25-150		05/09/2022 23:45
13C8 PFOSA	21	17	78	25-150		05/09/2022 23:45
d5-EtFOSAA	21	18	84	25-150		05/09/2022 23:45
13C7 PFUdA	21	21	97	25-150		05/09/2022 23:45
13C2 PFDoA	21	12	54	25-150		05/09/2022 23:45
13C2 PFTeDA	21	9.4	44	25-150		05/09/2022 23:45
13C3 HFPO-DA	21	21	97	25-150		05/09/2022 23:45
d7-N-MeFOSE	21	12	55	10-150		05/09/2022 23:45
d9-N-EtFOSE	21	7.5	35	10-150		05/09/2022 23:45
d3-N-MeFOSA	21	8.7	41	10-150		05/09/2022 23:45
d5-N-EtFOSA	21	6.8	32	10-150		05/09/2022 23:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-07-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351002-R	Total Amount Extracted	259mL
Lab File ID	B220530A_006	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	14	1.9	0.43	0.43	1	375-22-4		05/30/2022 22:38
PFPeA	7.5	1.9	0.42	0.42	1	2706-90-3		05/30/2022 22:38
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/30/2022 22:38
PFBS	5.9	1.7	0.46	0.46	1	375-73-5		05/30/2022 22:38
PFHxA	12	1.9	0.42	0.42	1	307-24-4		05/30/2022 22:38
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		05/30/2022 22:38
PFPeS	0.80 J	1.8	0.46	0.46	1	2706-91-4		05/30/2022 22:38
PFHpA	2.9	1.9	0.53	0.53	1	375-85-9		05/30/2022 22:38
DONA	ND	1.8	0.50	0.50	1	919005-14-4		05/30/2022 22:38
PFHxS	10	1.8	0.49	0.49	1	355-46-4		05/30/2022 22:38
PFOA	7.3	1.9	0.56	0.56	1	335-67-1		05/30/2022 22:38
6:2 FTS	1.7 BJ	1.8	0.62	0.62	1	27619-97-2		05/30/2022 22:38
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		05/30/2022 22:38
PFNA	ND	1.9	0.71	0.71	1	375-95-1		05/30/2022 22:38
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		05/30/2022 22:38
PFOS	6.8	1.8	0.53	0.53	1	1763-23-1		05/30/2022 22:38
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		05/30/2022 22:38
PFDA	ND	1.9	0.54	0.54	1	335-76-2		05/30/2022 22:38
EtFOSAm	ND	1.9	0.59	0.59	1	4151-50-2		05/30/2022 22:38
8:2 FTS	ND	1.9	0.63	0.63	1	39108-34-4		05/30/2022 22:38
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		05/30/2022 22:38
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		05/30/2022 22:38
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/30/2022 22:38
NMeFOSAA	1.3 J	1.9	0.42	0.42	1	2355-31-9		05/30/2022 22:38
NEtFOSAA	1.1 J	1.9	0.54	0.54	1	2991-50-6		05/30/2022 22:38
PFDS	ND	1.9	0.43	0.43	1	335-77-3		05/30/2022 22:38
PFDOA	ND	1.9	0.47	0.47	1	307-55-1		05/30/2022 22:38
MeFOSE	2.2	1.9	0.32	0.32	1	24448-09-7		05/30/2022 22:38
EtFOSE	0.80 J	1.9	0.48	0.48	1	1691-99-2		05/30/2022 22:38
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/30/2022 22:38
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		05/30/2022 22:38
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		05/30/2022 22:38
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		05/30/2022 22:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-07-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351002-R	Total Amount Extracted	259mL
Lab File ID	B220530A_006	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	17	86	50-150		05/30/2022 22:38
13C4 PFOA	19	15	78	50-150		05/30/2022 22:38
13C2 PFDA	19	15	79	50-150		05/30/2022 22:38
13C4 PFOS	18	13	72	50-150		05/30/2022 22:38

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	14	70	25-150		05/30/2022 22:38
13C5 PFPeA	19	17	89	25-150		05/30/2022 22:38
13C3 PFBS	18	20	114	25-150		05/30/2022 22:38
13C2 4:2FTS	18	80	442	25-150	R	05/30/2022 22:38
13C5 PFHxA	19	18	91	25-150		05/30/2022 22:38
13C4 PFHpA	19	22	113	25-150		05/30/2022 22:38
13C3 PFHxS	18	22	123	25-150		05/30/2022 22:38
13C2 6:2FTS	18	95	516	25-150	R	05/30/2022 22:38
13C8 PFOA	19	18	94	25-150		05/30/2022 22:38
13C9 PFNA	19	23	121	25-150		05/30/2022 22:38
13C8 PFOS	18	13	72	25-150		05/30/2022 22:38
13C2 8:2FTS	18	47	255	25-150	R	05/30/2022 22:38
13C6 PFDA	19	18	92	25-150		05/30/2022 22:38
d3-MeFOSAA	19	12	60	25-150		05/30/2022 22:38
13C8 PFOSA	19	12	62	25-150		05/30/2022 22:38
d5-EtFOSAA	19	12	64	25-150		05/30/2022 22:38
13C7 PFUdA	19	11	58	25-150		05/30/2022 22:38
13C2 PFDoA	19	8.4	44	25-150		05/30/2022 22:38
13C2 PFTeDA	19	7.7	40	25-150		05/30/2022 22:38
13C3 HFPO-DA	19	17	89	25-150		05/30/2022 22:38
d7-N-MeFOSE	19	10.0	52	10-150		05/30/2022 22:38
d9-N-EtFOSE	19	8.4	43	10-150		05/30/2022 22:38
d3-N-MeFOSA	19	8.3	43	10-150		05/30/2022 22:38
d5-N-EtFOSA	19	8.7	45	10-150		05/30/2022 22:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-08-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351003-R	Total Amount Extracted	241mL
Lab File ID	B220530A_007	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.0	2.1	0.46	0.46	1	375-22-4		05/30/2022 22:58
PFPeA	3.7	2.1	0.45	0.45	1	2706-90-3		05/30/2022 22:58
HFPO-DA	ND	2.1	0.55	0.55	1	13252-13-6		05/30/2022 22:58
PFBS	2.5	1.8	0.49	0.49	1	375-73-5		05/30/2022 22:58
PFHxA	5.3	2.1	0.45	0.45	1	307-24-4		05/30/2022 22:58
4:2 FTS	ND	1.9	0.58	0.58	1	757124-72-4		05/30/2022 22:58
PFPeS	ND	1.9	0.49	0.49	1	2706-91-4		05/30/2022 22:58
PFHpA	1.2 J	2.1	0.57	0.57	1	375-85-9		05/30/2022 22:58
DONA	ND	2.0	0.53	0.53	1	919005-14-4		05/30/2022 22:58
PFHxS	3.8	1.9	0.53	0.53	1	355-46-4		05/30/2022 22:58
PFOA	2.6	2.1	0.61	0.61	1	335-67-1		05/30/2022 22:58
6:2 FTS	0.70 BIJ	2.0	0.67	0.67	1	27619-97-2		05/30/2022 22:58
PFHpS	ND	2.0	0.43	0.43	1	375-92-8		05/30/2022 22:58
PFNA	ND	2.1	0.77	0.77	1	375-95-1		05/30/2022 22:58
PFOSAm	ND	2.1	0.85	0.85	1	754-91-6		05/30/2022 22:58
PFOS	2.7	1.9	0.57	0.57	1	1763-23-1		05/30/2022 22:58
MeFOSA	ND	2.1	0.53	0.53	1	31506-32-8		05/30/2022 22:58
PFDA	0.71 J	2.1	0.58	0.58	1	335-76-2		05/30/2022 22:58
EtFOSAm	ND	2.1	0.63	0.63	1	4151-50-2		05/30/2022 22:58
8:2 FTS	ND	2.0	0.68	0.68	1	39108-34-4		05/30/2022 22:58
9-CI-PF3ON	ND	1.9	0.32	0.32	1	756426-58-1		05/30/2022 22:58
PFNS	ND	2.0	0.46	0.46	1	68259-12-1		05/30/2022 22:58
PFUnDA	ND	2.1	0.56	0.56	1	2058-94-8		05/30/2022 22:58
NMeFOSAA	ND	2.1	0.45	0.45	1	2355-31-9		05/30/2022 22:58
NEtFOSAA	0.85 J	2.1	0.58	0.58	1	2991-50-6		05/30/2022 22:58
PFDS	ND	2.0	0.47	0.47	1	335-77-3		05/30/2022 22:58
PFDOA	ND	2.1	0.50	0.50	1	307-55-1		05/30/2022 22:58
MeFOSE	1.4 J	2.1	0.34	0.34	1	24448-09-7		05/30/2022 22:58
EtFOSE	0.91 J	2.1	0.52	0.52	1	1691-99-2		05/30/2022 22:58
11-CI-PF3OUdS	ND	2.0	0.45	0.45	1	763051-92-9		05/30/2022 22:58
PFTTrDA	ND	2.1	0.64	0.64	1	72629-94-8		05/30/2022 22:58
PFDoS	ND	2.0	0.48	0.48	1	79780-39-5		05/30/2022 22:58
PFTDA	ND	2.1	0.49	0.49	1	376-06-7		05/30/2022 22:58

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-08-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351003-R	Total Amount Extracted	241mL
Lab File ID	B220530A_007	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	21	19	93	50-150		05/30/2022 22:58
13C4 PFOA	21	18	86	50-150		05/30/2022 22:58
13C2 PFDA	21	17	80	50-150		05/30/2022 22:58
13C4 PFOS	20	16	80	50-150		05/30/2022 22:58

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	21	16	78	25-150		05/30/2022 22:58
13C5 PFPeA	21	19	91	25-150		05/30/2022 22:58
13C3 PFBS	19	22	115	25-150		05/30/2022 22:58
13C2 4:2FTS	19	84	434	25-150	R	05/30/2022 22:58
13C5 PFHxA	21	20	96	25-150		05/30/2022 22:58
13C4 PFHpA	21	23	110	25-150		05/30/2022 22:58
13C3 PFHxS	20	23	118	25-150		05/30/2022 22:58
13C2 6:2FTS	20	96	491	25-150	R	05/30/2022 22:58
13C8 PFOA	21	20	96	25-150		05/30/2022 22:58
13C9 PFNA	21	24	116	25-150		05/30/2022 22:58
13C8 PFOS	20	14	71	25-150		05/30/2022 22:58
13C2 8:2FTS	20	56	282	25-150	R	05/30/2022 22:58
13C6 PFDA	21	17	84	25-150		05/30/2022 22:58
d3-MeFOSAA	21	12	60	25-150		05/30/2022 22:58
13C8 PFOSA	21	13	65	25-150		05/30/2022 22:58
d5-EtFOSAA	21	14	67	25-150		05/30/2022 22:58
13C7 PFUdA	21	10	50	25-150		05/30/2022 22:58
13C2 PFDoA	21	8.2	40	25-150		05/30/2022 22:58
13C2 PFTeDA	21	8.5	41	25-150		05/30/2022 22:58
13C3 HFPO-DA	21	18	87	25-150		05/30/2022 22:58
d7-N-MeFOSE	21	14	70	10-150		05/30/2022 22:58
d9-N-EtFOSE	21	7.1	34	10-150		05/30/2022 22:58
d3-N-MeFOSA	21	7.7	37	10-150		05/30/2022 22:58
d5-N-EtFOSA	21	7.9	38	10-150		05/30/2022 22:58

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-11-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351004-R	Total Amount Extracted	262mL
Lab File ID	B220530A_008	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.4	1.9	0.42	0.42	1	375-22-4		05/30/2022 23:18
PFPeA	2.6	1.9	0.42	0.42	1	2706-90-3		05/30/2022 23:18
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/30/2022 23:18
PFBS	2.7	1.7	0.45	0.45	1	375-73-5		05/30/2022 23:18
PFHxA	4.3	1.9	0.42	0.42	1	307-24-4		05/30/2022 23:18
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		05/30/2022 23:18
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		05/30/2022 23:18
PFHpA	0.88 J	1.9	0.53	0.53	1	375-85-9		05/30/2022 23:18
DONA	ND	1.8	0.49	0.49	1	919005-14-4		05/30/2022 23:18
PFHxS	2.2 I	1.7	0.49	0.49	1	355-46-4		05/30/2022 23:18
PFOA	2.6	1.9	0.56	0.56	1	335-67-1		05/30/2022 23:18
6:2 FTS	0.82 BJ	1.8	0.62	0.62	1	27619-97-2		05/30/2022 23:18
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		05/30/2022 23:18
PFNA	ND	1.9	0.71	0.71	1	375-95-1		05/30/2022 23:18
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		05/30/2022 23:18
PFOS	1.9	1.8	0.52	0.52	1	1763-23-1		05/30/2022 23:18
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		05/30/2022 23:18
PFDA	ND	1.9	0.54	0.54	1	335-76-2		05/30/2022 23:18
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		05/30/2022 23:18
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		05/30/2022 23:18
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		05/30/2022 23:18
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		05/30/2022 23:18
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/30/2022 23:18
NMeFOSAA	0.45 J	1.9	0.41	0.41	1	2355-31-9		05/30/2022 23:18
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		05/30/2022 23:18
PFDS	ND	1.8	0.43	0.43	1	335-77-3		05/30/2022 23:18
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		05/30/2022 23:18
MeFOSE	1.0 J	1.9	0.31	0.31	1	24448-09-7		05/30/2022 23:18
EtFOSE	0.64 J	1.9	0.47	0.47	1	1691-99-2		05/30/2022 23:18
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/30/2022 23:18
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		05/30/2022 23:18
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		05/30/2022 23:18
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		05/30/2022 23:18

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-11-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351004-R	Total Amount Extracted	262mL
Lab File ID	B220530A_008	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	16	86	50-150		05/30/2022 23:18
13C4 PFOA	19	14	71	50-150		05/30/2022 23:18
13C2 PFDA	19	14	75	50-150		05/30/2022 23:18
13C4 PFOS	18	12	66	50-150		05/30/2022 23:18

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	8.5	45	25-150		05/30/2022 23:18
13C5 PFPeA	19	12	62	25-150		05/30/2022 23:18
13C3 PFBS	18	17	93	25-150		05/30/2022 23:18
13C2 4:2FTS	18	67	374	25-150	R	05/30/2022 23:18
13C5 PFHxA	19	15	78	25-150		05/30/2022 23:18
13C4 PFHpA	19	19	97	25-150		05/30/2022 23:18
13C3 PFHxS	18	20	109	25-150		05/30/2022 23:18
13C2 6:2FTS	18	85	471	25-150	R	05/30/2022 23:18
13C8 PFOA	19	14	76	25-150		05/30/2022 23:18
13C9 PFNA	19	20	107	25-150		05/30/2022 23:18
13C8 PFOS	18	12	64	25-150		05/30/2022 23:18
13C2 8:2FTS	18	40	216	25-150	R	05/30/2022 23:18
13C6 PFDA	19	16	82	25-150		05/30/2022 23:18
d3-MeFOSAA	19	9.3	49	25-150		05/30/2022 23:18
13C8 PFOSA	19	7.1	37	25-150		05/30/2022 23:18
d5-EtFOSAA	19	11	60	25-150		05/30/2022 23:18
13C7 PFUdA	19	11	59	25-150		05/30/2022 23:18
13C2 PFDoA	19	8.5	45	25-150		05/30/2022 23:18
13C2 PFTeDA	19	10	52	25-150		05/30/2022 23:18
13C3 HFPO-DA	19	15	76	25-150		05/30/2022 23:18
d7-N-MeFOSE	19	19	99	10-150		05/30/2022 23:18
d9-N-EtFOSE	19	5.4	28	10-150		05/30/2022 23:18
d3-N-MeFOSA	19	7.2	38	10-150		05/30/2022 23:18
d5-N-EtFOSA	19	7.4	39	10-150		05/30/2022 23:18

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-18-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351005-R	Total Amount Extracted	249mL
Lab File ID	B220530A_009	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	2.0	0.44	0.44	1	375-22-4		05/30/2022 23:38
PFPeA	6.5	2.0	0.44	0.44	1	2706-90-3		05/30/2022 23:38
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		05/30/2022 23:38
PFBS	5.8	1.8	0.48	0.48	1	375-73-5		05/30/2022 23:38
PFHxA	8.4	2.0	0.44	0.44	1	307-24-4		05/30/2022 23:38
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		05/30/2022 23:38
PFPeS	1.9	1.9	0.48	0.48	1	2706-91-4		05/30/2022 23:38
PFHpA	2.7	2.0	0.55	0.55	1	375-85-9		05/30/2022 23:38
DONA	ND	1.9	0.52	0.52	1	919005-14-4		05/30/2022 23:38
PFHxS	16	1.8	0.51	0.51	1	355-46-4		05/30/2022 23:38
PFOA	8.3	2.0	0.59	0.59	1	335-67-1		05/30/2022 23:38
6:2 FTS	2.3 B	1.9	0.65	0.65	1	27619-97-2		05/30/2022 23:38
PFHpS	0.41 J	1.9	0.41	0.41	1	375-92-8		05/30/2022 23:38
PFNA	ND	2.0	0.74	0.74	1	375-95-1		05/30/2022 23:38
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		05/30/2022 23:38
PFOS	9.8	1.9	0.55	0.55	1	1763-23-1		05/30/2022 23:38
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		05/30/2022 23:38
PFDA	ND	2.0	0.57	0.57	1	335-76-2		05/30/2022 23:38
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		05/30/2022 23:38
8:2 FTS	ND	1.9	0.66	0.66	1	39108-34-4		05/30/2022 23:38
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		05/30/2022 23:38
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		05/30/2022 23:38
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		05/30/2022 23:38
NMeFOSAA	1.0 J	2.0	0.44	0.44	1	2355-31-9		05/30/2022 23:38
NEtFOSAA	1.4 J	2.0	0.56	0.56	1	2991-50-6		05/30/2022 23:38
PFDS	ND	1.9	0.45	0.45	1	335-77-3		05/30/2022 23:38
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		05/30/2022 23:38
MeFOSE	0.73 J	2.0	0.33	0.33	1	24448-09-7		05/30/2022 23:38
EtFOSE	1.7 J	2.0	0.50	0.50	1	1691-99-2		05/30/2022 23:38
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		05/30/2022 23:38
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		05/30/2022 23:38
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		05/30/2022 23:38
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		05/30/2022 23:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-18-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351005-R	Total Amount Extracted	249mL
Lab File ID	B220530A_009	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	19	97	50-150		05/30/2022 23:38
13C4 PFOA	20	18	88	50-150		05/30/2022 23:38
13C2 PFDA	20	17	84	50-150		05/30/2022 23:38
13C4 PFOS	19	14	74	50-150		05/30/2022 23:38

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	17	84	25-150		05/30/2022 23:38
13C5 PFPeA	20	20	99	25-150		05/30/2022 23:38
13C3 PFBS	19	22	118	25-150		05/30/2022 23:38
13C2 4:2FTS	19	93	497	25-150	R	05/30/2022 23:38
13C5 PFHxA	20	20	97	25-150		05/30/2022 23:38
13C4 PFHpA	20	23	114	25-150		05/30/2022 23:38
13C3 PFHxS	19	24	126	25-150		05/30/2022 23:38
13C2 6:2FTS	19	110	553	25-150	R	05/30/2022 23:38
13C8 PFOA	20	19	96	25-150		05/30/2022 23:38
13C9 PFNA	20	24	119	25-150		05/30/2022 23:38
13C8 PFOS	19	14	71	25-150		05/30/2022 23:38
13C2 8:2FTS	19	53	274	25-150	R	05/30/2022 23:38
13C6 PFDA	20	19	93	25-150		05/30/2022 23:38
d3-MeFOSAA	20	15	72	25-150		05/30/2022 23:38
13C8 PFOSA	20	11	54	25-150		05/30/2022 23:38
d5-EtFOSAA	20	13	64	25-150		05/30/2022 23:38
13C7 PFUdA	20	12	58	25-150		05/30/2022 23:38
13C2 PFDoA	20	8.4	42	25-150		05/30/2022 23:38
13C2 PFTeDA	20	11	55	25-150		05/30/2022 23:38
13C3 HFPO-DA	20	19	93	25-150		05/30/2022 23:38
d7-N-MeFOSE	20	31	154	10-150	R	05/30/2022 23:38
d9-N-EtFOSE	20	5.8	29	10-150		05/30/2022 23:38
d3-N-MeFOSA	20	8.9	44	10-150		05/30/2022 23:38
d5-N-EtFOSA	20	9.0	45	10-150		05/30/2022 23:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID EFFLUENT-20220426
 Lab Sample ID 10606351006-R
 Lab File ID B220530A_010
 Matrix Industrial_Water
 Collected 04/26/2022 23:59
 Received 04/28/2022 08:50

Extraction Date 05/19/2022 15:17
 Total Amount Extracted 178mL
 Percent Moisture N/A
 Ical ID 220527B02
 CCal File B220530A_003
 Ending CCal File B220530A_012
 Blank File B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.9	2.8	0.62	0.62	1	375-22-4		05/30/2022 23:58
PFPeA	11	2.8	0.62	0.62	1	2706-90-3		05/30/2022 23:58
HFPO-DA	ND	2.8	0.74	0.74	1	13252-13-6		05/30/2022 23:58
PFBS	3.5	2.5	0.67	0.67	1	375-73-5		05/30/2022 23:58
PFHxA	21	2.8	0.62	0.62	1	307-24-4		05/30/2022 23:58
4:2 FTS	ND	2.6	0.79	0.79	1	757124-72-4		05/30/2022 23:58
PFPeS	ND	2.6	0.67	0.67	1	2706-91-4		05/30/2022 23:58
PFHpA	2.5 J	2.8	0.77	0.77	1	375-85-9		05/30/2022 23:58
DONA	ND	2.7	0.72	0.72	1	919005-14-4		05/30/2022 23:58
PFHxS	7.0	2.6	0.72	0.72	1	355-46-4		05/30/2022 23:58
PFOA	7.8	2.8	0.82	0.82	1	335-67-1		05/30/2022 23:58
6:2 FTS	2.1 BJ	2.7	0.91	0.91	1	27619-97-2		05/30/2022 23:58
PFHpS	ND	2.7	0.58	0.58	1	375-92-8		05/30/2022 23:58
PFNA	ND	2.8	1.0	1.0	1	375-95-1		05/30/2022 23:58
PFOSAm	ND	2.8	1.2	1.2	1	754-91-6		05/30/2022 23:58
PFOS	3.0	2.6	0.77	0.77	1	1763-23-1		05/30/2022 23:58
MeFOSA	ND	2.8	0.72	0.72	1	31506-32-8		05/30/2022 23:58
PFDA	0.98 J	2.8	0.79	0.79	1	335-76-2		05/30/2022 23:58
EtFOSAm	ND	2.8	0.86	0.86	1	4151-50-2		05/30/2022 23:58
8:2 FTS	ND	2.7	0.92	0.92	1	39108-34-4		05/30/2022 23:58
9-CI-PF3ON	ND	2.6	0.43	0.43	1	756426-58-1		05/30/2022 23:58
PFNS	ND	2.7	0.63	0.63	1	68259-12-1		05/30/2022 23:58
PFUnDA	ND	2.8	0.76	0.76	1	2058-94-8		05/30/2022 23:58
NMeFOSAA	1.1 J	2.8	0.61	0.61	1	2355-31-9		05/30/2022 23:58
NEtFOSAA	ND	2.8	0.78	0.78	1	2991-50-6		05/30/2022 23:58
PFDS	ND	2.7	0.63	0.63	1	335-77-3		05/30/2022 23:58
PFDOA	ND	2.8	0.68	0.68	1	307-55-1		05/30/2022 23:58
MeFOSE	ND	2.8	0.46	0.46	1	24448-09-7		05/30/2022 23:58
EtFOSE	ND	2.8	0.70	0.70	1	1691-99-2		05/30/2022 23:58
11-CI-PF3OUdS	ND	2.7	0.61	0.61	1	763051-92-9		05/30/2022 23:58
PFTTrDA	ND	2.8	0.88	0.88	1	72629-94-8		05/30/2022 23:58
PFDoS	ND	2.7	0.65	0.65	1	79780-39-5		05/30/2022 23:58
PFTDA	ND	2.8	0.67	0.67	1	376-06-7		05/30/2022 23:58

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	EFFLUENT-20220426	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351006-R	Total Amount Extracted	178mL
Lab File ID	B220530A_010	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/26/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	28	33	116	50-150		05/30/2022 23:58
13C4 PFOA	28	34	121	50-150		05/30/2022 23:58
13C2 PFDA	28	36	130	50-150		05/30/2022 23:58
13C4 PFOS	27	40	149	50-150		05/30/2022 23:58

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	28	26	93	25-150		05/30/2022 23:58
13C5 PFPeA	28	31	109	25-150		05/30/2022 23:58
13C3 PFBS	26	34	130	25-150		05/30/2022 23:58
13C2 4:2FTS	26	91	346	25-150	R	05/30/2022 23:58
13C5 PFHxA	28	32	113	25-150		05/30/2022 23:58
13C4 PFHpA	28	35	125	25-150		05/30/2022 23:58
13C3 PFHxS	27	34	126	25-150		05/30/2022 23:58
13C2 6:2FTS	27	68	254	25-150	R	05/30/2022 23:58
13C8 PFOA	28	36	129	25-150		05/30/2022 23:58
13C9 PFNA	28	37	131	25-150		05/30/2022 23:58
13C8 PFOS	27	35	131	25-150		05/30/2022 23:58
13C2 8:2FTS	27	69	256	25-150	R	05/30/2022 23:58
13C6 PFDA	28	39	140	25-150		05/30/2022 23:58
d3-MeFOSAA	28	39	138	25-150		05/30/2022 23:58
13C8 PFOSA	28	26	91	25-150		05/30/2022 23:58
d5-EtFOSAA	28	43	152	25-150	R	05/30/2022 23:58
13C7 PFUdA	28	39	137	25-150		05/30/2022 23:58
13C2 PFDoA	28	36	128	25-150		05/30/2022 23:58
13C2 PFTeDA	28	27	95	25-150		05/30/2022 23:58
13C3 HFPO-DA	28	31	110	25-150		05/30/2022 23:58
d7-N-MeFOSE	28	15	54	10-150		05/30/2022 23:58
d9-N-EtFOSE	28	11	39	10-150		05/30/2022 23:58
d3-N-MeFOSA	28	1.3	5	10-150	R	05/30/2022 23:58
d5-N-EtFOSA	28	1.2	4	10-150	R	05/30/2022 23:58

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Page 1 of 2

Client Sample ID FB01-20220426
 Lab Sample ID 10606351007
 Lab File ID Q220509B_036
 Matrix Water
 Collected 04/26/2022 09:59
 Received 04/28/2022 08:50

Extraction Date 05/06/2022 12:20
 Total Amount Extracted 257mL
 Percent Moisture N/A
 Ical ID 220509A01
 CCal File Q220509B_035
 Ending CCal File Q220509B_046
 Blank File A220510B_006

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.43	0.43	1	375-22-4		05/10/2022 01:55
PFPeA	ND	1.9	0.43	0.43	1	2706-90-3		05/10/2022 01:55
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/10/2022 01:55
PFBS	ND	1.7	0.46	0.46	1	375-73-5		05/10/2022 01:55
PFHxA	ND	1.9	0.43	0.43	1	307-24-4		05/10/2022 01:55
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		05/10/2022 01:55
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		05/10/2022 01:55
PFHpA	ND	1.9	0.53	0.53	1	375-85-9		05/10/2022 01:55
DONA	ND	1.8	0.50	0.50	1	919005-14-4		05/10/2022 01:55
PFHxS	ND	1.8	0.49	0.49	1	355-46-4		05/10/2022 01:55
PFOA	ND	1.9	0.57	0.57	1	335-67-1		05/10/2022 01:55
6:2 FTS	ND	1.8	0.63	0.63	1	27619-97-2		05/10/2022 01:55
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		05/10/2022 01:55
PFNA	ND	1.9	0.72	0.72	1	375-95-1		05/10/2022 01:55
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		05/10/2022 01:55
PFOS	ND	1.8	0.53	0.53	1	1763-23-1		05/10/2022 01:55
MeFOSA	ND	1.9	0.50	0.50	1	31506-32-8		05/10/2022 01:55
PFDA	ND	1.9	0.55	0.55	1	335-76-2		05/10/2022 01:55
EtFOSAm	ND	1.9	0.59	0.59	1	4151-50-2		05/10/2022 01:55
8:2 FTS	ND	1.9	0.63	0.63	1	39108-34-4		05/10/2022 01:55
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		05/10/2022 01:55
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		05/10/2022 01:55
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/10/2022 01:55
NMeFOSAA	ND	1.9	0.42	0.42	1	2355-31-9		05/10/2022 01:55
NEtFOSAA	ND	1.9	0.54	0.54	1	2991-50-6		05/10/2022 01:55
PFDS	ND	1.9	0.44	0.44	1	335-77-3		05/10/2022 01:55
PFDOA	ND	1.9	0.47	0.47	1	307-55-1		05/10/2022 01:55
MeFOSE	ND	1.9	0.32	0.32	1	24448-09-7		05/10/2022 01:55
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		05/10/2022 01:55
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/10/2022 01:55
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		05/10/2022 01:55
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		05/10/2022 01:55
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		05/10/2022 01:55

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	FB01-20220426	Extraction Date	05/06/2022 12:20
Lab Sample ID	10606351007	Total Amount Extracted	257mL
Lab File ID	Q220509B_036	Percent Moisture	N/A
Matrix	Water	Ical ID	220509A01
Collected	04/26/2022 09:59	CCal File	Q220509B_035
Received	04/28/2022 08:50	Ending CCal File	Q220509B_046
		Blank File	A220510B_006

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	21	109	50-150		05/10/2022 01:55
13C4 PFOA	19	20	103	50-150		05/10/2022 01:55
13C2 PFDA	19	20	102	50-150		05/10/2022 01:55
13C4 PFOS	19	20	109	50-150		05/10/2022 01:55

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	21	107	25-150		05/10/2022 01:55
13C5 PFPeA	19	22	113	25-150		05/10/2022 01:55
13C3 PFBS	18	22	123	25-150		05/10/2022 01:55
13C2 4:2FTS	18	16	89	25-150		05/10/2022 01:55
13C5 PFHxA	19	20	103	25-150		05/10/2022 01:55
13C4 PFHpA	19	21	108	25-150		05/10/2022 01:55
13C3 PFHxS	18	18	100	25-150		05/10/2022 01:55
13C2 6:2FTS	18	18	98	25-150		05/10/2022 01:55
13C8 PFOA	19	22	112	25-150		05/10/2022 01:55
13C9 PFNA	19	21	109	25-150		05/10/2022 01:55
13C8 PFOS	19	19	103	25-150		05/10/2022 01:55
13C2 8:2FTS	19	15	82	25-150		05/10/2022 01:55
13C6 PFDA	19	20	102	25-150		05/10/2022 01:55
d3-MeFOSAA	19	15	76	25-150		05/10/2022 01:55
13C8 PFOSA	19	16	81	25-150		05/10/2022 01:55
d5-EtFOSAA	19	15	75	25-150		05/10/2022 01:55
13C7 PFUdA	19	17	85	25-150		05/10/2022 01:55
13C2 PFDoA	19	16	80	25-150		05/10/2022 01:55
13C2 PFTeDA	19	14	70	25-150		05/10/2022 01:55
13C3 HFPO-DA	19	20	104	25-150		05/10/2022 01:55
d7-N-MeFOSE	19	14	70	10-150		05/10/2022 01:55
d9-N-EtFOSE	19	13	69	10-150		05/10/2022 01:55
d3-N-MeFOSA	19	10	53	10-150		05/10/2022 01:55
d5-N-EtFOSA	19	10	52	10-150		05/10/2022 01:55

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	FB-20220427	Extraction Date	05/06/2022 12:20
Lab Sample ID	10606351008	Total Amount Extracted	258mL
Lab File ID	Q220509B_037	Percent Moisture	N/A
Matrix	Water	Ical ID	220509A01
Collected	04/27/2022 07:00	CCal File	Q220509B_035
Received	04/28/2022 08:50	Ending CCal File	Q220509B_046
		Blank File	A220510B_006

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.43	0.43	1	375-22-4		05/10/2022 02:14
PFPeA	ND	1.9	0.42	0.42	1	2706-90-3		05/10/2022 02:14
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/10/2022 02:14
PFBS	ND	1.7	0.46	0.46	1	375-73-5		05/10/2022 02:14
PFHxA	ND	1.9	0.42	0.42	1	307-24-4		05/10/2022 02:14
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		05/10/2022 02:14
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		05/10/2022 02:14
PFHpA	ND	1.9	0.53	0.53	1	375-85-9		05/10/2022 02:14
DONA	ND	1.8	0.50	0.50	1	919005-14-4		05/10/2022 02:14
PFHxS	ND	1.8	0.49	0.49	1	355-46-4		05/10/2022 02:14
PFOA	ND	1.9	0.57	0.57	1	335-67-1		05/10/2022 02:14
6:2 FTS	ND	1.8	0.62	0.62	1	27619-97-2		05/10/2022 02:14
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		05/10/2022 02:14
PFNA	ND	1.9	0.72	0.72	1	375-95-1		05/10/2022 02:14
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		05/10/2022 02:14
PFOS	ND	1.8	0.53	0.53	1	1763-23-1		05/10/2022 02:14
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		05/10/2022 02:14
PFDA	ND	1.9	0.55	0.55	1	335-76-2		05/10/2022 02:14
EtFOSAm	ND	1.9	0.59	0.59	1	4151-50-2		05/10/2022 02:14
8:2 FTS	ND	1.9	0.63	0.63	1	39108-34-4		05/10/2022 02:14
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		05/10/2022 02:14
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		05/10/2022 02:14
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/10/2022 02:14
NMeFOSAA	ND	1.9	0.42	0.42	1	2355-31-9		05/10/2022 02:14
NEtFOSAA	ND	1.9	0.54	0.54	1	2991-50-6		05/10/2022 02:14
PFDS	ND	1.9	0.44	0.44	1	335-77-3		05/10/2022 02:14
PFDOA	ND	1.9	0.47	0.47	1	307-55-1		05/10/2022 02:14
MeFOSE	ND	1.9	0.32	0.32	1	24448-09-7		05/10/2022 02:14
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		05/10/2022 02:14
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/10/2022 02:14
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		05/10/2022 02:14
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		05/10/2022 02:14
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		05/10/2022 02:14

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	FB-20220427	Extraction Date	05/06/2022 12:20
Lab Sample ID	10606351008	Total Amount Extracted	258mL
Lab File ID	Q220509B_037	Percent Moisture	N/A
Matrix	Water	Ical ID	220509A01
Collected	04/27/2022 07:00	CCal File	Q220509B_035
Received	04/28/2022 08:50	Ending CCal File	Q220509B_046
		Blank File	A220510B_006

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	19	99	50-150		05/10/2022 02:14
13C4 PFOA	19	22	112	50-150		05/10/2022 02:14
13C2 PFDA	19	17	90	50-150		05/10/2022 02:14
13C4 PFOS	19	21	114	50-150		05/10/2022 02:14

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	20	104	25-150		05/10/2022 02:14
13C5 PFPeA	19	22	112	25-150		05/10/2022 02:14
13C3 PFBS	18	20	114	25-150		05/10/2022 02:14
13C2 4:2FTS	18	18	100	25-150		05/10/2022 02:14
13C5 PFHxA	19	20	104	25-150		05/10/2022 02:14
13C4 PFHpA	19	21	107	25-150		05/10/2022 02:14
13C3 PFHxS	18	19	106	25-150		05/10/2022 02:14
13C2 6:2FTS	18	18	100	25-150		05/10/2022 02:14
13C8 PFOA	19	22	111	25-150		05/10/2022 02:14
13C9 PFNA	19	20	103	25-150		05/10/2022 02:14
13C8 PFOS	19	18	95	25-150		05/10/2022 02:14
13C2 8:2FTS	19	14	77	25-150		05/10/2022 02:14
13C6 PFDA	19	19	96	25-150		05/10/2022 02:14
d3-MeFOSAA	19	12	61	25-150		05/10/2022 02:14
13C8 PFOSA	19	14	75	25-150		05/10/2022 02:14
d5-EtFOSAA	19	14	71	25-150		05/10/2022 02:14
13C7 PFUdA	19	17	86	25-150		05/10/2022 02:14
13C2 PFDaA	19	13	67	25-150		05/10/2022 02:14
13C2 PFTeDA	19	11	57	25-150		05/10/2022 02:14
13C3 HFPO-DA	19	21	110	25-150		05/10/2022 02:14
d7-N-MeFOSE	19	12	62	10-150		05/10/2022 02:14
d9-N-EtFOSE	19	13	66	10-150		05/10/2022 02:14
d3-N-MeFOSA	19	11	55	10-150		05/10/2022 02:14
d5-N-EtFOSA	19	11	59	10-150		05/10/2022 02:14

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKSN	Extraction Date	05/06/2022 12:20
Lab Sample ID	BLANK-98543	Total Amount Extracted	250mL
Lab File ID	A220510B_006	Percent Moisture	N/A
Matrix	Water	Ical ID	220510A03
Collected	05/03/2022 10:40	CCal File	A220510B_002
Received	05/03/2022 10:40	Ending CCal File	A220510B_024
		Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.44	0.44	1	375-22-4		05/10/2022 15:20
PFPeA	ND	2.0	0.44	0.44	1	2706-90-3		05/10/2022 15:20
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		05/10/2022 15:20
PFBS	ND	1.8	0.47	0.47	1	375-73-5		05/10/2022 15:20
PFHxA	ND	2.0	0.44	0.44	1	307-24-4		05/10/2022 15:20
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		05/10/2022 15:20
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		05/10/2022 15:20
PFHpA	ND	2.0	0.55	0.55	1	375-85-9		05/10/2022 15:20
DONA	ND	1.9	0.51	0.51	1	919005-14-4		05/10/2022 15:20
PFHxS	ND	1.8	0.51	0.51	1	355-46-4		05/10/2022 15:20
PFOA	ND	2.0	0.58	0.58	1	335-67-1		05/10/2022 15:20
6:2 FTS	0.92 J	1.9	0.64	0.64	1	27619-97-2		05/10/2022 15:20
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		05/10/2022 15:20
PFNA	ND	2.0	0.74	0.74	1	375-95-1		05/10/2022 15:20
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		05/10/2022 15:20
PFOS	ND	1.8	0.55	0.55	1	1763-23-1		05/10/2022 15:20
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		05/10/2022 15:20
PFDA	ND	2.0	0.56	0.56	1	335-76-2		05/10/2022 15:20
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		05/10/2022 15:20
8:2 FTS	ND	1.9	0.65	0.65	1	39108-34-4		05/10/2022 15:20
9-CI-PF3ON	ND	1.9	0.30	0.30	1	756426-58-1		05/10/2022 15:20
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		05/10/2022 15:20
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		05/10/2022 15:20
NMeFOSAA	ND	2.0	0.43	0.43	1	2355-31-9		05/10/2022 15:20
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		05/10/2022 15:20
PFDS	ND	1.9	0.45	0.45	1	335-77-3		05/10/2022 15:20
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		05/10/2022 15:20
MeFOSE	ND	2.0	0.33	0.33	1	24448-09-7		05/10/2022 15:20
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		05/10/2022 15:20
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		05/10/2022 15:20
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		05/10/2022 15:20
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		05/10/2022 15:20
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		05/10/2022 15:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKSN	Extraction Date	05/06/2022 12:20
Lab Sample ID	BLANK-98543	Total Amount Extracted	250mL
Lab File ID	A220510B_006	Percent Moisture	N/A
Matrix	Water	Ical ID	220510A03
Collected	05/03/2022 10:40	CCal File	A220510B_002
Received	05/03/2022 10:40	Ending CCal File	A220510B_024
		Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	21	104	50-150		05/10/2022 15:20
13C4 PFOA	20	19	96	50-150		05/10/2022 15:20
13C2 PFDA	20	20	101	50-150		05/10/2022 15:20
13C4 PFOS	19	20	104	50-150		05/10/2022 15:20

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	22	108	50-150		05/10/2022 15:20
13C5 PFPeA	20	22	108	50-150		05/10/2022 15:20
13C3 PFBS	19	19	105	50-150		05/10/2022 15:20
13C2 4:2FTS	19	21	115	50-150		05/10/2022 15:20
13C5 PFHxA	20	22	110	50-150		05/10/2022 15:20
13C4 PFHpA	20	22	108	50-150		05/10/2022 15:20
13C3 PFHxS	19	20	104	50-150		05/10/2022 15:20
13C2 6:2FTS	19	19	101	50-150		05/10/2022 15:20
13C8 PFOA	20	22	111	50-150		05/10/2022 15:20
13C9 PFNA	20	21	107	50-150		05/10/2022 15:20
13C8 PFOS	19	20	106	50-150		05/10/2022 15:20
13C2 8:2FTS	19	20	107	50-150		05/10/2022 15:20
13C6 PFDA	20	21	105	50-150		05/10/2022 15:20
d3-MeFOSAA	20	18	89	50-150		05/10/2022 15:20
13C8 PFOSA	20	17	86	50-150		05/10/2022 15:20
d5-EtFOSAA	20	17	83	50-150		05/10/2022 15:20
13C7 PFUdA	20	20	101	50-150		05/10/2022 15:20
13C2 PFDoA	20	19	94	50-150		05/10/2022 15:20
13C2 PFTeDA	20	18	92	50-150		05/10/2022 15:20
13C3 HFPO-DA	20	21	107	50-150		05/10/2022 15:20
d7-N-MeFOSE	20	16	80	20-150		05/10/2022 15:20
d9-N-EtFOSE	20	16	81	20-150		05/10/2022 15:20
d3-N-MeFOSA	20	13	65	20-150		05/10/2022 15:20
d5-N-EtFOSA	20	13	66	20-150		05/10/2022 15:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKZW	Extraction Date	05/19/2022 15:17
Lab Sample ID	BLANK-98939	Total Amount Extracted	261mL
Lab File ID	B220524A_044	Percent Moisture	N/A
Matrix	Water	Ical ID	220523B02
Collected	05/16/2022 14:29	CCal File	B220524B_037
Received	05/16/2022 14:29	Ending CCal File	B220524A_048
		Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.42	0.42	1	375-22-4		05/25/2022 13:44
PFPeA	ND	1.9	0.42	0.42	1	2706-90-3		05/25/2022 13:44
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/25/2022 13:44
PFBS	ND	1.7	0.45	0.45	1	375-73-5		05/25/2022 13:44
PFHxA	ND	1.9	0.42	0.42	1	307-24-4		05/25/2022 13:44
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		05/25/2022 13:44
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		05/25/2022 13:44
PFHpA	ND	1.9	0.53	0.53	1	375-85-9		05/25/2022 13:44
DONA	ND	1.8	0.49	0.49	1	919005-14-4		05/25/2022 13:44
PFHxS	ND	1.7	0.49	0.49	1	355-46-4		05/25/2022 13:44
PFOA	ND	1.9	0.56	0.56	1	335-67-1		05/25/2022 13:44
6:2 FTS	0.82 J	1.8	0.62	0.62	1	27619-97-2		05/25/2022 13:44
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		05/25/2022 13:44
PFNA	ND	1.9	0.71	0.71	1	375-95-1		05/25/2022 13:44
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		05/25/2022 13:44
PFOS	ND	1.8	0.52	0.52	1	1763-23-1		05/25/2022 13:44
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		05/25/2022 13:44
PFDA	ND	1.9	0.54	0.54	1	335-76-2		05/25/2022 13:44
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		05/25/2022 13:44
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		05/25/2022 13:44
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		05/25/2022 13:44
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		05/25/2022 13:44
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/25/2022 13:44
NMeFOSAA	ND	1.9	0.42	0.42	1	2355-31-9		05/25/2022 13:44
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		05/25/2022 13:44
PFDS	ND	1.8	0.43	0.43	1	335-77-3		05/25/2022 13:44
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		05/25/2022 13:44
MeFOSE	ND	1.9	0.32	0.32	1	24448-09-7		05/25/2022 13:44
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		05/25/2022 13:44
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/25/2022 13:44
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		05/25/2022 13:44
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		05/25/2022 13:44
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		05/25/2022 13:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKZW	Extraction Date	05/19/2022 15:17
Lab Sample ID	BLANK-98939	Total Amount Extracted	261mL
Lab File ID	B220524A_044	Percent Moisture	N/A
Matrix	Water	Ical ID	220523B02
Collected	05/16/2022 14:29	CCal File	B220524B_037
Received	05/16/2022 14:29	Ending CCal File	B220524A_048
		Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	20	106	50-150		05/25/2022 13:44
13C4 PFOA	19	21	108	50-150		05/25/2022 13:44
13C2 PFDA	19	19	98	50-150		05/25/2022 13:44
13C4 PFOS	18	21	114	50-150		05/25/2022 13:44

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	19	101	50-150		05/25/2022 13:44
13C5 PFPeA	19	19	101	50-150		05/25/2022 13:44
13C3 PFBS	18	19	108	50-150		05/25/2022 13:44
13C2 4:2FTS	18	19	105	50-150		05/25/2022 13:44
13C5 PFHxA	19	19	99	50-150		05/25/2022 13:44
13C4 PFHpA	19	20	103	50-150		05/25/2022 13:44
13C3 PFHxS	18	19	103	50-150		05/25/2022 13:44
13C2 6:2FTS	18	17	93	50-150		05/25/2022 13:44
13C8 PFOA	19	20	102	50-150		05/25/2022 13:44
13C9 PFNA	19	19	99	50-150		05/25/2022 13:44
13C8 PFOS	18	20	108	50-150		05/25/2022 13:44
13C2 8:2FTS	18	17	91	50-150		05/25/2022 13:44
13C6 PFDA	19	18	96	50-150		05/25/2022 13:44
d3-MeFOSAA	19	17	89	50-150		05/25/2022 13:44
13C8 PFOSA	19	10	55	50-150		05/25/2022 13:44
d5-EtFOSAA	19	16	86	50-150		05/25/2022 13:44
13C7 PFUdA	19	18	95	50-150		05/25/2022 13:44
13C2 PFDaA	19	17	89	50-150		05/25/2022 13:44
13C2 PFTeDA	19	17	87	50-150		05/25/2022 13:44
13C3 HFPO-DA	19	20	104	50-150		05/25/2022 13:44
d7-N-MeFOSE	19	10	54	20-150		05/25/2022 13:44
d9-N-EtFOSE	19	9.7	51	20-150		05/25/2022 13:44
d3-N-MeFOSA	19	9.4	49	20-150		05/25/2022 13:44
d5-N-EtFOSA	19	8.9	46	20-150		05/25/2022 13:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-98544	Instrument ID	10LCMS03
Run File Name	A220510B_007	Column ID	112EB00094
Analyzed	05/10/2022 15:35	Ical ID	220510A03
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	21	107	50-150	
13C4_PFOA	20	20	101	50-150	
13C2_PFDA	20	22	110	50-150	
13C4_PFOS	19	20	106	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	20	22	108	50-150	
13C5_PFPeA	20	22	108	50-150	
13C3_PFBFS	19	19	105	50-150	
13C2_4:2FTS	19	20	106	50-150	
13C5_PFHxA	20	22	110	50-150	
13C4_PFHpA	20	21	104	50-150	
13C3_PFHxS	19	19	99	50-150	
13C2_6:2FTS	19	18	94	50-150	
13C8_PFOA	20	22	108	50-150	
13C9_PFNA	20	21	105	50-150	
13C8_PFOS	19	19	102	50-150	
13C2_8:2FTS	19	19	99	50-150	
13C6_PFDA	20	19	97	50-150	
d3-MeFOSAA	20	18	89	50-150	
13C8_PFOA	20	11	53	50-150	
d5-EtFOSAA	20	16	81	50-150	
13C7_PFUdA	20	20	98	50-150	
13C2_PFDaA	20	18	88	50-150	
13C2_PFTeDA	20	17	86	50-150	
13C3_HFPO-DA	20	23	113	50-150	
d7-N-MeFOSE	20	7.8	39	20-150	
d9-N-EtFOSE	20	7.3	37	20-150	
d3-N-MeFOSA	20	0.26	1	20-150	R
d5-N-EtFOSA	20	0.24	1	20-150	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-98544
 Run File Name A220510B_007
 Analyzed 05/10/2022 15:35
 Injected By NH

Instrument ID 10LCMS03
 Column ID 112EB00094
 Ical ID 220510A03
 Level L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.0	4.0	99	50-150		375-22-4
PFPeA	4.0	3.7	92	50-150		2706-90-3
HFPO-DA	4.0	3.8	94	50-150		13252-13-6
PFBS	3.5	3.7	104	50-150		375-73-5
PFHxA	4.0	3.9	97	50-150		307-24-4
4:2 FTS	3.7	3.6	96	50-150		757124-72-4
PFPeS	3.8	3.7	98	50-150		2706-91-4
PFHpA	4.0	3.9	97	50-150		375-85-9
DONA	3.8	3.6	96	50-150		919005-14-4
PFHxS	3.6	3.7	101	50-150		355-46-4
PFOA	4.0	3.6	90	50-150		335-67-1
6:2 FTS	3.8	4.4	115	50-150		27619-97-2
PFHpS	3.8	3.7	97	50-150		375-92-8
PFNA	4.0	3.8	94	50-150		375-95-1
PFOSAm	4.0	3.8	96	50-150		754-91-6
PFOS	3.7	3.6	97	50-150		1763-23-1
MeFOSA	4.0	5.5	138	50-150		31506-32-8
PFDA	4.0	4.0	101	50-150		335-76-2
EtFOSAm	4.0	4.8	119	50-150		4151-50-2
8:2 FTS	3.8	3.3	86	50-150		39108-34-4
9-CI-PF3ON	3.7	3.4	92	50-150		756426-58-1
PFNS	3.8	3.5	91	50-150		68259-12-1
PFUnDA	4.0	3.8	94	50-150		2058-94-8
NMeFOSAA	4.0	3.8	96	50-150		2355-31-9
NEtFOSAA	4.0	4.1	102	50-150		2991-50-6
PFDS	3.9	3.3	85	50-150		335-77-3
PFDOA	4.0	4.1	103	50-150		307-55-1
MeFOSE	4.0	3.6	91	50-150		24448-09-7
EtFOSE	4.0	3.3	83	50-150		1691-99-2
11-CI-PF3OUdS	3.8	3.3	86	50-150		763051-92-9
PFTrDA	4.0	3.7	93	50-150		72629-94-8
PFDoS	3.9	3.2	83	50-150		79780-39-5
PFTDA	4.0	3.9	97	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-98544
 Run File Name A220510B_007
 Analyzed 05/10/2022 15:35
 Injected By NH

Instrument ID 10LCMS03
 Column ID 112EB00094
 Ical ID 220510A03
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	4.94	4.94	
13C4 PFOA	N/A	N/A	5.91	5.92	
13C2 PFDA	N/A	N/A	6.78	6.79	
13C4 PFOS	N/A	N/A	7.07	7.06	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	3.49	3.48	
13C5 PFPeA	N/A	N/A	4.34	4.33	
13C3 PFBS	N/A	N/A	5.11	5.10	
13C2 4:2FTS	N/A	N/A	4.73	4.71	
13C5 PFHxA	N/A	N/A	4.94	4.93	
13C4 PFHpA	N/A	N/A	5.45	5.43	
13C3 PFHxS	N/A	N/A	6.17	6.15	
13C2 6:2FTS	N/A	N/A	5.68	5.66	
13C8 PFOA	N/A	N/A	5.91	5.89	
13C9 PFNA	N/A	N/A	6.35	6.33	
13C8 PFOS	N/A	N/A	7.07	7.06	
13C2 8:2FTS	N/A	N/A	6.55	6.52	
13C6 PFDA	N/A	N/A	6.78	6.76	
d3-MeFOSAA	N/A	N/A	6.74	6.72	
13C8 PFOSA	N/A	N/A	8.63	8.62	
d5-EtFOSAA	N/A	N/A	6.94	6.92	
13C7 PFUdA	N/A	N/A	7.21	7.19	
13C2 PFDoA	N/A	N/A	7.64	7.62	
13C2 PFTeDA	N/A	N/A	8.47	8.47	
13C3 HFPO-DA	N/A	N/A	5.15	5.14	
d7-N-MeFOSE	N/A	N/A	9.98	10.03	
d9-N-EtFOSE	N/A	N/A	10.59	10.66	
d3-N-MeFOSA	N/A	N/A	10.23	10.20	R
d5-N-EtFOSA	N/A	N/A	10.89	10.96	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-98544
 Run File Name A220510B_007
 Analyzed 05/10/2022 15:35
 Injected By NH

Instrument ID 10LCMS03
 Column ID 112EB00094
 Ical ID 220510A03
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.49	3.50	
PFPeA	N/A	N/A	4.35	4.36	
HFPO-DA	0.46	0.43	5.16	5.17	
PFBS	0.33	0.32	5.11	5.12	
PFHxA	0.05	0.04	4.95	4.95	
4:2 FTS	0.54	0.66	4.73	4.73	
PFPeS	0.34	0.35	5.68	5.69	
PFHpA	0.29	0.26	5.46	5.45	
DONA	0.49	0.46	5.63	5.62	
PFHxS	0.28	0.30	6.17	6.19	
PFOA	0.37	0.35	5.91	5.92	
6:2 FTS	0.49	0.54	5.68	5.69	
PFHpS	0.26	0.23	6.64	6.64	
PFNA	0.19	0.16	6.35	6.36	
PFOSAm	N/A	N/A	8.64	8.64	
PFOS	0.23	0.22	7.08	7.09	
MeFOSA	0.97	0.98	10.26	10.26	
PFDA	0.10	0.07	6.79	6.79	
EtFOSAm	0.54	0.60	10.93	10.93	
8:2 FTS	0.71	0.65	6.55	6.55	
9-Cl-PF3ON	0.01	0.01	7.39	7.40	
PFNS	0.23	0.24	7.51	7.52	
PFUnDA	0.08	0.09	7.22	7.22	
NMeFOSAA	0.66	0.65	6.74	6.75	
NEtFOSAA	0.69	0.76	6.95	6.96	
PFDS	0.24	0.21	7.92	7.93	
PFDOA	0.12	0.14	7.64	7.65	
MeFOSE	N/A	N/A	10.02	10.02	
EtFOSE	0.00	0.00	10.65	10.65	
11-Cl-PF3OUdS	0.01	0.01	8.23	8.24	
PFTrDA	0.15	0.13	8.06	8.07	
PFDoS	0.20	0.22	8.72	8.74	
PFTDA	0.14	0.15	8.47	8.51	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-98940	Instrument ID	10LCMS02
Run File Name	B220603B_004	Column ID	125GA90033
Analyzed	06/03/2022 20:57	Ical ID	220603A02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	19	100	50-150	
13C4_PFOA	19	17	92	50-150	
13C2_PFDA	19	17	91	50-150	
13C4_PFOS	18	16	89	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	19	18	95	50-150	
13C5_PFPeA	19	18	95	50-150	
13C3_PFBFS	17	18	101	50-150	
13C2_4:2FTS	17	16	92	50-150	
13C5_PFHxA	19	18	95	50-150	
13C4_PFHpA	19	19	99	50-150	
13C3_PFHxS	18	17	95	50-150	
13C2_6:2FTS	18	17	93	50-150	
13C8_PFOA	19	18	96	50-150	
13C9_PFNA	19	18	97	50-150	
13C8_PFOS	18	17	96	50-150	
13C2_8:2FTS	18	17	95	50-150	
13C6_PFDA	19	18	94	50-150	
d3-MeFOSAA	19	19	104	50-150	
13C8_PFOSA	19	18	97	50-150	
d5-EtFOSAA	19	21	110	50-150	
13C7_PFUdA	19	18	95	50-150	
13C2_PFDaA	19	17	92	50-150	
13C2_PFTeDA	19	17	93	50-150	
13C3_HFPO-DA	19	18	96	50-150	
d7-N-MeFOSE	19	20	105	20-150	
d9-N-EtFOSE	19	17	91	20-150	
d3-N-MeFOSA	19	18	94	20-150	
d5-N-EtFOSA	19	18	96	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

LCS Analysis Summary
 PFAS by Isotope Dilution

Page 2 of 4

Lab Sample ID LCS-98940
 Run File Name B220603B_004
 Analyzed 06/03/2022 20:57
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220603A02
 Level L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.7	4.7	127	50-150		375-22-4
PFPeA	3.7	4.7	126	50-150		2706-90-3
HFPO-DA	3.7	4.7	125	50-150		13252-13-6
PFBS	3.3	4.2	128	50-150		375-73-5
PFHxA	3.7	4.5	120	50-150		307-24-4
4:2 FTS	3.5	4.5	130	50-150		757124-72-4
PFPeS	3.5	4.5	127	50-150		2706-91-4
PFHpA	3.7	4.5	121	50-150		375-85-9
DONA	3.5	4.8	135	50-150		919005-14-4
PFHxS	3.4	4.2	122	50-150		355-46-4
PFOA	3.7	4.9	132	50-150		335-67-1
6:2 FTS	3.6	4.3	122	50-150		27619-97-2
PFHpS	3.6	3.9	109	50-150		375-92-8
PFNA	3.7	4.6	124	50-150		375-95-1
PFOSAm	3.7	4.7	124	50-150		754-91-6
PFOS	3.5	4.1	117	50-150		1763-23-1
MeFOSA	3.7	4.3	116	50-150		31506-32-8
PFDA	3.7	4.6	123	50-150		335-76-2
EtFOSAm	3.7	4.4	118	50-150		4151-50-2
8:2 FTS	3.6	4.6	128	50-150		39108-34-4
9-CI-PF3ON	3.5	4.2	120	50-150		756426-58-1
PFNS	3.6	4.6	127	50-150		68259-12-1
PFUnDA	3.7	4.6	124	50-150		2058-94-8
NMeFOSAA	3.7	4.3	114	50-150		2355-31-9
NEtFOSAA	3.7	4.3	115	50-150		2991-50-6
PFDS	3.6	4.4	122	50-150		335-77-3
PFDOA	3.7	4.7	126	50-150		307-55-1
MeFOSE	3.7	4.5	121	50-150		24448-09-7
EtFOSE	3.7	4.8	128	50-150		1691-99-2
11-CI-PF3OUdS	3.5	4.4	124	50-150		763051-92-9
PFTrDA	3.7	5.1	135	50-150		72629-94-8
PFDoS	3.6	4.6	127	50-150		79780-39-5
PFTDA	3.7	4.6	122	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-98940
 Run File Name B220603B_004
 Analyzed 06/03/2022 20:57
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220603A02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	5.85	5.82	
13C4 PFOA	N/A	N/A	7.22	7.15	
13C2 PFDA	N/A	N/A	8.60	8.57	
13C4 PFOS	N/A	N/A	9.11	9.07	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.34	4.37	
13C5 PFPeA	N/A	N/A	5.15	5.15	
13C3 PFBS	N/A	N/A	6.13	6.16	
13C2 4:2FTS	N/A	N/A	5.56	5.56	
13C5 PFHxA	N/A	N/A	5.85	5.85	
13C4 PFHpA	N/A	N/A	6.54	6.54	
13C3 PFHxS	N/A	N/A	7.67	7.66	
13C2 6:2FTS	N/A	N/A	6.87	6.86	
13C8 PFOA	N/A	N/A	7.22	7.22	
13C9 PFNA	N/A	N/A	7.90	7.90	
13C8 PFOS	N/A	N/A	9.12	9.12	
13C2 8:2FTS	N/A	N/A	8.20	8.20	
13C6 PFDA	N/A	N/A	8.60	8.61	
d3-MeFOSAA	N/A	N/A	8.46	8.46	
13C8 PFOSA	N/A	N/A	10.87	10.88	
d5-EtFOSAA	N/A	N/A	8.77	8.77	
13C7 PFUdA	N/A	N/A	9.30	9.31	
13C2 PFDoA	N/A	N/A	9.99	10.01	
13C2 PFTeDA	N/A	N/A	11.34	11.36	
13C3 HFPO-DA	N/A	N/A	6.13	6.13	
d7-N-MeFOSE	N/A	N/A	12.58	12.58	
d9-N-EtFOSE	N/A	N/A	13.05	13.05	
d3-N-MeFOSA	N/A	N/A	12.78	12.79	
d5-N-EtFOSA	N/A	N/A	13.21	13.22	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-98940
 Run File Name B220603B_004
 Analyzed 06/03/2022 20:57
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220603A02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.34	4.36	
PFPeA	N/A	N/A	5.16	5.14	
HFPO-DA	0.27	0.28	6.15	6.14	
PFBS	0.39	0.42	6.13	6.09	
PFHxA	0.09	0.08	5.86	5.84	
4:2 FTS	0.86	0.92	5.57	5.56	
PFPeS	0.39	0.39	6.93	6.89	
PFHpA	0.30	0.27	6.55	6.50	
DONA	0.62	0.62	6.80	6.76	
PFHxS	0.34	0.34	7.67	7.65	
PFOA	0.37	0.36	7.23	7.22	
6:2 FTS	0.88	0.97	6.87	6.86	
PFHpS	0.40	0.36	8.41	8.41	
PFNA	0.14	0.14	7.91	7.91	
PFOSAm	N/A	N/A	10.88	10.89	
PFOS	0.35	0.37	9.13	9.11	
MeFOSA	0.58	0.51	12.81	12.77	
PFDA	0.17	0.20	8.62	8.59	
EtFOSAm	0.61	0.58	13.24	13.24	
8:2 FTS	0.95	1.10	8.21	8.21	
9-Cl-PF3ON	0.06	0.05	9.63	9.64	
PFNS	0.44	0.48	9.82	9.83	
PFUnDA	0.14	0.12	9.31	9.32	
NMeFOSAA	0.86	0.83	8.46	8.55	
NEtFOSAA	0.60	0.69	8.78	8.77	
PFDS	0.35	0.37	10.50	10.53	
PFDOA	0.16	0.19	10.00	10.02	
MeFOSE	N/A	N/A	12.61	12.62	
EtFOSE	0.00	0.00	13.09	13.09	
11-Cl-PF3OUdS	0.02	0.02	10.99	11.01	
PFTrDA	0.15	0.16	10.68	10.70	
PFDoS	0.47	0.48	11.77	11.78	
PFTDA	0.24	0.24	11.35	11.36	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

May 2022

June 29, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS-Revised Report
Pace Project No.: 10610437

Dear Mike Ursin:

Enclosed are the analytical results for sample(s) received by the laboratory on May 27, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

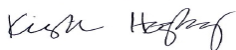
The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

This report was revised June 29, 2022, to add additional narration to the PFAS report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10610437001	Influent-02 20220523	Water	05/24/22 11:59	05/27/22 08:50
10610437002	Influent-07 20220523	Water	05/24/22 11:59	05/27/22 08:50
10610437003	Influent-08 20220523	Water	05/24/22 11:59	05/27/22 08:50
10610437004	Influent-11 20220523	Water	05/24/22 11:59	05/27/22 08:50
10610437005	Influent-18 20220523	Water	05/24/22 11:59	05/27/22 08:50
10610437006	Effluent 20220525	Water	05/25/22 11:59	05/27/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10610437001	Influent-02 20220523	SM 2540D	DP1	1
10610437002	Influent-07 20220523	SM 2540D	DP1	1
10610437003	Influent-08 20220523	SM 2540D	DP1	1
10610437004	Influent-11 20220523	SM 2540D	DP1	1
10610437005	Influent-18 20220523	SM 2540D	DP1	1
10610437006	Effluent 20220525	SM 2540D	DP1	1

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: June 29, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

Sample: Influent-02 20220523 Lab ID: 10610437001 Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	208	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-07 20220523 Lab ID: 10610437002 Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	214	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-08 20220523 Lab ID: 10610437003 Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	221	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-11 20220523 Lab ID: 10610437004 Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	248	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-18 20220523 Lab ID: 10610437005 Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	230	mg/L	33.3	16.7	1		05/30/22 17:12		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

Sample: Effluent 20220525 **Lab ID: 10610437006** Collected: 05/25/22 11:59 Received: 05/27/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Pace Analytical Services - Minneapolis									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		06/01/22 11:40		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

QC Batch:	818417	Analysis Method:	SM 2540D
QC Batch Method:	SM 2540D	Analysis Description:	2540D Total Suspended Solids
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10610437001, 10610437002, 10610437003, 10610437004, 10610437005

METHOD BLANK: 4337651 Matrix: Water

Associated Lab Samples: 10610437001, 10610437002, 10610437003, 10610437004, 10610437005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	05/30/22 17:12	

LABORATORY CONTROL SAMPLE: 4337652

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	83.8	84	80-120	

SAMPLE DUPLICATE: 4337828

Parameter	Units	10610221004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

QC Batch: 818777	Analysis Method: SM 2540D
QC Batch Method: SM 2540D	Analysis Description: 2540D Total Suspended Solids
	Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10610437006

METHOD BLANK: 4339009 Matrix: Water

Associated Lab Samples: 10610437006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	06/01/22 11:38	

LABORATORY CONTROL SAMPLE: 4339010

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	97.4	97	80-120	

SAMPLE DUPLICATE: 4339011

Parameter	Units	10610293002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND			5

SAMPLE DUPLICATE: 4339012

Parameter	Units	10610394001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	202	191	5	5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10610437

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10610437001	Influent-02 20220523	SM 2540D	818417		
10610437002	Influent-07 20220523	SM 2540D	818417		
10610437003	Influent-08 20220523	SM 2540D	818417		
10610437004	Influent-11 20220523	SM 2540D	818417		
10610437005	Influent-18 20220523	SM 2540D	818417		
10610437006	Effluent 20220525	SM 2540D	818777		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workor

WO#: 10610437



ALL SHADE

Container Preservative Type

10610437

Company: TRC

Billing Information: Bill to MMSD (see P.O.)

Address: 708

Report To: Mike Ursin

Email To: mursin@trccompanies.com

Copy To: Lydia Auner Jeff Ramey

Site Collection Info/Address: 1610 Moorland Rd

Customer Project Name/Number: MMSD PFAS

State: WI County/City: Madison Time Zone Collected: [] PT [] MT [] CT [] ET

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Phone: Email:	Site/Facility ID #:	Compliance Monitoring? [] Yes [] No
Collected By (print):	Purchase Order #: Quote #:	DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required:	Immediately Packed on Ice: [] Yes [] No
Sample Disposal: [] Dispose as appropriate [] Return [] Archive: [] Hold:	Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day (Expedite Charges Apply)	Field Filtered (if applicable): [] Yes [] No Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
INFLUENT-02 20220523	WW	C	05/23/22	0:00	05/24/22	11:59		3
-07								3
-08								3
-11								3
-18								3
EFFLUENT 20220525	WW	C	5/25/22	0:00	5/25/22	11:59		3

PFAS W I 32-List

Analyses																				
TSS	X	X																		

Lab Profile/Line: 43476

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips:			
Sample pH Acceptable	Y	N	NA
pH Strips:			
Sulfide Present	Y	N	NA
Lead Acetate Strips:			

LAB USE ONLY:
Lab Sample # / Comments:

001
002
003
004
005
006

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:
Radchem sample(s) screened (<500 ppm): Y N NA

Lab Tracking #: 2831054
Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: 17
Cooler 1 Temp Upon Receipt: 28.8°C
Cooler 1 Therm Corr. Factor: 2.8°C
Cooler 1 Corrected Temp: 26.0°C
Comments:

Relinquished by/Company: (Signature) *Gennifer Faust*
Date/Time: 05/26/22

Received by/Company: (Signature) *W. J. Paer*
Date/Time: 5/27/22 8:50

Relinquished by/Company: (Signature) *[Signature]*
Date/Time:

Received by/Company: (Signature)
Date/Time:

Relinquished by/Company: (Signature)
Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:
Trip Blank Received: Y N NA
HCL MeOH TSP Other
Non Conformance(s): YES / NO
Page: of:

DC# Title: ENV-FRM-MIN4-0150 v05 Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022



Sample Condition Upon Receipt

Client Name: TRC

Project #: _____

Courier: Fed Ex UPS USPS Client
 Pace SpeedDee Commercial

Tracking Number: 5405 1419 9582

See Exceptions
 ENV-FRM-MIN4-0142

WO#: 10610437

PM: KNH **Due Date: 06/06/22**

CLIENT: TRC-WI

Custody Seal on Cooler/Box Present? Yes No

Seals Intact? Yes No

Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap Bubble Bags None Other: Ziplocks

Temp Blank? Yes No

Thermometer: T1(0461) T2(1336) T3(0459) T4(0254) T5(0489) T6(0235)
 T7 (0042) 01339252/1710 122639816 140792808

Type of Ice: Wet Blue None Dry Melted

Did Samples Originate in West Virginia? Yes No

Were All Container Temps Taken? Yes No N/A

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 2.8 °C

Average Corrected Temp (no temp blank only): _____ °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 2.8 °C

Average Corrected Temp (no temp blank only): _____ °C

See Exceptions ENV-FRM-MIN4-0142
 1 Container

USDA Regulated Soil: (N/A, water sample/Other: _____)

Date/Initials of Person Examining Contents: KNH 05/28/22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If Fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8hr, <24 hrs, <input type="checkbox"/> >24 hrs
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other-	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Positive for Res. Chlorine? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142 pH Paper Lot#
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased): _____
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Field Data Required? Yes No

Project Manager Review: Kirsten Hogberg **Date:** 5/31/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: KNH (2)

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Information:

Pace Project #: 10610437
Sample Receipt Date: 05/27/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



June 29, 2022

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

June 29, 2022

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance. Reporting limits were set to MDL levels. This report was revised June 29, 2022 to update the narrative.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. The RPDs (relative percent differences) between one designated spike and its duplicate were within the method limits. A matrix spike was prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

Diminished/elevated extracted internal standard (EIS) recovery ("R" flagged) were present in sample and LCS-99351, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

With the exception of 13C2_PFDA in "Effluent 20220525", the four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Values were flagged "I" where incorrect isotope ratios were obtained.

Samples Influent-02 20220523, Influent-07 20220523, Influent-08 20220523, Influent-11 20220523, and Influent-18 20220523 required centrifugation prior to extraction due to excessive solids present in the samples. Centrifugation was

DISCUSSION

performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and centrifuged for 10 mins. Sample bottles were rinsed with methanol as normal. The bottle rinsate was added to the elution. Samples concentrated to <1mL and reconstituted to 1mL using methanol by transfer pipet.

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

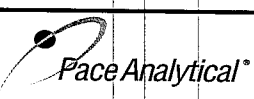


Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Influent-02 20220523	10610437001	05/27/2022	Water
Influent-07 20220523	10610437002	05/27/2022	Water
Influent-08 20220523	10610437003	05/27/2022	Water
Influent-11 20220523	10610437004	05/27/2022	Water
Influent-18 20220523	10610437005	05/27/2022	Water
Effluent 20220525	10610437006	05/27/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workor

WO#: 10610437



Report To: 708

Company: TRC
Address: 708

Billing Information: Bill to MMSD (see P.O.)

ALL SHADE

Container Preservative Type

Report To: Mike Ursin
Copy To: Lydia Auner Jeff Ramey

Email To: mursin@trccompanies.com
Site Collection Info/Address: 1610 Moorland Rd

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Project Name/Number: MMSD PFAS

State: County/City: Time Zone: WI Madison []PT []MT [x]CT []ET

Analyses

Lab Profile/Line: 43476

Phone:
Email:

Site/Facility ID #:

Compliance Monitoring? [] Yes [] No

Collected By (print):

Purchase Order #:
Quote #:

DW PWS ID #:
DW Location Code:

Collected By (signature):

Turnaround Date Required:

Immediately Packed on Ice: [] Yes [] No

Sample Disposal: [] Dispose as appropriate [] Return [] Archive [] Hold

Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day (Expedite Charges Apply)

Field Filtered (if applicable): [] Yes [] No
Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Table with columns: Customer Sample ID, Matrix, Comp/Grab, Collected (or Composite Start) Date/Time, Composite End Date/Time, Res Cl, # of Ctns. Rows include INFLUENT and EFFLUENT samples.

PFAS WI 33-List

TSS

- Lab Sample Receipt Checklist: Custody Seals Present/Intact, Collector Signatures Present, Bottles Intact, Correct Bottles, Sufficient Volume, Samples Received on Ice, VOA - Headspace Acceptable, USDA Regulated Soils, Samples in Holding Time, Residual Chlorine Present, Cl Strips, Sample pH Acceptable, pH Strips, Sulfide Present, Lead Acetate Strips.

LAB USE ONLY: Lab Sample # / Comments:

001
002
003
004
005
006

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: 2831054

Radchem sample(s) screened (<500 ppm): Y N NA

Samples received via: FEDEX UPS Client Courier Pace Courier

Relinquished by/Company: (Signature)

Date/Time: 05/26/22

Received by/Company: (Signature)

Date/Time: 5/27/22 850

Table #: MTJL LAB USE ONLY

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Template:

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Prelogin:

Lab Sample Temperature Info: Temp Blank Received, Therm ID#, Cooler 1 Temp Upon Receipt, Cooler 1 Therm Corr. Factor, Cooler 1 Corrected Temp, Comments:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO Page: of:

Page 7 of 4

DC# Title: ENV-FRM-MIN4-0150 v05 Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022



Sample Condition Upon Receipt

Client Name: TRC

Project #:

Courier: Fed Ex UPS USPS Client
 Pace SpeedDee Commercial

Tracking Number: 5405 1419 9582

See Exceptions
 ENV-FRM-MIN4-0142

WO#: 10610437

PM: KNH **Due Date: 06/06/22**

CLIENT: TRC-WI

Custody Seal on Cooler/Box Present? Yes No

Seals Intact? Yes No

Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap Bubble Bags None Other: Ziplocks

Temp Blank? Yes No

Thermometer: T1(0461) T2(1336) T3(0459) T4(0254) T5(0489) T6(0235)
 T7 (0042) 01339252/1710 122639816 140792808

Type of Ice: Wet Blue None Dry Melted

Did Samples Originate in West Virginia? Yes No

Were All Container Temps Taken? Yes No N/A

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 2.8 °C

Average Corrected Temp (no temp blank only): °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 2.8 °C

See Exceptions
 ENV-FRM-MIN4-0142
 1 Container

USDA Regulated Soil: (N/A, water sample/Other:)

Date/Initials of Person Examining Contents: KNH 05/28/22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If Fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8hr, <24 hrs, <input type="checkbox"/> >24 hrs
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other-	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Positive for Res. Chlorine? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142
	pH Paper Lot#
	Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. See Exception <input type="checkbox"/> ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ **Date/Time:** _____

Comments/Resolution: _____ **Field Data Required?** Yes No

Project Manager Review: Kirsten Hogberg **Date:** 5/31/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: KNH (2)

Page 21 of 46

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10610437001	Influent-02 20220523	SW3535	33262	PFAS-36	B220613C_01
10610437002	Influent-07 20220523	SW3535	33262	PFAS-36	B220613C_01
10610437003	Influent-08 20220523	SW3535	33262	PFAS-36	B220613C_01
10610437004	Influent-11 20220523	SW3535	33262	PFAS-36	B220613C_01
10610437005	Influent-18 20220523	SW3535	33262	PFAS-36	B220613C_01
10610437006	Effluent 20220525	SW3535	33262	PFAS-36	B220616B_00

Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix B

Sample Analysis Summary



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02 20220523
 Lab Sample ID 10610437001
 Lab File ID B220613C_013
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 262mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.2	1.9	0.42	0.42	1	375-22-4		06/14/2022 05:34
PFPeA	3.4	1.9	0.42	0.42	1	2706-90-3		06/14/2022 05:34
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/14/2022 05:34
PFBS	1.9	1.7	0.45	0.45	1	375-73-5		06/14/2022 05:34
PFHxA	4.2	1.9	0.42	0.42	1	307-24-4		06/14/2022 05:34
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		06/14/2022 05:34
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		06/14/2022 05:34
PFHpA	1.4 J	1.9	0.53	0.53	1	375-85-9		06/14/2022 05:34
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/14/2022 05:34
PFHxS	5.0	1.7	0.49	0.49	1	355-46-4		06/14/2022 05:34
PFOA	3.2	1.9	0.56	0.56	1	335-67-1		06/14/2022 05:34
6:2 FTS	1.5 J	1.8	0.62	0.62	1	27619-97-2		06/14/2022 05:34
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		06/14/2022 05:34
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/14/2022 05:34
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		06/14/2022 05:34
PFOS	4.2	1.8	0.52	0.52	1	1763-23-1		06/14/2022 05:34
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/14/2022 05:34
PFDA	ND	1.9	0.54	0.54	1	335-76-2		06/14/2022 05:34
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/14/2022 05:34
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		06/14/2022 05:34
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 05:34
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/14/2022 05:34
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/14/2022 05:34
NMeFOSAA	0.42 J	1.9	0.41	0.41	1	2355-31-9		06/14/2022 05:34
NEtFOSAA	0.71 J	1.9	0.53	0.53	1	2991-50-6		06/14/2022 05:34
PFDS	7.3	1.8	0.43	0.43	1	335-77-3		06/14/2022 05:34
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/14/2022 05:34
MeFOSE	1.5 J	1.9	0.31	0.31	1	24448-09-7		06/14/2022 05:34
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/14/2022 05:34
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/14/2022 05:34
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		06/14/2022 05:34
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/14/2022 05:34
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		06/14/2022 05:34

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Influent-02 20220523	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437001	Total Amount Extracted	262mL
Lab File ID	B220613C_013	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220613A02
Collected	05/24/2022 11:59	CCal File	B220613C_012
Received	05/27/2022 08:50	Ending CCal File	B220613C_023
		Blank File	B220613C_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	14	75	50-150		06/14/2022 05:34
13C4 PFOA	19	12	64	50-150		06/14/2022 05:34
13C2 PFDA	19	16	83	50-150		06/14/2022 05:34
13C4 PFOS	18	17	91	50-150		06/14/2022 05:34

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	7.8	41	25-150		06/14/2022 05:34
13C5 PFPeA	19	12	65	25-150		06/14/2022 05:34
13C3 PFBS	18	15	84	25-150		06/14/2022 05:34
13C2 4:2FTS	18	68	383	25-150	R	06/14/2022 05:34
13C5 PFHxA	19	15	78	25-150		06/14/2022 05:34
13C4 PFHpA	19	18	92	25-150		06/14/2022 05:34
13C3 PFHxS	18	20	110	25-150		06/14/2022 05:34
13C2 6:2FTS	18	81	445	25-150	R	06/14/2022 05:34
13C8 PFOA	19	14	73	25-150		06/14/2022 05:34
13C9 PFNA	19	20	106	25-150		06/14/2022 05:34
13C8 PFOS	18	14	79	25-150		06/14/2022 05:34
13C2 8:2FTS	18	48	264	25-150	R	06/14/2022 05:34
13C6 PFDA	19	16	83	25-150		06/14/2022 05:34
d3-MeFOSAA	19	9.4	49	25-150		06/14/2022 05:34
13C8 PFOSA	19	6.6	35	25-150		06/14/2022 05:34
d5-EtFOSAA	19	12	62	25-150		06/14/2022 05:34
13C7 PFUdA	19	12	62	25-150		06/14/2022 05:34
13C2 PFDaA	19	12	63	25-150		06/14/2022 05:34
13C2 PFTeDA	19	12	63	25-150		06/14/2022 05:34
13C3 HFPO-DA	19	14	74	25-150		06/14/2022 05:34
d7-N-MeFOSE	19	9.9	52	10-150		06/14/2022 05:34
d9-N-EtFOSE	19	9.2	48	10-150		06/14/2022 05:34
d3-N-MeFOSA	19	8.3	43	10-150		06/14/2022 05:34
d5-N-EtFOSA	19	8.8	46	10-150		06/14/2022 05:34

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07 20220523
 Lab Sample ID 10610437002
 Lab File ID B220613C_014
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 247mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	2.0	0.45	0.45	1	375-22-4		06/14/2022 05:54
PFPeA	5.5	2.0	0.44	0.44	1	2706-90-3		06/14/2022 05:54
HFPO-DA	ND	2.0	0.54	0.54	1	13252-13-6		06/14/2022 05:54
PFBS	4.8	1.8	0.48	0.48	1	375-73-5		06/14/2022 05:54
PFHxA	8.6	2.0	0.44	0.44	1	307-24-4		06/14/2022 05:54
4:2 FTS	ND	1.9	0.57	0.57	1	757124-72-4		06/14/2022 05:54
PFPeS	1.0 J	1.9	0.48	0.48	1	2706-91-4		06/14/2022 05:54
PFHpA	2.2	2.0	0.56	0.56	1	375-85-9		06/14/2022 05:54
DONA	ND	1.9	0.52	0.52	1	919005-14-4		06/14/2022 05:54
PFHxS	11	1.8	0.51	0.51	1	355-46-4		06/14/2022 05:54
PFOA	6.2	2.0	0.59	0.59	1	335-67-1		06/14/2022 05:54
6:2 FTS	3.5	1.9	0.65	0.65	1	27619-97-2		06/14/2022 05:54
PFHpS	ND	1.9	0.42	0.42	1	375-92-8		06/14/2022 05:54
PFNA	ND	2.0	0.75	0.75	1	375-95-1		06/14/2022 05:54
PFOSAm	ND	2.0	0.83	0.83	1	754-91-6		06/14/2022 05:54
PFOS	8.9	1.9	0.56	0.56	1	1763-23-1		06/14/2022 05:54
MeFOSA	ND	2.0	0.52	0.52	1	31506-32-8		06/14/2022 05:54
PFDA	0.63 J	2.0	0.57	0.57	1	335-76-2		06/14/2022 05:54
EtFOSAm	ND	2.0	0.62	0.62	1	4151-50-2		06/14/2022 05:54
8:2 FTS	ND	1.9	0.66	0.66	1	39108-34-4		06/14/2022 05:54
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		06/14/2022 05:54
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		06/14/2022 05:54
PFUnDA	ND	2.0	0.55	0.55	1	2058-94-8		06/14/2022 05:54
NMeFOSAA	0.74 J	2.0	0.44	0.44	1	2355-31-9		06/14/2022 05:54
NEtFOSAA	0.95 J	2.0	0.56	0.56	1	2991-50-6		06/14/2022 05:54
PFDS	ND	2.0	0.46	0.46	1	335-77-3		06/14/2022 05:54
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		06/14/2022 05:54
MeFOSE	1.9 J	2.0	0.33	0.33	1	24448-09-7		06/14/2022 05:54
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		06/14/2022 05:54
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		06/14/2022 05:54
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		06/14/2022 05:54
PFDoS	ND	2.0	0.47	0.47	1	79780-39-5		06/14/2022 05:54
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		06/14/2022 05:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Influent-07 20220523	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437002	Total Amount Extracted	247mL
Lab File ID	B220613C_014	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220613A02
Collected	05/24/2022 11:59	CCal File	B220613C_012
Received	05/27/2022 08:50	Ending CCal File	B220613C_023
		Blank File	B220613C_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	18	87	50-150		06/14/2022 05:54
13C4 PFOA	20	17	82	50-150		06/14/2022 05:54
13C2 PFDA	20	18	89	50-150		06/14/2022 05:54
13C4 PFOS	19	17	89	50-150		06/14/2022 05:54

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	13	64	25-150		06/14/2022 05:54
13C5 PFPeA	20	17	82	25-150		06/14/2022 05:54
13C3 PFBS	19	17	93	25-150		06/14/2022 05:54
13C2 4:2FTS	19	76	400	25-150	R	06/14/2022 05:54
13C5 PFHxA	20	18	88	25-150		06/14/2022 05:54
13C4 PFHpA	20	20	100	25-150		06/14/2022 05:54
13C3 PFHxS	19	22	114	25-150		06/14/2022 05:54
13C2 6:2FTS	19	92	476	25-150	R	06/14/2022 05:54
13C8 PFOA	20	18	89	25-150		06/14/2022 05:54
13C9 PFNA	20	22	110	25-150		06/14/2022 05:54
13C8 PFOS	19	15	78	25-150		06/14/2022 05:54
13C2 8:2FTS	19	52	265	25-150	R	06/14/2022 05:54
13C6 PFDA	20	18	87	25-150		06/14/2022 05:54
d3-MeFOSAA	20	12	58	25-150		06/14/2022 05:54
13C8 PFOSA	20	7.1	35	25-150		06/14/2022 05:54
d5-EtFOSAA	20	13	63	25-150		06/14/2022 05:54
13C7 PFUdA	20	14	67	25-150		06/14/2022 05:54
13C2 PFDoA	20	11	56	25-150		06/14/2022 05:54
13C2 PFTeDA	20	11	56	25-150		06/14/2022 05:54
13C3 HFPO-DA	20	17	83	25-150		06/14/2022 05:54
d7-N-MeFOSE	20	10	51	10-150		06/14/2022 05:54
d9-N-EtFOSE	20	9.0	44	10-150		06/14/2022 05:54
d3-N-MeFOSA	20	11	53	10-150		06/14/2022 05:54
d5-N-EtFOSA	20	9.5	47	10-150		06/14/2022 05:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08 20220523
 Lab Sample ID 10610437003
 Lab File ID B220613C_015
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 261mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.5	1.9	0.42	0.42	1	375-22-4		06/14/2022 06:14
PFPeA	3.9	1.9	0.42	0.42	1	2706-90-3		06/14/2022 06:14
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/14/2022 06:14
PFBS	1.7	1.7	0.45	0.45	1	375-73-5		06/14/2022 06:14
PFHxA	4.1	1.9	0.42	0.42	1	307-24-4		06/14/2022 06:14
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		06/14/2022 06:14
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		06/14/2022 06:14
PFHpA	0.92 J	1.9	0.53	0.53	1	375-85-9		06/14/2022 06:14
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/14/2022 06:14
PFHxS	4.2	1.7	0.49	0.49	1	355-46-4		06/14/2022 06:14
PFOA	1.9	1.9	0.56	0.56	1	335-67-1		06/14/2022 06:14
6:2 FTS	1.4 J	1.8	0.62	0.62	1	27619-97-2		06/14/2022 06:14
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		06/14/2022 06:14
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/14/2022 06:14
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		06/14/2022 06:14
PFOS	2.9	1.8	0.52	0.52	1	1763-23-1		06/14/2022 06:14
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/14/2022 06:14
PFDA	ND	1.9	0.54	0.54	1	335-76-2		06/14/2022 06:14
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/14/2022 06:14
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		06/14/2022 06:14
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 06:14
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/14/2022 06:14
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/14/2022 06:14
NMeFOSAA	ND	1.9	0.42	0.42	1	2355-31-9		06/14/2022 06:14
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		06/14/2022 06:14
PFDS	ND	1.8	0.43	0.43	1	335-77-3		06/14/2022 06:14
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/14/2022 06:14
MeFOSE	1.8 J	1.9	0.31	0.31	1	24448-09-7		06/14/2022 06:14
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/14/2022 06:14
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/14/2022 06:14
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		06/14/2022 06:14
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/14/2022 06:14
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		06/14/2022 06:14

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Influent-08 20220523	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437003	Total Amount Extracted	261mL
Lab File ID	B220613C_015	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220613A02
Collected	05/24/2022 11:59	CCal File	B220613C_012
Received	05/27/2022 08:50	Ending CCal File	B220613C_023
		Blank File	B220613C_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	17	89	50-150		06/14/2022 06:14
13C4 PFOA	19	15	78	50-150		06/14/2022 06:14
13C2 PFDA	19	15	80	50-150		06/14/2022 06:14
13C4 PFOS	18	17	92	50-150		06/14/2022 06:14

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	10	53	25-150		06/14/2022 06:14
13C5 PFPeA	19	16	82	25-150		06/14/2022 06:14
13C3 PFBS	18	18	101	25-150		06/14/2022 06:14
13C2 4:2FTS	18	73	406	25-150	R	06/14/2022 06:14
13C5 PFHxA	19	19	98	25-150		06/14/2022 06:14
13C4 PFHpA	19	20	105	25-150		06/14/2022 06:14
13C3 PFHxS	18	23	127	25-150		06/14/2022 06:14
13C2 6:2FTS	18	97	536	25-150	R	06/14/2022 06:14
13C8 PFOA	19	18	96	25-150		06/14/2022 06:14
13C9 PFNA	19	24	126	25-150		06/14/2022 06:14
13C8 PFOS	18	16	88	25-150		06/14/2022 06:14
13C2 8:2FTS	18	59	322	25-150	R	06/14/2022 06:14
13C6 PFDA	19	17	90	25-150		06/14/2022 06:14
d3-MeFOSAA	19	10	54	25-150		06/14/2022 06:14
13C8 PFOSA	19	8.1	42	25-150		06/14/2022 06:14
d5-EtFOSAA	19	13	70	25-150		06/14/2022 06:14
13C7 PFUdA	19	13	70	25-150		06/14/2022 06:14
13C2 PFDoA	19	12	61	25-150		06/14/2022 06:14
13C2 PFTeDA	19	11	59	25-150		06/14/2022 06:14
13C3 HFPO-DA	19	17	86	25-150		06/14/2022 06:14
d7-N-MeFOSE	19	11	59	10-150		06/14/2022 06:14
d9-N-EtFOSE	19	13	66	10-150		06/14/2022 06:14
d3-N-MeFOSA	19	10	52	10-150		06/14/2022 06:14
d5-N-EtFOSA	19	9.2	48	10-150		06/14/2022 06:14

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11 20220523
 Lab Sample ID 10610437004
 Lab File ID B220613C_016
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 260mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.7	1.9	0.42	0.42	1	375-22-4		06/14/2022 06:34
PFPeA	2.2	1.9	0.42	0.42	1	2706-90-3		06/14/2022 06:34
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/14/2022 06:34
PFBS	1.5 J	1.7	0.45	0.45	1	375-73-5		06/14/2022 06:34
PFHxA	3.5	1.9	0.42	0.42	1	307-24-4		06/14/2022 06:34
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		06/14/2022 06:34
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		06/14/2022 06:34
PFHpA	0.82 J	1.9	0.53	0.53	1	375-85-9		06/14/2022 06:34
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/14/2022 06:34
PFHxS	1.5 IJ	1.8	0.49	0.49	1	355-46-4		06/14/2022 06:34
PFOA	1.9	1.9	0.56	0.56	1	335-67-1		06/14/2022 06:34
6:2 FTS	1.1 J	1.8	0.62	0.62	1	27619-97-2		06/14/2022 06:34
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		06/14/2022 06:34
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/14/2022 06:34
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		06/14/2022 06:34
PFOS	2.1	1.8	0.53	0.53	1	1763-23-1		06/14/2022 06:34
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/14/2022 06:34
PFDA	ND	1.9	0.54	0.54	1	335-76-2		06/14/2022 06:34
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/14/2022 06:34
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		06/14/2022 06:34
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 06:34
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/14/2022 06:34
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/14/2022 06:34
NMeFOSAA	0.60 J	1.9	0.42	0.42	1	2355-31-9		06/14/2022 06:34
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		06/14/2022 06:34
PFDS	ND	1.9	0.43	0.43	1	335-77-3		06/14/2022 06:34
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/14/2022 06:34
MeFOSE	4.6	1.9	0.32	0.32	1	24448-09-7		06/14/2022 06:34
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/14/2022 06:34
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/14/2022 06:34
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		06/14/2022 06:34
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/14/2022 06:34
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		06/14/2022 06:34

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Influent-11 20220523	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437004	Total Amount Extracted	260mL
Lab File ID	B220613C_016	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220613A02
Collected	05/24/2022 11:59	CCal File	B220613C_012
Received	05/27/2022 08:50	Ending CCal File	B220613C_023
		Blank File	B220613C_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	18	93	50-150		06/14/2022 06:34
13C4 PFOA	19	16	82	50-150		06/14/2022 06:34
13C2 PFDA	19	15	80	50-150		06/14/2022 06:34
13C4 PFOS	18	15	82	50-150		06/14/2022 06:34

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	8.2	43	25-150		06/14/2022 06:34
13C5 PFPeA	19	15	75	25-150		06/14/2022 06:34
13C3 PFBS	18	17	97	25-150		06/14/2022 06:34
13C2 4:2FTS	18	70	388	25-150	R	06/14/2022 06:34
13C5 PFHxA	19	17	88	25-150		06/14/2022 06:34
13C4 PFHpA	19	19	100	25-150		06/14/2022 06:34
13C3 PFHxS	18	23	125	25-150		06/14/2022 06:34
13C2 6:2FTS	18	87	478	25-150	R	06/14/2022 06:34
13C8 PFOA	19	16	85	25-150		06/14/2022 06:34
13C9 PFNA	19	20	107	25-150		06/14/2022 06:34
13C8 PFOS	18	13	73	25-150		06/14/2022 06:34
13C2 8:2FTS	18	52	280	25-150	R	06/14/2022 06:34
13C6 PFDA	19	15	77	25-150		06/14/2022 06:34
d3-MeFOSAA	19	7.9	41	25-150		06/14/2022 06:34
13C8 PFOSA	19	4.9	25	25-150		06/14/2022 06:34
d5-EtFOSAA	19	10.0	52	25-150		06/14/2022 06:34
13C7 PFUdA	19	9.8	51	25-150		06/14/2022 06:34
13C2 PFDoA	19	9.9	52	25-150		06/14/2022 06:34
13C2 PFTeDA	19	8.9	46	25-150		06/14/2022 06:34
13C3 HFPO-DA	19	16	84	25-150		06/14/2022 06:34
d7-N-MeFOSE	19	10	53	10-150		06/14/2022 06:34
d9-N-EtFOSE	19	11	59	10-150		06/14/2022 06:34
d3-N-MeFOSA	19	9.4	49	10-150		06/14/2022 06:34
d5-N-EtFOSA	19	8.7	45	10-150		06/14/2022 06:34

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Influent-18 20220523	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437005	Total Amount Extracted	266mL
Lab File ID	B220613C_017	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220613A02
Collected	05/24/2022 11:59	CCal File	B220613C_012
Received	05/27/2022 08:50	Ending CCal File	B220613C_023
		Blank File	B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.7	1.9	0.41	0.41	1	375-22-4		06/14/2022 06:54
PFPeA	5.1	1.9	0.41	0.41	1	2706-90-3		06/14/2022 06:54
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		06/14/2022 06:54
PFBS	3.9	1.7	0.44	0.44	1	375-73-5		06/14/2022 06:54
PFHxA	6.5	1.9	0.41	0.41	1	307-24-4		06/14/2022 06:54
4:2 FTS	ND	1.8	0.52	0.52	1	757124-72-4		06/14/2022 06:54
PFPeS	1.3 J	1.8	0.45	0.45	1	2706-91-4		06/14/2022 06:54
PFHpA	1.9	1.9	0.52	0.52	1	375-85-9		06/14/2022 06:54
DONA	ND	1.8	0.48	0.48	1	919005-14-4		06/14/2022 06:54
PFHxS	13	1.7	0.48	0.48	1	355-46-4		06/14/2022 06:54
PFOA	5.9	1.9	0.55	0.55	1	335-67-1		06/14/2022 06:54
6:2 FTS	2.2	1.8	0.61	0.61	1	27619-97-2		06/14/2022 06:54
PFHpS	0.39 J	1.8	0.39	0.39	1	375-92-8		06/14/2022 06:54
PFNA	ND	1.9	0.70	0.70	1	375-95-1		06/14/2022 06:54
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		06/14/2022 06:54
PFOS	7.1	1.7	0.51	0.51	1	1763-23-1		06/14/2022 06:54
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		06/14/2022 06:54
PFDA	0.54 J	1.9	0.53	0.53	1	335-76-2		06/14/2022 06:54
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		06/14/2022 06:54
8:2 FTS	ND	1.8	0.61	0.61	1	39108-34-4		06/14/2022 06:54
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 06:54
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		06/14/2022 06:54
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		06/14/2022 06:54
NMeFOSAA	0.58 J	1.9	0.41	0.41	1	2355-31-9		06/14/2022 06:54
NEtFOSAA	0.83 J	1.9	0.52	0.52	1	2991-50-6		06/14/2022 06:54
PFDS	ND	1.8	0.42	0.42	1	335-77-3		06/14/2022 06:54
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		06/14/2022 06:54
MeFOSE	3.7	1.9	0.31	0.31	1	24448-09-7		06/14/2022 06:54
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		06/14/2022 06:54
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		06/14/2022 06:54
PFTTrDA	ND	1.9	0.58	0.58	1	72629-94-8		06/14/2022 06:54
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		06/14/2022 06:54
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		06/14/2022 06:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Influent-18 20220523	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437005	Total Amount Extracted	266mL
Lab File ID	B220613C_017	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220613A02
Collected	05/24/2022 11:59	CCal File	B220613C_012
Received	05/27/2022 08:50	Ending CCal File	B220613C_023
		Blank File	B220613C_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	17	90	50-150		06/14/2022 06:54
13C4 PFOA	19	14	75	50-150		06/14/2022 06:54
13C2 PFDA	19	16	85	50-150		06/14/2022 06:54
13C4 PFOS	18	15	84	50-150		06/14/2022 06:54

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	13	68	25-150		06/14/2022 06:54
13C5 PFPeA	19	17	88	25-150		06/14/2022 06:54
13C3 PFBS	17	18	105	25-150		06/14/2022 06:54
13C2 4:2FTS	18	74	419	25-150	R	06/14/2022 06:54
13C5 PFHxA	19	18	96	25-150		06/14/2022 06:54
13C4 PFHpA	19	22	116	25-150		06/14/2022 06:54
13C3 PFHxS	18	22	123	25-150		06/14/2022 06:54
13C2 6:2FTS	18	86	482	25-150	R	06/14/2022 06:54
13C8 PFOA	19	17	91	25-150		06/14/2022 06:54
13C9 PFNA	19	21	114	25-150		06/14/2022 06:54
13C8 PFOS	18	14	79	25-150		06/14/2022 06:54
13C2 8:2FTS	18	51	283	25-150	R	06/14/2022 06:54
13C6 PFDA	19	17	92	25-150		06/14/2022 06:54
d3-MeFOSAA	19	9.4	50	25-150		06/14/2022 06:54
13C8 PFOSA	19	4.6	25	25-150		06/14/2022 06:54
d5-EtFOSAA	19	11	60	25-150		06/14/2022 06:54
13C7 PFUdA	19	12	63	25-150		06/14/2022 06:54
13C2 PFDoA	19	9.5	51	25-150		06/14/2022 06:54
13C2 PFTeDA	19	9.2	49	25-150		06/14/2022 06:54
13C3 HFPO-DA	19	16	86	25-150		06/14/2022 06:54
d7-N-MeFOSE	19	9.6	51	10-150		06/14/2022 06:54
d9-N-EtFOSE	19	8.6	46	10-150		06/14/2022 06:54
d3-N-MeFOSA	19	9.9	53	10-150		06/14/2022 06:54
d5-N-EtFOSA	19	9.0	48	10-150		06/14/2022 06:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220525
 Lab Sample ID 10610437006
 Lab File ID B220616B_014
 Matrix Industrial_Water
 Collected 05/25/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 260mL
 Percent Moisture N/A
 Ical ID 220616A02
 CCal File B220616B_006
 Ending CCal File B220616B_016
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.7	1.9	0.42	0.42	1	375-22-4		06/16/2022 17:19
PFPeA	16	1.9	0.42	0.42	1	2706-90-3		06/16/2022 17:19
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/16/2022 17:19
PFBS	2.2	1.7	0.45	0.45	1	375-73-5		06/16/2022 17:19
PFHxA	22	1.9	0.42	0.42	1	307-24-4		06/16/2022 17:19
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		06/16/2022 17:19
PFPeS	0.54 J	1.8	0.46	0.46	1	2706-91-4		06/16/2022 17:19
PFHpA	1.8 J	1.9	0.53	0.53	1	375-85-9		06/16/2022 17:19
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/16/2022 17:19
PFHxS	6.2	1.7	0.49	0.49	1	355-46-4		06/16/2022 17:19
PFOA	6.8	1.9	0.56	0.56	1	335-67-1		06/16/2022 17:19
6:2 FTS	1.3 J	1.8	0.62	0.62	1	27619-97-2		06/16/2022 17:19
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		06/16/2022 17:19
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/16/2022 17:19
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		06/16/2022 17:19
PFOS	3.1	1.8	0.53	0.53	1	1763-23-1		06/16/2022 17:19
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/16/2022 17:19
PFDA	1.4 J	1.9	0.54	0.54	1	335-76-2		06/16/2022 17:19
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/16/2022 17:19
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		06/16/2022 17:19
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/16/2022 17:19
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/16/2022 17:19
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/16/2022 17:19
NMeFOSAA	0.92 J	1.9	0.42	0.42	1	2355-31-9		06/16/2022 17:19
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		06/16/2022 17:19
PFDS	ND	1.9	0.43	0.43	1	335-77-3		06/16/2022 17:19
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/16/2022 17:19
MeFOSE	ND	1.9	0.32	0.32	1	24448-09-7		06/16/2022 17:19
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/16/2022 17:19
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/16/2022 17:19
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		06/16/2022 17:19
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/16/2022 17:19
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		06/16/2022 17:19

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Effluent 20220525	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437006	Total Amount Extracted	260mL
Lab File ID	B220616B_014	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220616A02
Collected	05/25/2022 11:59	CCal File	B220616B_006
Received	05/27/2022 08:50	Ending CCal File	B220616B_016
		Blank File	B220613C_002

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	21	107	50-150		06/16/2022 17:19
13C4 PFOA	19	25	129	50-150		06/16/2022 17:19
13C2 PFDA	19	29	153	50-150	R	06/16/2022 17:19
13C4 PFOS	18	26	140	50-150		06/16/2022 17:19

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	15	77	25-150		06/16/2022 17:19
13C5 PFPeA	19	19	99	25-150		06/16/2022 17:19
13C3 PFBS	18	22	121	25-150		06/16/2022 17:19
13C2 4:2FTS	18	84	469	25-150	R	06/16/2022 17:19
13C5 PFHxA	19	22	113	25-150		06/16/2022 17:19
13C4 PFHpA	19	24	123	25-150		06/16/2022 17:19
13C3 PFHxS	18	23	129	25-150		06/16/2022 17:19
13C2 6:2FTS	18	73	400	25-150	R	06/16/2022 17:19
13C8 PFOA	19	26	133	25-150		06/16/2022 17:19
13C9 PFNA	19	28	147	25-150		06/16/2022 17:19
13C8 PFOS	18	25	134	25-150		06/16/2022 17:19
13C2 8:2FTS	18	67	363	25-150	R	06/16/2022 17:19
13C6 PFDA	19	29	153	25-150	R	06/16/2022 17:19
d3-MeFOSAA	19	32	167	25-150	R	06/16/2022 17:19
13C8 PFOSA	19	21	110	25-150		06/16/2022 17:19
d5-EtFOSAA	19	31	160	25-150	R	06/16/2022 17:19
13C7 PFUdA	19	29	151	25-150	R	06/16/2022 17:19
13C2 PFDoA	19	26	134	25-150		06/16/2022 17:19
13C2 PFTeDA	19	16	85	25-150		06/16/2022 17:19
13C3 HFPO-DA	19	20	105	25-150		06/16/2022 17:19
d7-N-MeFOSE	19	15	78	10-150		06/16/2022 17:19
d9-N-EtFOSE	19	12	65	10-150		06/16/2022 17:19
d3-N-MeFOSA	19	11	57	10-150		06/16/2022 17:19
d5-N-EtFOSA	19	8.6	45	10-150		06/16/2022 17:19

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKGW	Extraction Date	06/10/2022 09:02
Lab Sample ID	BLANK-99350	Total Amount Extracted	250mL
Lab File ID	B220613C_002	Percent Moisture	N/A
Matrix	Water	Ical ID	220613A02
Collected	06/07/2022 07:12	CCal File	B220613B_033
Received	06/07/2022 07:12	Ending CCal File	B220613C_012
		Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.44	0.44	1	375-22-4		06/14/2022 01:54
PFPeA	ND	2.0	0.44	0.44	1	2706-90-3		06/14/2022 01:54
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		06/14/2022 01:54
PFBS	ND	1.8	0.47	0.47	1	375-73-5		06/14/2022 01:54
PFHxA	ND	2.0	0.44	0.44	1	307-24-4		06/14/2022 01:54
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		06/14/2022 01:54
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		06/14/2022 01:54
PFHpA	ND	2.0	0.55	0.55	1	375-85-9		06/14/2022 01:54
DONA	ND	1.9	0.51	0.51	1	919005-14-4		06/14/2022 01:54
PFHxS	ND	1.8	0.51	0.51	1	355-46-4		06/14/2022 01:54
PFOA	ND	2.0	0.59	0.59	1	335-67-1		06/14/2022 01:54
6:2 FTS	ND	1.9	0.65	0.65	1	27619-97-2		06/14/2022 01:54
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		06/14/2022 01:54
PFNA	ND	2.0	0.74	0.74	1	375-95-1		06/14/2022 01:54
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		06/14/2022 01:54
PFOS	ND	1.9	0.55	0.55	1	1763-23-1		06/14/2022 01:54
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		06/14/2022 01:54
PFDA	ND	2.0	0.56	0.56	1	335-76-2		06/14/2022 01:54
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		06/14/2022 01:54
8:2 FTS	ND	1.9	0.65	0.65	1	39108-34-4		06/14/2022 01:54
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		06/14/2022 01:54
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		06/14/2022 01:54
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		06/14/2022 01:54
NMeFOSAA	ND	2.0	0.43	0.43	1	2355-31-9		06/14/2022 01:54
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		06/14/2022 01:54
PFDS	ND	1.9	0.45	0.45	1	335-77-3		06/14/2022 01:54
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		06/14/2022 01:54
MeFOSE	ND	2.0	0.33	0.33	1	24448-09-7		06/14/2022 01:54
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		06/14/2022 01:54
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		06/14/2022 01:54
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		06/14/2022 01:54
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		06/14/2022 01:54
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		06/14/2022 01:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKGW	Extraction Date	06/10/2022 09:02
Lab Sample ID	BLANK-99350	Total Amount Extracted	250mL
Lab File ID	B220613C_002	Percent Moisture	N/A
Matrix	Water	Ical ID	220613A02
Collected	06/07/2022 07:12	CCal File	B220613B_033
Received	06/07/2022 07:12	Ending CCal File	B220613C_012
		Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	21	106	50-150		06/14/2022 01:54
13C4 PFOA	20	21	104	50-150		06/14/2022 01:54
13C2 PFDA	20	22	109	50-150		06/14/2022 01:54
13C4 PFOS	19	19	101	50-150		06/14/2022 01:54

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	21	104	50-150		06/14/2022 01:54
13C5 PFPeA	20	21	106	50-150		06/14/2022 01:54
13C3 PFBS	19	18	97	50-150		06/14/2022 01:54
13C2 4:2FTS	19	20	105	50-150		06/14/2022 01:54
13C5 PFHxA	20	21	107	50-150		06/14/2022 01:54
13C4 PFHpA	20	21	107	50-150		06/14/2022 01:54
13C3 PFHxS	19	18	96	50-150		06/14/2022 01:54
13C2 6:2FTS	19	20	107	50-150		06/14/2022 01:54
13C8 PFOA	20	21	103	50-150		06/14/2022 01:54
13C9 PFNA	20	19	97	50-150		06/14/2022 01:54
13C8 PFOS	19	20	106	50-150		06/14/2022 01:54
13C2 8:2FTS	19	17	89	50-150		06/14/2022 01:54
13C6 PFDA	20	18	92	50-150		06/14/2022 01:54
d3-MeFOSAA	20	17	86	50-150		06/14/2022 01:54
13C8 PFOSA	20	18	91	50-150		06/14/2022 01:54
d5-EtFOSAA	20	16	82	50-150		06/14/2022 01:54
13C7 PFUdA	20	19	95	50-150		06/14/2022 01:54
13C2 PFDaA	20	19	93	50-150		06/14/2022 01:54
13C2 PFTeDA	20	19	93	50-150		06/14/2022 01:54
13C3 HFPO-DA	20	21	107	50-150		06/14/2022 01:54
d7-N-MeFOSE	20	16	81	20-150		06/14/2022 01:54
d9-N-EtFOSE	20	15	75	20-150		06/14/2022 01:54
d3-N-MeFOSA	20	10.0	50	20-150		06/14/2022 01:54
d5-N-EtFOSA	20	9.4	47	20-150		06/14/2022 01:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-99351	Instrument ID	10LCMS02
Run File Name	B220614A_031	Column ID	125GA90033
Analyzed	06/14/2022 20:34	Ical ID	220613A02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	19	94	50-150	
13C4_PFOA	20	18	90	50-150	
13C2_PFDA	20	21	105	50-150	
13C4_PFOS	19	18	93	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBa	20	18	92	50-150	
13C5_PFPeA	20	18	91	50-150	
13C3_PFBs	18	18	97	50-150	
13C2_4:2Fts	19	18	94	50-150	
13C5_PFHxA	20	18	92	50-150	
13C4_PFHpA	20	18	90	50-150	
13C3_PFHxS	19	17	92	50-150	
13C2_6:2Fts	19	18	93	50-150	
13C8_PFOA	20	17	86	50-150	
13C9_PfNA	20	18	90	50-150	
13C8_PFOs	19	17	88	50-150	
13C2_8:2Fts	19	17	90	50-150	
13C6_PFDA	20	19	96	50-150	
d3-MeFOSAA	20	17	86	50-150	
13C8_PFOsA	20	13	66	50-150	
d5-EtFOSAA	20	15	73	50-150	
13C7_PFUdA	20	20	101	50-150	
13C2_PFDaA	20	18	92	50-150	
13C2_PFTeDA	20	21	104	50-150	
13C3_HFPO-DA	20	18	90	50-150	
d7-N-MeFOSE	20	9.3	47	20-150	
d9-N-EtFOSE	20	9.8	49	20-150	
d3-N-MeFOSA	20	0.77	4	20-150	R
d5-N-EtFOSA	20	0.80	4	20-150	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99351
 Run File Name B220614A_031
 Analyzed 06/14/2022 20:34
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220613A02
 Level L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.0	3.3	83	50-150		375-22-4
PFPeA	4.0	3.8	95	50-150		2706-90-3
HFPO-DA	4.0	3.6	91	50-150		13252-13-6
PFBS	3.5	3.3	95	50-150		375-73-5
PFHxA	4.0	3.7	93	50-150		307-24-4
4:2 FTS	3.7	3.1	83	50-150		757124-72-4
PFPeS	3.7	3.3	88	50-150		2706-91-4
PFHpA	4.0	3.7	94	50-150		375-85-9
DONA	3.8	3.5	93	50-150		919005-14-4
PFHxS	3.6	3.2	88	50-150		355-46-4
PFOA	4.0	3.7	94	50-150		335-67-1
6:2 FTS	3.8	3.6	96	50-150		27619-97-2
PFHpS	3.8	3.1	81	50-150		375-92-8
PFNA	4.0	3.6	91	50-150		375-95-1
PFOSAm	4.0	3.5	87	50-150		754-91-6
PFOS	3.7	3.1	83	50-150		1763-23-1
MeFOSA	4.0	3.8	95	50-150		31506-32-8
PFDA	4.0	3.4	86	50-150		335-76-2
EtFOSAm	4.0	2.9	73	50-150		4151-50-2
8:2 FTS	3.8	3.1	82	50-150		39108-34-4
9-CI-PF3ON	3.7	3.1	84	50-150		756426-58-1
PFNS	3.8	3.2	84	50-150		68259-12-1
PFUnDA	4.0	3.7	93	50-150		2058-94-8
NMeFOSAA	4.0	3.4	84	50-150		2355-31-9
NEtFOSAA	4.0	3.5	87	50-150		2991-50-6
PFDS	3.8	3.0	79	50-150		335-77-3
PFDOA	4.0	3.6	89	50-150		307-55-1
MeFOSE	4.0	3.4	86	50-150		24448-09-7
EtFOSE	4.0	3.4	84	50-150		1691-99-2
11-CI-PF3OUdS	3.8	2.9	77	50-150		763051-92-9
PFTrDA	4.0	3.3	82	50-150		72629-94-8
PFDoS	3.9	2.6	68	50-150		79780-39-5
PFTDA	4.0	2.9	74	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99351
 Run File Name B220614A_031
 Analyzed 06/14/2022 20:34
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220613A02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.77	5.73	1340	
13C4 PFOA	N/A	N/A	7.08	7.04	1947	
13C2 PFDA	N/A	N/A	8.42	8.39	1842	
13C4 PFOS	N/A	N/A	8.91	8.88	1204	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.38	4.37	4218	
13C5 PFPeA	N/A	N/A	5.13	5.15	2423	
13C3 PFBS	N/A	N/A	6.02	5.99	2186	
13C2 4:2FTS	N/A	N/A	5.50	5.46	591	
13C5 PFHxA	N/A	N/A	5.77	5.73	1579	
13C4 PFHpA	N/A	N/A	6.42	6.38	1899	
13C3 PFHxS	N/A	N/A	7.49	7.47	1581	
13C2 6:2FTS	N/A	N/A	6.73	6.70	1446	
13C8 PFOA	N/A	N/A	7.08	7.04	2407	
13C9 PFNA	N/A	N/A	7.75	7.71	1966	
13C8 PFOS	N/A	N/A	8.91	8.88	3217	
13C2 8:2FTS	N/A	N/A	8.04	8.01	52980	
13C6 PFDA	N/A	N/A	8.43	8.40	1280	
d3-MeFOSAA	N/A	N/A	8.29	8.26	1409	
13C8 PFOSA	N/A	N/A	10.65	10.63	1430	
d5-EtFOSAA	N/A	N/A	8.60	8.56	751	
13C7 PFUdA	N/A	N/A	9.11	9.08	2058	
13C2 PFDoA	N/A	N/A	9.79	9.76	1427	
13C2 PFTeDA	N/A	N/A	11.11	11.07	1320	
13C3 HFPO-DA	N/A	N/A	6.04	6.00	1878	
d7-N-MeFOSE	N/A	N/A	12.36	12.35	485	
d9-N-EtFOSE	N/A	N/A	12.85	12.84	528	
d3-N-MeFOSA	N/A	N/A	12.57	12.56	376	R
d5-N-EtFOSA	N/A	N/A	13.01	13.00	273	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99351
 Run File Name B220614A_031
 Analyzed 06/14/2022 20:34
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220613A02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.38	4.36	115	
PFPeA	N/A	N/A	5.14	5.14	383	
HFPO-DA	0.26	0.26	6.05	6.02	565	
PFBS	0.41	0.36	6.02	6.00	784	
PFHxA	0.09	0.09	5.77	5.74	209	
4:2 FTS	0.91	0.99	5.50	5.47	1727	
PFPeS	0.43	0.45	6.78	6.75	2476	
PFHpA	0.31	0.34	6.42	6.39	22	
DONA	0.62	0.60	6.67	6.63	1290	
PFHxS	0.36	0.35	7.50	7.47	1041	
PFOA	0.39	0.41	7.09	7.05	173	
6:2 FTS	0.96	0.87	6.73	6.70	181	
PFHpS	0.37	0.35	8.22	8.19	2250	
PFNA	0.14	0.12	7.76	7.72	500	
PFOSAm	N/A	N/A	10.66	10.64	762	
PFOS	0.41	0.40	8.92	8.88	319	
MeFOSA	0.64	0.57	12.60	12.59	70	
PFDA	0.21	0.19	8.44	8.41	303	
EtFOSAm	0.54	0.53	13.03	13.02	143	
8:2 FTS	0.91	0.82	8.05	8.01	2596	
9-CI-PF3ON	0.07	0.07	9.41	9.38	895	
PFNS	0.48	0.51	9.60	9.57	819	
PFUnDA	0.13	0.14	9.11	9.08	362	
NMeFOSAA	0.99	0.74	8.30	8.27	217	
NEtFOSAA	0.74	0.60	8.61	8.58	230	
PFDS	0.34	0.35	10.27	10.24	1384	
PFDOA	0.18	0.19	9.80	9.76	389	
MeFOSE	N/A	N/A	12.40	12.39	316	
EtFOSE	0.00	0.00	12.88	12.88	344	
11-CI-PF3OUdS	0.02	0.02	10.75	10.72	717	
PFTrDA	0.17	0.13	10.47	10.43	359	
PFDoS	0.50	0.44	11.51	11.48	1279	
PFTDA	0.21	0.22	11.12	11.08	272	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-99352
 Run File Name B220614A_032
 Analyzed 06/14/2022 20:54
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220613A02
 Level L

Injection Internal Standards

Compound	Known Conc.	LCS Conc. Found	LCS Rec. %	LCSD Conc. Found	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
13C2 PFHxA	19	19	94	22	113	18.5	50-150	
13C4 PFOA	19	18	90	22	114	23.3	50-150	
13C2 PFDA	19	21	105	27	138	27.4	50-150	
13C4 PFOS	19	18	93	21	112	18.8	50-150	

Extracted Internal Standards

Compound	Known Conc.	LCS Conc. Found	LCS Rec. %	LCSD Conc. Found	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
13C4 PFBA	19	18	92	21	110	17.5	50-150	
13C5 PFPeA	19	18	91	22	112	20.1	50-150	
13C3 PFBS	18	18	97	21	115	16.9	50-150	
13C2 4:2FTS	18	18	94	21	114	18.9	50-150	
13C5 PFHxA	19	18	92	23	116	23.2	50-150	
13C4 PFHpA	19	18	90	20	105	15.6	50-150	
13C3 PFHxS	18	17	92	21	116	23.4	50-150	
13C2 6:2FTS	18	18	93	21	112	18.5	50-150	
13C8 PFOA	19	17	86	22	112	26.4	50-150	
13C9 PFNA	19	18	90	22	115	24.4	50-150	
13C8 PFOS	19	17	88	20	108	20.2	50-150	
13C2 8:2FTS	19	17	90	18	99	9.4	50-150	
13C6 PFDA	19	19	96	23	117	19.7	50-150	
d3-MeFOSAA	19	17	86	22	114	28.3	50-150	
13C8 PFOSA	19	13	66	18	94	34.6	50-150	
d5-EtFOSAA	19	15	73	19	98	29.7	50-150	
13C7 PFUdA	19	20	101	21	109	8.3	50-150	
13C2 PFDoA	19	18	92	22	115	22.6	50-150	
13C2 PFTeDA	19	21	104	23	116	11.3	50-150	
13C3 HFPO-DA	19	18	90	21	108	18.1	50-150	
d7-N-MeFOSE	19	9.3	47	17	87	60.9	20-150	
d9-N-EtFOSE	19	9.8	49	15	75	41.2	20-150	
d3-N-MeFOSA	19	0.77	4	4.8	25	146.2	20-150	
d5-N-EtFOSA	19	0.80	4	4.5	23	140.3	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-D-99352
 Run File Name B220614A_032
 Analyzed 06/14/2022 20:54
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220613A02
 Level L

Native Analytes

Compound	Known Conc.	LCS Conc. Found	LCS Rec. %	LCSD Conc. Found	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
PFBA	3.9	3.3	83	3.8	97	15.7	50-150	
PFPeA	3.9	3.8	95	3.8	98	3.2	50-150	
HFPO-DA	3.9	3.6	91	3.7	95	4.3	50-150	
PFBS	3.4	3.3	95	3.3	96	0.8	50-150	
PFHxA	3.9	3.7	93	3.6	92	1.4	50-150	
4:2 FTS	3.6	3.1	83	3.1	85	2.0	50-150	
PFPeS	3.7	3.3	88	3.2	89	1.1	50-150	
PFHpA	3.9	3.7	94	3.9	101	7.4	50-150	
DONA	3.7	3.5	93	3.2	88	5.6	50-150	
PFHxS	3.5	3.2	88	3.1	87	1.3	50-150	
PFOA	3.9	3.7	94	3.7	95	1.4	50-150	
6:2 FTS	3.7	3.6	96	3.8	104	7.8	50-150	
PFHpS	3.7	3.1	81	3.2	87	6.7	50-150	
PFNA	3.9	3.6	91	3.5	90	1.4	50-150	
PFOSAm	3.9	3.5	87	3.6	94	7.2	50-150	
PFOS	3.6	3.1	83	3.2	90	7.8	50-150	
MeFOSA	3.9	3.8	95	3.8	98	3.7	50-150	
PFDA	3.9	3.4	86	3.3	85	1.7	50-150	
EtFOSAm	3.9	2.9	73	3.3	84	14.8	50-150	
8:2 FTS	3.7	3.1	82	3.2	86	4.0	50-150	
9-CI-PF3ON	3.6	3.1	84	3.0	84	0.5	50-150	
PFNS	3.7	3.2	84	3.4	90	7.3	50-150	
PFUnDA	3.9	3.7	93	3.9	100	6.8	50-150	
NMeFOSAA	3.9	3.4	84	3.2	82	2.4	50-150	
NEtFOSAA	3.9	3.5	87	3.3	85	1.8	50-150	
PFDS	3.8	3.0	79	3.1	82	4.0	50-150	
PFDOA	3.9	3.6	89	3.3	86	4.1	50-150	
MeFOSE	3.9	3.4	86	3.1	81	6.3	50-150	
EtFOSE	3.9	3.4	84	3.7	95	11.6	50-150	
11-CI-PF3OUdS	3.7	2.9	77	2.9	78	1.4	50-150	
PFTTrDA	3.9	3.3	82	3.3	86	4.1	50-150	
PFDoS	3.8	2.6	68	2.8	74	8.8	50-150	
PFTDA	3.9	2.9	74	3.2	82	10.7	50-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-99352
 Run File Name B220614A_032
 Analyzed 06/14/2022 20:54
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220613A02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.77	5.73	1458	
13C4 PFOA	N/A	N/A	7.08	7.04	2291	
13C2 PFDA	N/A	N/A	8.43	8.39	1674	
13C4 PFOS	N/A	N/A	8.90	8.88	1613	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.38	4.37	3221	
13C5 PFPeA	N/A	N/A	5.14	5.15	2991	
13C3 PFBS	N/A	N/A	6.02	5.99	2437	
13C2 4:2FTS	N/A	N/A	5.50	5.46	685	
13C5 PFHxA	N/A	N/A	5.77	5.73	1936	
13C4 PFHpA	N/A	N/A	6.42	6.38	1630	
13C3 PFHxS	N/A	N/A	7.50	7.47	1498	
13C2 6:2FTS	N/A	N/A	6.73	6.70	2403	
13C8 PFOA	N/A	N/A	7.08	7.04	2240	
13C9 PFNA	N/A	N/A	7.75	7.71	2019	
13C8 PFOS	N/A	N/A	8.91	8.88	2742	
13C2 8:2FTS	N/A	N/A	8.04	8.01	365	
13C6 PFDA	N/A	N/A	8.43	8.40	1487	
d3-MeFOSAA	N/A	N/A	8.29	8.26	1408	
13C8 PFOSA	N/A	N/A	10.65	10.63	1597	
d5-EtFOSAA	N/A	N/A	8.59	8.56	789	
13C7 PFUdA	N/A	N/A	9.11	9.08	2211	
13C2 PFDoA	N/A	N/A	9.79	9.76	1295	
13C2 PFTeDA	N/A	N/A	11.12	11.07	1074	
13C3 HFPO-DA	N/A	N/A	6.04	6.00	1498	
d7-N-MeFOSE	N/A	N/A	12.36	12.35	709	
d9-N-EtFOSE	N/A	N/A	12.84	12.84	418	
d3-N-MeFOSA	N/A	N/A	12.58	12.56	351	
d5-N-EtFOSA	N/A	N/A	13.01	13.00	655	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-99352
 Run File Name B220614A_032
 Analyzed 06/14/2022 20:54
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220613A02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.38	4.36	147	
PFPeA	N/A	N/A	5.14	5.14	464	
HFPO-DA	0.27	0.26	6.05	6.02	753	
PFBS	0.41	0.36	6.03	6.00	748	
PFHxA	0.08	0.09	5.78	5.74	203	
4:2 FTS	0.93	0.99	5.50	5.47	5313	
PFPeS	0.41	0.45	6.78	6.75	1303	
PFHpA	0.29	0.34	6.43	6.39	21	
DONA	0.67	0.60	6.67	6.63	1294	
PFHxS	0.35	0.35	7.51	7.47	835	
PFOA	0.37	0.41	7.09	7.05	192	
6:2 FTS	0.92	0.87	6.74	6.70	233	
PFHpS	0.35	0.35	8.22	8.19	842	
PFNA	0.13	0.12	7.75	7.72	507	
PFOSAm	N/A	N/A	10.66	10.64	1120	
PFOS	0.34	0.40	8.92	8.88	364	
MeFOSA	0.56	0.57	12.60	12.59	392	
PFDA	0.19	0.19	8.44	8.41	394	
EtFOSAm	0.58	0.53	13.03	13.02	390	
8:2 FTS	0.92	0.82	8.04	8.01	11326	
9-CI-PF3ON	0.07	0.07	9.42	9.38	1206	
PFNS	0.49	0.51	9.60	9.57	1143	
PFUnDA	0.13	0.14	9.11	9.08	432	
NMeFOSAA	0.74	0.74	8.30	8.27	163	
NEtFOSAA	0.73	0.60	8.61	8.58	197	
PFDS	0.33	0.35	10.27	10.24	1186	
PFDOA	0.19	0.19	9.80	9.76	321	
MeFOSE	N/A	N/A	12.41	12.39	406	
EtFOSE	0.00	0.00	12.88	12.88	513	
11-CI-PF3OUdS	0.02	0.02	10.75	10.72	763	
PFTrDA	0.16	0.13	10.47	10.43	462	
PFDoS	0.46	0.44	11.51	11.48	1463	
PFTDA	0.25	0.22	11.12	11.08	271	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

June 2022

August 29, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS-Revised Report
Pace Project No.: 10614143

Dear Mike Ursin:

Enclosed are the analytical results for sample(s) received by the laboratory on June 23, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

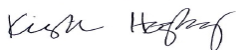
The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

This report was revised August 29, 2022, to include TSS results only.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

A2LA Certification #: 2926.01*

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10614143001	Influent-02-20220620	Water	06/20/22 23:59	06/23/22 08:50
10614143002	Influent-07-20220620	Water	06/20/22 23:59	06/23/22 08:50
10614143003	Influent-08-20220620	Water	06/20/22 23:59	06/23/22 08:50
10614143004	Influent-11-20220620	Water	06/20/22 23:59	06/23/22 08:50
10614143005	Influent-18-20220620	Water	06/20/22 23:59	06/23/22 08:50
10614143006	Effluent-20220621	Water	06/20/22 23:59	06/23/22 08:50
10614143007	Equipment Blank 20220622	Water	06/22/22 08:00	06/23/22 08:50
10614143008	Biosolids A-20220622	Solid	06/22/22 08:08	06/23/22 08:50
10614143009	Biosolids B-20220622	Solid	06/22/22 07:50	06/23/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10614143001	Influent-02-20220620	SM 2540D	DP1	1	PASI-M
10614143002	Influent-07-20220620	SM 2540D	DP1	1	PASI-M
10614143003	Influent-08-20220620	SM 2540D	DP1	1	PASI-M
10614143004	Influent-11-20220620	SM 2540D	DP1	1	PASI-M
10614143005	Influent-18-20220620	SM 2540D	DP1	1	PASI-M
10614143006	Effluent-20220621	SM 2540D	DP1	1	PASI-M
10614143008	Biosolids A-20220622	ASTM D2974	JDL	1	PASI-M
10614143009	Biosolids B-20220622	ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: August 29, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Sample: Influent-02-20220620 **Lab ID: 10614143001** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	215	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-07-20220620 **Lab ID: 10614143002** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	216	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-08-20220620 **Lab ID: 10614143003** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	210	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-11-20220620 **Lab ID: 10614143004** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	271	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-18-20220620 **Lab ID: 10614143005** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	285	mg/L	25.0	12.5	1		06/27/22 10:46		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Sample: Effluent-20220621 **Lab ID: 10614143006** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	10.6	mg/L	10.0	5.0	1		06/27/22 10:46		

Sample: Biosolids A-20220622 **Lab ID: 10614143008** Collected: 06/22/22 08:08 Received: 06/23/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974		Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	75.7	%	0.10	0.10	1		06/24/22 12:04		N2

Sample: Biosolids B-20220622 **Lab ID: 10614143009** Collected: 06/22/22 07:50 Received: 06/23/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974		Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	94.7	%	0.10	0.10	1		06/24/22 12:04		N2

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

QC Batch: 824063

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10614143008, 10614143009

SAMPLE DUPLICATE: 4365980

Parameter	Units	10614223001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.9	13.2	2	30	N2

SAMPLE DUPLICATE: 4366020

Parameter	Units	10613178001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.3	15.7	10	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report
Pace Project No.: 10614143

QC Batch: 824370 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10614143001, 10614143002, 10614143003, 10614143004, 10614143005, 10614143006

METHOD BLANK: 4367605 Matrix: Water
Associated Lab Samples: 10614143001, 10614143002, 10614143003, 10614143004, 10614143005, 10614143006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	06/27/22 10:45	

LABORATORY CONTROL SAMPLE: 4367606

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	96.4	96	80-120	

SAMPLE DUPLICATE: 4367607

Parameter	Units	10614166001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND			5

SAMPLE DUPLICATE: 4367608

Parameter	Units	10613719001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND			5

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

WORKORDER QUALIFIERS

WO: 10614143

[1] The samples were received outside of required temperature range. Analysis was completed upon client approval.

ANALYTE QUALIFIERS

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10614143008	Biosolids A-20220622	ASTM D2974	824063		
10614143009	Biosolids B-20220622	ASTM D2974	824063		
10614143001	Influent-02-20220620	SM 2540D	824370		
10614143002	Influent-07-20220620	SM 2540D	824370		
10614143003	Influent-08-20220620	SM 2540D	824370		
10614143004	Influent-11-20220620	SM 2540D	824370		
10614143005	Influent-18-20220620	SM 2540D	824370		
10614143006	Effluent-20220621	SM 2540D	824370		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workord

WO#: 10614143



10614143

ALL SHADED

Container Preservative Type *

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Company: **TRC**
Address: **708 Heartland Trail, Suite 3000
Madison, WI 53717**

Billing Information:
**Bill to MMSD
(see PO)**

Report To: **Mike Ursin**
Copy To: **Lydia Avner, Jeff Ramey**

Email To: **mursin@trccompanies.com**
Site Collection Info/Address: **1610 Moorland Rd**

Customer Project Name/Number:
MMSD PFAS

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [] CT [] ET**

Phone:
Email:

Site/Facility ID #:

Compliance Monitoring?
 Yes No

Collected By (print):
Carol Mielke

Purchase Order #: **22006666**
Quote #:

DW PWS ID #:
DW Location Code:

Collected By (signature):
Carol Mielke

Turnaround Date Required:
standard TAT

Immediately Packed on Ice:
 Yes No

Sample Disposal:
 Dispose as appropriate Return
 Archive: _____
 Hold: _____

Rush:
 Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
(Expedite Charges Apply)

Field Filtered (if applicable):
 Yes No
Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TOP	ASSAY	TSS
			Date	Time	Date	Time						
Influent-02-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-07-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-08-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-11-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-18-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Effluent-20220621	WW	C	6/21/22	00:00	6/21/22	23:59		4	X	X	X	
Biosolids A-20220622	SL	G	-	-	6/22/22	08:08		3	X	X		
Biosolids B-20220622	SL	G	-	-	6/22/22	07:50		3	X	X		
Equipment Blank 20220622	WW	G	-	-	6/22/22	08:00		1	X			

Lab Profile/Line: **43416**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips:			
Sample pH Acceptable	Y	N	NA
pH Strips:			
Sulfide Present	Y	N	NA
Lead Acetate Strips:			

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
For influent samples, follow EA-19-001 (WI PFAS Method Expectations) section VI.3 procedure for particulates in aqueous samples & centrifugation, if necessary, based on visual appearance.

Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: **2831367**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via:
FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: _____

Cooler 1 Temp Upon Receipt: **3.8** °C

Cooler 1 Therm Corr. Factor: **-0.1** °C

Cooler 1 Corrected Temp: **3.8** °C

Comments:

Relinquished by/Company: (Signature)
Carol Mielke

Date/Time:
6/22/2022

Received by/Company: (Signature)
Jace Brenna/Pace

Date/Time:
6-23-22 8:50

MTJL LAB USE ONLY
Table #:
Acctnum:

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Template:
Prelogin:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

PM:
PB:

Non Conformance(s): YES / NO
Page: _____ of: _____



DC#_Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name:

TRC

Project #:

WO#: 10614143

PM: KNH

Due Date: 06/30/22

CLIENT: TRC-WI

Courier:

Fed Ex UPS USPS Client Pace Speedee Commercial

Tracking Number:

5405 1820 4416

See Exceptions

ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present?

Yes No

Seals Intact?

Yes No

Biological Tissue Frozen?

Yes No N/A

Packing Material:

Bubble Wrap Bubble Bags None Other:

Temp Blank?

Yes No

Thermometer:

T1(0461) T2(1336) T3(0459) T4(0254) T5(0489) T6(0235) T7 (0042) 01339252/1710 122639816 140792808

Type of Ice:

Wet Blue None Dry Melted

Did Samples Originate in West Virginia? Yes No

Were All Container Temps Taken? Yes No N/A

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank:

8.9

Average Corrected Temp (no temp blank only):

See Exceptions ENV-FRM-MIN4-0142 1 Container

Correction Factor: -0.1

Cooler Temp Corrected w/temp blank:

8.8

USDA Regulated Soil: N/A water sample Other: soil

Date/Initials of Person Examining Contents: BB 6/23/22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If Fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8hr, <24 hrs, <input type="checkbox"/> >24 hrs
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Matrix: <input checked="" type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other-	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> Zinc Acetate
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> See Exception ENV-FRM-MIN4-0142
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	pH Paper Lot#
Exceptions: VOA, Coliform, TOC/BOD Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased):
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Mike Ursin (Email)

Date/Time: 6/28/2022

Field Data Required? Yes No

Comments/Resolution: Samples received outside the recommended temperature range - proceed with analysis.

Project Manager Review: Kirsten Hojberg

Date: 6/28/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: BB 1



DC#_Title: ENV-FRM-MIN4-0142 v01_Sample Condition Upon Receipt (SCUR) Exception Form

Effective Date: 02/25/2022

SCUR Exceptions:

Workorder #: 10614143

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
<i>All out of temp</i>			If yes, indicate who was contacted/date/time. If no, indicate reason why.

Multiple Cooler Project? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If you answered yes, fill out information to the left.		
No Temp Blank		
Read Temp	Corrected Temp	Average Temp

Tracking Number/Temperature

Issue Type:	Container Type	# of Containers
Sample ID	Type	

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserve	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition? <input type="checkbox"/> Yes <input type="checkbox"/> No	Initials

Comments:

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Prepared Date:

August 5, 2022

Report Information:

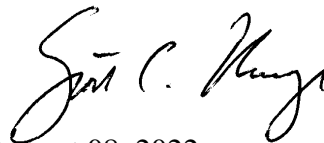
Pace Project #: 10614143
Sample Receipt Date: 06/23/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



August 08, 2022

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on nine samples, two matrix spikes, one matrix spike duplicate, and one sample duplicate submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance for PFAS. Reporting limits were set to MDL levels. The samples were received outside the temperature range specified in the method (0-6° C). The analysis was completed upon the client's approval. This report was revised August 5, 2022 to update the narrative, undiluted surrogate recovery of 13C8_PFOS for Biosolids A-20220622, and Biosolids results based on dry weight.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. With the exception of PFHxS in LCSD-99738, the RPDs (relative percent differences) between one designated spike and its duplicate were within the method limits of 30%.

On the matrix spikes there are several analytes that are marked R as the recoveries are diminished or elevated from the expected levels. With the exception of PFHxS in 10614143009-MSD, the RPDs (relative percent differences) between one designated matrix spike and its duplicate were within the method limits of 30%. These deviations may be due to the presence of the affected analytes in the sample material and/or sample inhomogeneity.

Diminished extracted internal standard (EIS) recovery ("R" flagged) were present in samples, QC, and CCV, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

DISCUSSION

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Results for selected analytes were taken from secondary dilutions of the sample extracts in order to bring the results within the calibration range. The affected values were flagged "D" on the results tables.

Values were flagged "I" where incorrect isotope ratios were obtained. Results that were below the calibration range were flagged "J".

Samples INFLUENT-02-20220620, INFLUENT-07-20220620, INFLUENT-08-20220620, INFLUENT-11-20220620, and INFLUENT-18-20220620 required centrifugation prior to extraction due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and centrifuged for 10 mins. Sample bottles were rinsed with methanol as normal. The bottle rinsate was added to the elution. Samples concentrated to <1mL and reconstituted to 1mL using methanol by transfer pipet.

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix A

Sample Management

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Influent-02-20220620	10614143001	06/23/2022	Water
Influent-07-20220620	10614143002	06/23/2022	Water
Influent-08-20220620	10614143003	06/23/2022	Water
Influent-11-20220620	10614143004	06/23/2022	Water
Influent-18-20220620	10614143005	06/23/2022	Water
Effluent-20220621	10614143006	06/23/2022	Water
Equipment Blank 20220622	10614143007	06/23/2022	Water
Biosolids A-20220622	10614143008	06/23/2022	Solid
Biosolids B-20220622	10614143009	06/23/2022	Solid

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workord

WO#: 10614143



10614143

ALL SHADED

Container Preservative Type *

Company: **TRC**
Address: **708 Heartland Trail, Suite 3000
Madison, WI 53717**

Billing Information:
**Bill to MMSD
(see PO)**

Report To: **Mike Ursin**
Copy To: **Lydia Avner, Jeff Ramey**

Email To: **mursin@trccompanies.com**
Site Collection Info/Address: **1610 Moorland Rd**

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Project Name/Number:
MMSD PFAS

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [] CT [] ET**

Analyses

Lab Profile/Line: **43416**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips:			
Sample pH Acceptable	Y	N	NA
pH Strips:			
Sulfide Present	Y	N	NA
Lead Acetate Strips:			

Phone: _____ Site/Facility ID #: _____
Email: _____

Compliance Monitoring?
 Yes No

Collected By (print): **Carol Mielke**
Purchase Order #: **22006666**
Quote #: _____

DW PWS ID #: _____
DW Location Code: _____

Collected By (signature): **Carol Mielke**
Turnaround Date Required: **standard TAT**

Immediately Packed on Ice:
 Yes No

Sample Disposal:
 Dispose as appropriate Return
 Archive: _____
 Hold: _____

Rush: Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
(Expedite Charges Apply)

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TOP	ASSAY	TSS
			Date	Time	Date	Time						
Influent-02-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-07-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-08-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-11-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Influent-18-20220620	WW	C	6/20/22	00:00	6/20/22	23:59		4	X	X	X	
Effluent-20220621	WW	C	6/21/22	00:00	6/21/22	23:59		4	X	X	X	
Biosolids A-20220622	SL	G	-	-	6/22/22	08:08		3	X	X		
Biosolids B-20220622	SL	G	-	-	6/22/22	07:50		3	X	X		
Equipment Blank 20220622	WW	G	-	-	6/22/22	08:00		1	X			

Analysis	Result
PFAS	X
TOP	X
ASSAY	X
TSS	

LAB USE ONLY:
Lab Sample # / Comments:

021
052
03
04
05
06
08
09
07

Customer Remarks / Special Conditions / Possible Hazards:
For influent samples, follow EA-19-001 (WI PFAS Method Expectations) section VI.3 procedure for particulates in aqueous samples & centrifugation, if necessary, based on visual appearance.

Type of Ice Used: Wet Blue Dry None
Packing Material Used: _____
Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
Lab Tracking #: **2831367**
Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: **3.8** °C
Cooler 1 Therm Corr. Factor: **-0.1** °C
Cooler 1 Corrected Temp: **3.8** °C
Comments:

Relinquished by/Company: (Signature) **Carol Mielke**

Date/Time: **6/22/2022**

Received by/Company: (Signature) **Jace Brenna/Pace**

Date/Time: **6-23-22 8:50**

MTJL LAB USE ONLY
Table #: _____
Acctnum: _____

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Template: _____
Prelogin: _____
PM: _____
PB: _____

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

PM: _____
PB: _____

Non Conformance(s): _____ Page: _____
YES / NO of: _____



DC#_Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name:

TRC

Project #:

WO#: 10614143

PM: KNH

Due Date: 06/30/22

CLIENT: TRC-WI

Courier:

- Fed Ex, UPS, USPS, Client, Pace, Speedee, Commercial

Tracking Number:

5405 1820 4416

See Exceptions

- ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present?

- Yes, No

Seals Intact?

- Yes, No

Biological Tissue Frozen?

- Yes, No, N/A

Packing Material:

- Bubble Wrap, Bubble Bags, None, Other

Temp Blank?

- Yes, No

Thermometer:

- T1(0461), T2(1336), T3(0459), T4(0254), T5(0489), T6(0235), T7(0042), 01339252/1710, 122639816, 140792808

Type of Ice:

- Wet, Blue, None, Dry, Melted

Did Samples Originate in West Virginia?

Were All Container Temps Taken?

Average Corrected

Temp (no temp blank only):

- See Exceptions, ENV-FRM-MIN4-0142, 1 Container

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 8.9 °C

Correction Factor: -0.1

Cooler Temp Corrected w/temp blank: 8.8 °C

USDA Regulated Soil: () N/A, () water sample, () Other: soil

Date/Initials of Person Examining Contents: BB 6/23/22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Table with 2 columns: Location (check one) and COMMENTS. Rows include Chain of Custody, Short Hold Time Analysis, Rush Turn Around Time, Containers Intact, Field Filtered Volume, Matrix, All containers needing acid/base preservation, Exceptions: VOA, Coliform, TOC/BOD Oil and Grease, DRO/8015 (water) and Dioxin/PFAS, Headspace in Methyl Mercury Container, Extra labels present on soil VOA or WIDRO containers, Trip Blank Present, Trip Blank Custody Seals Present.

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Mike Ursin (Email)

Date/Time: 6/28/2022

Field Data Required? Yes No

Comments/Resolution: Samples received outside the recommended temperature range - proceed with analysis.

Project Manager Review: Kirsten Hojberg

Date: 6/28/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: BB (1)



DC#_ Title: ENV-FRM-MIN4-0142 v01_Sample Condition Upon Receipt (SCUR) Exception Form

Effective Date: 02/25/2022

SCUR Exceptions:

Workorder #: 10614143

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
<i>All out of temp</i>			If yes, indicate who was contacted/date/time. If no, indicate reason why.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp

Tracking Number/Temperature

Issue Type:	Container Type	# of Containers
Sample ID	Type	

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserve	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition? <input type="checkbox"/> Yes <input type="checkbox"/> No	Initials
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10614143001	Influent-02-20220620	SW3535	33395	PFAS-36	B220715C_00
10614143002	Influent-07-20220620	SW3535	33395	PFAS-36	B220715C_00
10614143003	Influent-08-20220620	SW3535	33395	PFAS-36	B220715C_00
10614143003-D	Influent-08-20220620-DUP	SW3535	33395	PFAS-36	Q220719A_00
10614143004	Influent-11-20220620	SW3535	33395	PFAS-36	B220715C_00
10614143005	Influent-18-20220620	SW3535	33395	PFAS-36	B220715C_00
10614143006	Effluent-20220621	SW3535	33395	PFAS-36	B220715C_00
10614143007	Equipment Blank 20220622	SW3535	33395	PFAS-36	B220715C_00
10614143008	Biosolids A-20220622	SW3535	33418	PFAS-36	Q220708B_01
10614143008	Biosolids A-20220622	SW3535	33418	PFAS-36	Q220708B_01
10614143009	Biosolids B-20220622	SW3535	33418	PFAS-36	Q220708A_00

Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Isotope ratio out of specification
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDEInterference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix B

Sample Analysis Summary

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220620
 Lab Sample ID 10614143001
 Lab File ID B220715C_006
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 261mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	7.5	1.9	0.42	0.42	1	375-22-4		07/15/2022 20:40
PFPeA	4.2	1.9	0.42	0.42	1	2706-90-3		07/15/2022 20:40
HFPO-DA	1.2 IJ	1.9	0.51	0.51	1	13252-13-6		07/15/2022 20:40
PFBS	4.3	1.7	0.45	0.45	1	375-73-5		07/15/2022 20:40
PFHxA	6.3	1.9	0.42	0.42	1	307-24-4		07/15/2022 20:40
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/15/2022 20:40
PFPeS	1.3 J	1.8	0.45	0.45	1	2706-91-4		07/15/2022 20:40
PFHpA	3.5	1.9	0.53	0.53	1	375-85-9		07/15/2022 20:40
DONA	ND	1.8	0.49	0.49	1	919005-14-4		07/15/2022 20:40
PFHxS	17	1.7	0.49	0.49	1	355-46-4		07/15/2022 20:40
PFOA	7.3	1.9	0.56	0.56	1	335-67-1		07/15/2022 20:40
6:2 FTS	1.9	1.8	0.62	0.62	1	27619-97-2		07/15/2022 20:40
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 20:40
PFNA	ND	1.9	0.71	0.71	1	375-95-1		07/15/2022 20:40
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		07/15/2022 20:40
PFOS	16	1.8	0.52	0.52	1	1763-23-1		07/15/2022 20:40
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		07/15/2022 20:40
PFDA	1.2 J	1.9	0.54	0.54	1	335-76-2		07/15/2022 20:40
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		07/15/2022 20:40
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		07/15/2022 20:40
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 20:40
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		07/15/2022 20:40
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		07/15/2022 20:40
NMeFOSAA	0.73 J	1.9	0.42	0.42	1	2355-31-9		07/15/2022 20:40
NEtFOSAA	1.7 J	1.9	0.53	0.53	1	2991-50-6		07/15/2022 20:40
PFDS	1.3 J	1.8	0.43	0.43	1	335-77-3		07/15/2022 20:40
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 20:40
MeFOSE	12	1.9	0.31	0.31	1	24448-09-7		07/15/2022 20:40
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		07/15/2022 20:40
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		07/15/2022 20:40
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		07/15/2022 20:40
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		07/15/2022 20:40
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		07/15/2022 20:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220620
 Lab Sample ID 10614143001
 Lab File ID B220715C_006
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 261mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	22	114	50-150		07/15/2022 20:40
13C4 PFOA	19	23	120	50-150		07/15/2022 20:40
13C2 PFDA	19	24	124	50-150		07/15/2022 20:40
13C4 PFOS	18	20	111	50-150		07/15/2022 20:40

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	0.63	3	25-150	R	07/15/2022 20:40
13C5 PFPeA	19	0.75	4	25-150	R	07/15/2022 20:40
13C3 PFBS	18	0.65	4	25-150	R	07/15/2022 20:40
13C2 4:2FTS	18	1.8	10	25-150	R	07/15/2022 20:40
13C5 PFHxA	19	0.76	4	25-150	R	07/15/2022 20:40
13C4 PFHpA	19	0.76	4	25-150	R	07/15/2022 20:40
13C3 PFHxS	18	0.59	3	25-150	R	07/15/2022 20:40
13C2 6:2FTS	18	1.8	10	25-150	R	07/15/2022 20:40
13C8 PFOA	19	0.83	4	25-150	R	07/15/2022 20:40
13C9 PFNA	19	0.87	5	25-150	R	07/15/2022 20:40
13C8 PFOS	18	0.72	4	25-150	R	07/15/2022 20:40
13C2 8:2FTS	18	2.0	11	25-150	R	07/15/2022 20:40
13C6 PFDA	19	1.1	6	25-150	R	07/15/2022 20:40
d3-MeFOSAA	19	1.8	9	25-150	R	07/15/2022 20:40
13C8 PFOSA	19	1.4	7	25-150	R	07/15/2022 20:40
d5-EtFOSAA	19	2.2	11	25-150	R	07/15/2022 20:40
13C7 PFUdA	19	1.7	9	25-150	R	07/15/2022 20:40
13C2 PFDoA	19	1.7	9	25-150	R	07/15/2022 20:40
13C2 PFTeDA	19	2.1	11	25-150	R	07/15/2022 20:40
13C3 HFPO-DA	19	0.78	4	25-150	R	07/15/2022 20:40
d7-N-MeFOSE	19	0.93	5	10-150	R	07/15/2022 20:40
d9-N-EtFOSE	19	0.74	4	10-150	R	07/15/2022 20:40
d3-N-MeFOSA	19	0.63	3	10-150	R	07/15/2022 20:40
d5-N-EtFOSA	19	0.45	2	10-150	R	07/15/2022 20:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220620
 Lab Sample ID 10614143002
 Lab File ID B220715C_007
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 265mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	20	1.9	0.42	0.42	1	375-22-4		07/15/2022 21:00
PFPeA	7.0	1.9	0.41	0.41	1	2706-90-3		07/15/2022 21:00
HFPO-DA	1.8 J	1.9	0.50	0.50	1	13252-13-6		07/15/2022 21:00
PFBS	9.6	1.7	0.45	0.45	1	375-73-5		07/15/2022 21:00
PFHxA	9.6	1.9	0.41	0.41	1	307-24-4		07/15/2022 21:00
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/15/2022 21:00
PFPeS	4.0 I	1.8	0.45	0.45	1	2706-91-4		07/15/2022 21:00
PFHpA	2.8	1.9	0.52	0.52	1	375-85-9		07/15/2022 21:00
DONA	0.54 J	1.8	0.48	0.48	1	919005-14-4		07/15/2022 21:00
PFHxS	28 I	1.7	0.48	0.48	1	355-46-4		07/15/2022 21:00
PFOA	9.1	1.9	0.55	0.55	1	335-67-1		07/15/2022 21:00
6:2 FTS	4.5	1.8	0.61	0.61	1	27619-97-2		07/15/2022 21:00
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 21:00
PFNA	1.0 J	1.9	0.70	0.70	1	375-95-1		07/15/2022 21:00
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		07/15/2022 21:00
PFOS	12	1.7	0.52	0.52	1	1763-23-1		07/15/2022 21:00
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 21:00
PFDA	ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 21:00
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		07/15/2022 21:00
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		07/15/2022 21:00
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 21:00
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 21:00
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		07/15/2022 21:00
NMeFOSAA	1.8 J	1.9	0.41	0.41	1	2355-31-9		07/15/2022 21:00
NEtFOSAA	2.6	1.9	0.52	0.52	1	2991-50-6		07/15/2022 21:00
PFDS	ND	1.8	0.42	0.42	1	335-77-3		07/15/2022 21:00
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 21:00
MeFOSE	9.0	1.9	0.31	0.31	1	24448-09-7		07/15/2022 21:00
EtFOSE	1.3 J	1.9	0.47	0.47	1	1691-99-2		07/15/2022 21:00
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 21:00
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/15/2022 21:00
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		07/15/2022 21:00
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		07/15/2022 21:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220620
 Lab Sample ID 10614143002
 Lab File ID B220715C_007
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 265mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	20	105	50-150		07/15/2022 21:00
13C4 PFOA	19	21	111	50-150		07/15/2022 21:00
13C2 PFDA	19	22	119	50-150		07/15/2022 21:00
13C4 PFOS	18	17	94	50-150		07/15/2022 21:00

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	0.36	2	25-150	R	07/15/2022 21:00
13C5 PFPeA	19	0.43	2	25-150	R	07/15/2022 21:00
13C3 PFBS	18	0.48	3	25-150	R	07/15/2022 21:00
13C2 4:2FTS	18	2.6	15	25-150	R	07/15/2022 21:00
13C5 PFHxA	19	0.48	3	25-150	R	07/15/2022 21:00
13C4 PFHpA	19	0.47	3	25-150	R	07/15/2022 21:00
13C3 PFHxS	18	0.46	3	25-150	R	07/15/2022 21:00
13C2 6:2FTS	18	0.76	4	25-150	R	07/15/2022 21:00
13C8 PFOA	19	0.53	3	25-150	R	07/15/2022 21:00
13C9 PFNA	19	0.55	3	25-150	R	07/15/2022 21:00
13C8 PFOS	18	0.49	3	25-150	R	07/15/2022 21:00
13C2 8:2FTS	18	1.3	7	25-150	R	07/15/2022 21:00
13C6 PFDA	19	0.77	4	25-150	R	07/15/2022 21:00
d3-MeFOSAA	19	1.0	5	25-150	R	07/15/2022 21:00
13C8 PFOSA	19	0.81	4	25-150	R	07/15/2022 21:00
d5-EtFOSAA	19	1.5	8	25-150	R	07/15/2022 21:00
13C7 PFUdA	19	1.1	6	25-150	R	07/15/2022 21:00
13C2 PFDoA	19	1.1	6	25-150	R	07/15/2022 21:00
13C2 PFTeDA	19	1.6	8	25-150	R	07/15/2022 21:00
13C3 HFPO-DA	19	0.50	3	25-150	R	07/15/2022 21:00
d7-N-MeFOSE	19	0.73	4	10-150	R	07/15/2022 21:00
d9-N-EtFOSE	19	0.67	4	10-150	R	07/15/2022 21:00
d3-N-MeFOSA	19	0.48	3	10-150	R	07/15/2022 21:00
d5-N-EtFOSA	19	0.34	2	10-150	R	07/15/2022 21:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220620
 Lab Sample ID 10614143003
 Lab File ID B220715C_008
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 251mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.0	2.0	0.44	0.44	1	375-22-4		07/15/2022 21:21
PFPeA	3.1	2.0	0.44	0.44	1	2706-90-3		07/15/2022 21:21
HFPO-DA	0.69 J	2.0	0.53	0.53	1	13252-13-6		07/15/2022 21:21
PFBS	3.1	1.8	0.47	0.47	1	375-73-5		07/15/2022 21:21
PFHxA	4.5	2.0	0.44	0.44	1	307-24-4		07/15/2022 21:21
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		07/15/2022 21:21
PFPeS	ND	1.9	0.47	0.47	1	2706-91-4		07/15/2022 21:21
PFHpA	1.4 J	2.0	0.55	0.55	1	375-85-9		07/15/2022 21:21
DONA	ND	1.9	0.51	0.51	1	919005-14-4		07/15/2022 21:21
PFHxS	4.9	1.8	0.51	0.51	1	355-46-4		07/15/2022 21:21
PFOA	3.2	2.0	0.58	0.58	1	335-67-1		07/15/2022 21:21
6:2 FTS	1.2 J	1.9	0.64	0.64	1	27619-97-2		07/15/2022 21:21
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		07/15/2022 21:21
PFNA	ND	2.0	0.74	0.74	1	375-95-1		07/15/2022 21:21
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		07/15/2022 21:21
PFOS	4.3 I	1.8	0.55	0.55	1	1763-23-1		07/15/2022 21:21
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		07/15/2022 21:21
PFDA	ND	2.0	0.56	0.56	1	335-76-2		07/15/2022 21:21
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		07/15/2022 21:21
8:2 FTS	ND	1.9	0.65	0.65	1	39108-34-4		07/15/2022 21:21
9-CI-PF3ON	ND	1.9	0.30	0.30	1	756426-58-1		07/15/2022 21:21
PFNS	ND	1.9	0.44	0.44	1	68259-12-1		07/15/2022 21:21
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		07/15/2022 21:21
NMeFOSAA	0.53 IJ	2.0	0.43	0.43	1	2355-31-9		07/15/2022 21:21
NEtFOSAA	2.5	2.0	0.55	0.55	1	2991-50-6		07/15/2022 21:21
PFDS	ND	1.9	0.45	0.45	1	335-77-3		07/15/2022 21:21
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		07/15/2022 21:21
MeFOSE	5.6	2.0	0.33	0.33	1	24448-09-7		07/15/2022 21:21
EtFOSE	0.79 J	2.0	0.50	0.50	1	1691-99-2		07/15/2022 21:21
11-CI-PF3OUdS	ND	1.9	0.43	0.43	1	763051-92-9		07/15/2022 21:21
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		07/15/2022 21:21
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		07/15/2022 21:21
PFTDA	ND	2.0	0.47	0.47	1	376-06-7		07/15/2022 21:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220620
 Lab Sample ID 10614143003
 Lab File ID B220715C_008
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 251mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	21	104	50-150		07/15/2022 21:21
13C4 PFOA	20	23	113	50-150		07/15/2022 21:21
13C2 PFDA	20	22	110	50-150		07/15/2022 21:21
13C4 PFOS	19	19	98	50-150		07/15/2022 21:21

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	0.89	4	25-150	R	07/15/2022 21:21
13C5 PFPeA	20	1.1	6	25-150	R	07/15/2022 21:21
13C3 PFBS	19	1.4	7	25-150	R	07/15/2022 21:21
13C2 4:2FTS	19	3.9	21	25-150	R	07/15/2022 21:21
13C5 PFHxA	20	1.4	7	25-150	R	07/15/2022 21:21
13C4 PFHpA	20	1.4	7	25-150	R	07/15/2022 21:21
13C3 PFHxS	19	1.6	8	25-150	R	07/15/2022 21:21
13C2 6:2FTS	19	4.1	22	25-150	R	07/15/2022 21:21
13C8 PFOA	20	1.8	9	25-150	R	07/15/2022 21:21
13C9 PFNA	20	2.0	10	25-150	R	07/15/2022 21:21
13C8 PFOS	19	1.6	8	25-150	R	07/15/2022 21:21
13C2 8:2FTS	19	4.6	24	25-150	R	07/15/2022 21:21
13C6 PFDA	20	2.3	11	25-150	R	07/15/2022 21:21
d3-MeFOSAA	20	2.2	11	25-150	R	07/15/2022 21:21
13C8 PFOSA	20	1.5	8	25-150	R	07/15/2022 21:21
d5-EtFOSAA	20	2.8	14	25-150	R	07/15/2022 21:21
13C7 PFUdA	20	2.2	11	25-150	R	07/15/2022 21:21
13C2 PFDoA	20	1.8	9	25-150	R	07/15/2022 21:21
13C2 PFTeDA	20	2.5	12	25-150	R	07/15/2022 21:21
13C3 HFPO-DA	20	1.2	6	25-150	R	07/15/2022 21:21
d7-N-MeFOSE	20	1.4	7	10-150	R	07/15/2022 21:21
d9-N-EtFOSE	20	1.2	6	10-150	R	07/15/2022 21:21
d3-N-MeFOSA	20	0.91	5	10-150	R	07/15/2022 21:21
d5-N-EtFOSA	20	0.56	3	10-150	R	07/15/2022 21:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220620-DUP
 Lab Sample ID 10614143003-DUP
 Lab File ID Q220719A_011
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 263mL
 Ical ID 220718B01
 CCal File Q220719A_002
 Ending CCal File Q220719A_012
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.2	1.9	0.42	0.42	1	375-22-4		07/19/2022 11:37
PFPeA	2.9	1.9	0.42	0.42	1	2706-90-3		07/19/2022 11:37
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		07/19/2022 11:37
PFBS	2.6 I	1.7	0.45	0.45	1	375-73-5		07/19/2022 11:37
PFHxA	4.4	1.9	0.42	0.42	1	307-24-4		07/19/2022 11:37
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/19/2022 11:37
PFPeS	0.47 J	1.8	0.45	0.45	1	2706-91-4		07/19/2022 11:37
PFHpA	1.1 J	1.9	0.52	0.52	1	375-85-9		07/19/2022 11:37
DONA	ND	1.8	0.49	0.49	1	919005-14-4		07/19/2022 11:37
PFHxS	3.3	1.7	0.48	0.48	1	355-46-4		07/19/2022 11:37
PFOA	2.2	1.9	0.56	0.56	1	335-67-1		07/19/2022 11:37
6:2 FTS	0.88 J	1.8	0.61	0.61	1	27619-97-2		07/19/2022 11:37
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/19/2022 11:37
PFNA	ND	1.9	0.70	0.70	1	375-95-1		07/19/2022 11:37
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		07/19/2022 11:37
PFOS	2.8 I	1.8	0.52	0.52	1	1763-23-1		07/19/2022 11:37
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		07/19/2022 11:37
PFDA	ND	1.9	0.54	0.54	1	335-76-2		07/19/2022 11:37
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		07/19/2022 11:37
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		07/19/2022 11:37
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/19/2022 11:37
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		07/19/2022 11:37
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		07/19/2022 11:37
NMeFOSAA	0.67 J	1.9	0.41	0.41	1	2355-31-9		07/19/2022 11:37
NEtFOSAA	1.5 J	1.9	0.53	0.53	1	2991-50-6		07/19/2022 11:37
PFDS	ND	1.8	0.43	0.43	1	335-77-3		07/19/2022 11:37
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		07/19/2022 11:37
MeFOSE	1.4 J	1.9	0.31	0.31	1	24448-09-7		07/19/2022 11:37
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		07/19/2022 11:37
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		07/19/2022 11:37
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/19/2022 11:37
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		07/19/2022 11:37
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		07/19/2022 11:37

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220620-DUP
 Lab Sample ID 10614143003-DUP
 Lab File ID Q220719A_011
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 263mL
 Ical ID 220718B01
 CCal File Q220719A_002
 Ending CCal File Q220719A_012
 Blank File B220715C_003

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	12	62	50-150		07/19/2022 11:37
13C4 PFOA	19	11	56	50-150		07/19/2022 11:37
13C2 PFDA	19	12	64	50-150		07/19/2022 11:37
13C4 PFOS	18	12	66	50-150		07/19/2022 11:37

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	11	59	25-150		07/19/2022 11:37
13C5 PFPeA	19	15	77	25-150		07/19/2022 11:37
13C3 PFBS	18	14	77	25-150		07/19/2022 11:37
13C2 4:2FTS	18	44	247	25-150	R	07/19/2022 11:37
13C5 PFHxA	19	12	62	25-150		07/19/2022 11:37
13C4 PFHpA	19	13	68	25-150		07/19/2022 11:37
13C3 PFHxS	18	14	75	25-150		07/19/2022 11:37
13C2 6:2FTS	18	56	309	25-150	R	07/19/2022 11:37
13C8 PFOA	19	13	68	25-150		07/19/2022 11:37
13C9 PFNA	19	15	78	25-150		07/19/2022 11:37
13C8 PFOS	18	11	61	25-150		07/19/2022 11:37
13C2 8:2FTS	18	60	328	25-150	R	07/19/2022 11:37
13C6 PFDA	19	13	66	25-150		07/19/2022 11:37
d3-MeFOSAA	19	13	68	25-150		07/19/2022 11:37
13C8 PFOSA	19	4.9	26	25-150		07/19/2022 11:37
d5-EtFOSAA	19	12	64	25-150		07/19/2022 11:37
13C7 PFUdA	19	11	56	25-150		07/19/2022 11:37
13C2 PFDaA	19	6.9	36	25-150		07/19/2022 11:37
13C2 PFTeDA	19	3.8	20	25-150	R	07/19/2022 11:37
13C3 HFPO-DA	19	12	61	25-150		07/19/2022 11:37
d7-N-MeFOSE	19	4.7	25	10-150		07/19/2022 11:37
d9-N-EtFOSE	19	7.5	39	10-150		07/19/2022 11:37
d3-N-MeFOSA	19	2.9	15	10-150		07/19/2022 11:37
d5-N-EtFOSA	19	2.4	12	10-150		07/19/2022 11:37

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Duplicate Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220620
 Lab Sample ID 10614143003
 Sample Filename B220715C_008

Client Duplicate ID Influent-08-20220620-D
 Lab Duplicate ID 10614143003-DUP
 Duplicate Filename Q220719A_011

Injection Internal Standards

Compound	Sample Concentration	Duplicate Concentration	RPD	Qualifiers
13C2_PFHxA	21	12	50.4	
13C4_PFOA	23	11	68.1	
13C2_PFDA	22	12	53.5	
13C4_PFOS	19	12	39.7	

Extracted Internal Standards

Compound	Sample Concentration	Duplicate Concentration	RPD	Qualifiers
13C4_PFBA	0.89	11	171.9	
13C5_PFPeA	1.1	15	172.4	
13C3_PFBFS	1.4	14	164.8	
13C2_4:2FTS	3.9	44	169.1	R
13C5_PFHxA	1.4	12	160.0	
13C4_PFHpA	1.4	13	161.1	
13C3_PFHxS	1.6	14	159.6	
13C2_6:2FTS	4.1	56	173.8	R
13C8_PFOA	1.8	13	153.0	
13C9_PFNA	2.0	15	155.6	
13C8_PFOS	1.6	11	151.9	
13C2_8:2FTS	4.6	60	172.8	R
13C6_PFDA	2.3	13	141.0	
d3-MeFOSAA	2.2	13	144.1	
13C8_PFOSA	1.5	4.9	108.3	
d5-EtFOSAA	2.8	12	127.7	
13C7_PFUdA	2.2	11	133.8	
13C2_PFDoA	1.8	6.9	120.3	
13C2_PFTeDA	2.5	3.8	48.5	R
13C3_HFPO-DA	1.2	12	163.3	
d7-N-MeFOSE	1.4	4.7	110.7	
d9-N-EtFOSE	1.2	7.5	148.9	
d3-N-MeFOSA	0.91	2.9	108.4	
d5-N-EtFOSA	0.56	2.4	126.5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Duplicate Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220620
 Lab Sample ID 10614143003
 Sample Filename B220715C_008

Client Duplicate ID Influent-08-20220620-D
 Lab Duplicate ID 10614143003-DUP
 Duplicate Filename Q220719A_011

Native Analytes

Compound	Sample Concentration	Duplicate Concentration	RPD	Qualifiers	CAS No.
PFBA	9.0	6.2	32.3		375-22-4
PFPeA	3.1	2.9	0.2		2706-90-3
HFPO-DA	0.69	ND	200		13252-13-6
PFBS	3.1	2.6	12.7	I	375-73-5
PFHxA	4.5	4.4	1.1		307-24-4
4:2 FTS	ND	ND			757124-72-4
PFPeS	ND	0.47	200	J	2706-91-4
PFHpA	1.4	1.1	18.2	J	375-85-9
DONA	ND	ND			919005-14-4
PFHxS	4.9	3.3	34.4		355-46-4
PFOA	3.2	2.2	31.5		335-67-1
6:2 FTS	1.2	0.88	26.5	J	27619-97-2
PFHpS	ND	ND			375-92-8
PFNA	ND	ND			375-95-1
PFOSAm	ND	ND			754-91-6
PFOS	4.3	2.8	38.2	I	1763-23-1
MeFOSA	ND	ND			31506-32-8
PFDA	ND	ND			335-76-2
EtFOSAm	ND	ND			4151-50-2
8:2 FTS	ND	ND			39108-34-4
9-CI-PF3ON	ND	ND			756426-58-1
PFNS	ND	ND			68259-12-1
PfUnDA	ND	ND			2058-94-8
NMeFOSAA	0.53	0.67	28.3	J	2355-31-9
NEtFOSAA	2.5	1.5	43.9	J	2991-50-6
PFDS	ND	ND			335-77-3
PFDOA	ND	ND			307-55-1
MeFOSE	5.6	1.4	118.0	J	24448-09-7
EtFOSE	0.79	ND	200		1691-99-2
11-CI-PF3OUdS	ND	ND			763051-92-9
PFTTrDA	ND	ND			72629-94-8
PFDoS	ND	ND			79780-39-5
PFTDA	ND	ND			376-06-7

RPD = Relative Percent Difference NA = Not Applicable ND = Not Detected Qualifier "R" = RPD not within QC limits

RPD calculations are based on unrounded intermediate data. Consequently, it may not be possible to precisely reconstruct the resultant values from the rounded concentration results, due to rounding errors.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220620
 Lab Sample ID 10614143004
 Lab File ID B220715C_009
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 265mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.7	1.9	0.42	0.42	1	375-22-4		07/15/2022 21:41
PFPeA	3.7	1.9	0.41	0.41	1	2706-90-3		07/15/2022 21:41
HFPO-DA	0.92 J	1.9	0.50	0.50	1	13252-13-6		07/15/2022 21:41
PFBS	2.1	1.7	0.45	0.45	1	375-73-5		07/15/2022 21:41
PFHxA	4.4	1.9	0.41	0.41	1	307-24-4		07/15/2022 21:41
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/15/2022 21:41
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		07/15/2022 21:41
PFHpA	1.3 J	1.9	0.52	0.52	1	375-85-9		07/15/2022 21:41
DONA	ND	1.8	0.48	0.48	1	919005-14-4		07/15/2022 21:41
PFHxS	6.4 I	1.7	0.48	0.48	1	355-46-4		07/15/2022 21:41
PFOA	ND	1.9	0.55	0.55	1	335-67-1		07/15/2022 21:41
6:2 FTS	1.7 J	1.8	0.61	0.61	1	27619-97-2		07/15/2022 21:41
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 21:41
PFNA	0.83 J	1.9	0.70	0.70	1	375-95-1		07/15/2022 21:41
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		07/15/2022 21:41
PFOS	6.2	1.7	0.52	0.52	1	1763-23-1		07/15/2022 21:41
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 21:41
PFDA	ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 21:41
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		07/15/2022 21:41
8:2 FTS	0.67 J	1.8	0.62	0.62	1	39108-34-4		07/15/2022 21:41
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 21:41
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 21:41
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		07/15/2022 21:41
NMeFOSAA	1.1 J	1.9	0.41	0.41	1	2355-31-9		07/15/2022 21:41
NEtFOSAA	1.5 J	1.9	0.52	0.52	1	2991-50-6		07/15/2022 21:41
PFDS	3.8	1.8	0.42	0.42	1	335-77-3		07/15/2022 21:41
PFDOA	0.72 J	1.9	0.46	0.46	1	307-55-1		07/15/2022 21:41
MeFOSE	14	1.9	0.31	0.31	1	24448-09-7		07/15/2022 21:41
EtFOSE	1.6 J	1.9	0.47	0.47	1	1691-99-2		07/15/2022 21:41
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 21:41
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/15/2022 21:41
PFDoS	1.3 J	1.8	0.43	0.43	1	79780-39-5		07/15/2022 21:41
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		07/15/2022 21:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220620
 Lab Sample ID 10614143004
 Lab File ID B220715C_009
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 265mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	20	106	50-150		07/15/2022 21:41
13C4 PFOA	19	21	112	50-150		07/15/2022 21:41
13C2 PFDA	19	22	119	50-150		07/15/2022 21:41
13C4 PFOS	18	17	92	50-150		07/15/2022 21:41

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	0.41	2	25-150	R	07/15/2022 21:41
13C5 PFPeA	19	0.56	3	25-150	R	07/15/2022 21:41
13C3 PFBS	18	0.55	3	25-150	R	07/15/2022 21:41
13C2 4:2FTS	18	1.8	10	25-150	R	07/15/2022 21:41
13C5 PFHxA	19	0.60	3	25-150	R	07/15/2022 21:41
13C4 PFHpA	19	0.63	3	25-150	R	07/15/2022 21:41
13C3 PFHxS	18	0.56	3	25-150	R	07/15/2022 21:41
13C2 6:2FTS	18	1.5	8	25-150	R	07/15/2022 21:41
13C8 PFOA	19	0.68	4	25-150	R	07/15/2022 21:41
13C9 PFNA	19	0.78	4	25-150	R	07/15/2022 21:41
13C8 PFOS	18	0.66	4	25-150	R	07/15/2022 21:41
13C2 8:2FTS	18	2.0	11	25-150	R	07/15/2022 21:41
13C6 PFDA	19	1.2	6	25-150	R	07/15/2022 21:41
d3-MeFOSAA	19	1.7	9	25-150	R	07/15/2022 21:41
13C8 PFOSA	19	1.1	6	25-150	R	07/15/2022 21:41
d5-EtFOSAA	19	2.2	12	25-150	R	07/15/2022 21:41
13C7 PFUdA	19	1.7	9	25-150	R	07/15/2022 21:41
13C2 PFDoA	19	1.5	8	25-150	R	07/15/2022 21:41
13C2 PFTeDA	19	2.2	12	25-150	R	07/15/2022 21:41
13C3 HFPO-DA	19	0.66	4	25-150	R	07/15/2022 21:41
d7-N-MeFOSE	19	1.0	5	10-150	R	07/15/2022 21:41
d9-N-EtFOSE	19	0.99	5	10-150	R	07/15/2022 21:41
d3-N-MeFOSA	19	0.71	4	10-150	R	07/15/2022 21:41
d5-N-EtFOSA	19	0.48	3	10-150	R	07/15/2022 21:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220620
 Lab Sample ID 10614143005
 Lab File ID B220715C_010
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 264mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.8	1.9	0.42	0.42	1	375-22-4		07/15/2022 22:01
PFPeA	5.5	1.9	0.42	0.42	1	2706-90-3		07/15/2022 22:01
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		07/15/2022 22:01
PFBS	5.1	1.7	0.45	0.45	1	375-73-5		07/15/2022 22:01
PFHxA	6.7	1.9	0.42	0.42	1	307-24-4		07/15/2022 22:01
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/15/2022 22:01
PFPeS	1.8 J	1.8	0.45	0.45	1	2706-91-4		07/15/2022 22:01
PFHpA	2.2	1.9	0.52	0.52	1	375-85-9		07/15/2022 22:01
DONA	ND	1.8	0.49	0.49	1	919005-14-4		07/15/2022 22:01
PFHxS	14	1.7	0.48	0.48	1	355-46-4		07/15/2022 22:01
PFOA	6.5	1.9	0.55	0.55	1	335-67-1		07/15/2022 22:01
6:2 FTS	2.4	1.8	0.61	0.61	1	27619-97-2		07/15/2022 22:01
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 22:01
PFNA	ND	1.9	0.70	0.70	1	375-95-1		07/15/2022 22:01
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		07/15/2022 22:01
PFOS	9.2	1.8	0.52	0.52	1	1763-23-1		07/15/2022 22:01
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 22:01
PFDA	ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 22:01
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		07/15/2022 22:01
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		07/15/2022 22:01
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 22:01
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 22:01
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		07/15/2022 22:01
NMeFOSAA	0.94 J	1.9	0.41	0.41	1	2355-31-9		07/15/2022 22:01
NEtFOSAA	1.9 J	1.9	0.53	0.53	1	2991-50-6		07/15/2022 22:01
PFDS	ND	1.8	0.43	0.43	1	335-77-3		07/15/2022 22:01
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 22:01
MeFOSE	5.7	1.9	0.31	0.31	1	24448-09-7		07/15/2022 22:01
EtFOSE	0.49 J	1.9	0.47	0.47	1	1691-99-2		07/15/2022 22:01
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 22:01
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/15/2022 22:01
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		07/15/2022 22:01
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		07/15/2022 22:01

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220620
 Lab Sample ID 10614143005
 Lab File ID B220715C_010
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 264mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	18	95	50-150		07/15/2022 22:01
13C4 PFOA	19	19	99	50-150		07/15/2022 22:01
13C2 PFDA	19	18	97	50-150		07/15/2022 22:01
13C4 PFOS	18	16	91	50-150		07/15/2022 22:01

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	4.4	23	25-150	R	07/15/2022 22:01
13C5 PFPeA	19	4.6	24	25-150	R	07/15/2022 22:01
13C3 PFBS	18	5.9	33	25-150		07/15/2022 22:01
13C2 4:2FTS	18	12	69	25-150		07/15/2022 22:01
13C5 PFHxA	19	5.4	28	25-150		07/15/2022 22:01
13C4 PFHpA	19	5.6	30	25-150		07/15/2022 22:01
13C3 PFHxS	18	6.7	37	25-150		07/15/2022 22:01
13C2 6:2FTS	18	22	120	25-150		07/15/2022 22:01
13C8 PFOA	19	6.3	33	25-150		07/15/2022 22:01
13C9 PFNA	19	6.9	36	25-150		07/15/2022 22:01
13C8 PFOS	18	5.3	29	25-150		07/15/2022 22:01
13C2 8:2FTS	18	15	81	25-150		07/15/2022 22:01
13C6 PFDA	19	5.9	31	25-150		07/15/2022 22:01
d3-MeFOSAA	19	4.1	22	25-150	R	07/15/2022 22:01
13C8 PFOSA	19	3.2	17	25-150	R	07/15/2022 22:01
d5-EtFOSAA	19	5.5	29	25-150		07/15/2022 22:01
13C7 PFUdA	19	5.3	28	25-150		07/15/2022 22:01
13C2 PFDoA	19	3.9	21	25-150	R	07/15/2022 22:01
13C2 PFTeDA	19	4.6	24	25-150	R	07/15/2022 22:01
13C3 HFPO-DA	19	4.7	25	25-150		07/15/2022 22:01
d7-N-MeFOSE	19	3.5	18	10-150		07/15/2022 22:01
d9-N-EtFOSE	19	2.7	14	10-150		07/15/2022 22:01
d3-N-MeFOSA	19	2.7	14	10-150		07/15/2022 22:01
d5-N-EtFOSA	19	1.4	8	10-150	R	07/15/2022 22:01

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent-20220621
 Lab Sample ID 10614143006
 Lab File ID B220715C_011
 Matrix Industrial_Water
 Collected 06/21/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 261mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.5	1.9	0.42	0.42	1	375-22-4		07/15/2022 22:21
PFPeA	14	1.9	0.42	0.42	1	2706-90-3		07/15/2022 22:21
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		07/15/2022 22:21
PFBS	3.0	1.7	0.45	0.45	1	375-73-5		07/15/2022 22:21
PFHxA	16	1.9	0.42	0.42	1	307-24-4		07/15/2022 22:21
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/15/2022 22:21
PFPeS	0.64 J	1.8	0.46	0.46	1	2706-91-4		07/15/2022 22:21
PFHpA	1.6 J	1.9	0.53	0.53	1	375-85-9		07/15/2022 22:21
DONA	ND	1.8	0.49	0.49	1	919005-14-4		07/15/2022 22:21
PFHxS	6.5	1.7	0.49	0.49	1	355-46-4		07/15/2022 22:21
PFOA	7.2	1.9	0.56	0.56	1	335-67-1		07/15/2022 22:21
6:2 FTS	1.0 IJ	1.8	0.62	0.62	1	27619-97-2		07/15/2022 22:21
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 22:21
PFNA	0.78 J	1.9	0.71	0.71	1	375-95-1		07/15/2022 22:21
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		07/15/2022 22:21
PFOS	4.3	1.8	0.53	0.53	1	1763-23-1		07/15/2022 22:21
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		07/15/2022 22:21
PFDA	1.3 IJ	1.9	0.54	0.54	1	335-76-2		07/15/2022 22:21
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		07/15/2022 22:21
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		07/15/2022 22:21
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 22:21
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		07/15/2022 22:21
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		07/15/2022 22:21
NMeFOSAA	0.94 IJ	1.9	0.42	0.42	1	2355-31-9		07/15/2022 22:21
NEtFOSAA	0.71 J	1.9	0.53	0.53	1	2991-50-6		07/15/2022 22:21
PFDS	ND	1.8	0.43	0.43	1	335-77-3		07/15/2022 22:21
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 22:21
MeFOSE	0.67 J	1.9	0.32	0.32	1	24448-09-7		07/15/2022 22:21
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		07/15/2022 22:21
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		07/15/2022 22:21
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		07/15/2022 22:21
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		07/15/2022 22:21
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		07/15/2022 22:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent-20220621
 Lab Sample ID 10614143006
 Lab File ID B220715C_011
 Matrix Industrial_Water
 Collected 06/21/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 261mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	20	106	50-150		07/15/2022 22:21
13C4 PFOA	19	22	112	50-150		07/15/2022 22:21
13C2 PFDA	19	24	124	50-150		07/15/2022 22:21
13C4 PFOS	18	21	112	50-150		07/15/2022 22:21

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	1.4	7	25-150	R	07/15/2022 22:21
13C5 PFPeA	19	1.6	8	25-150	R	07/15/2022 22:21
13C3 PFBS	18	1.5	8	25-150	R	07/15/2022 22:21
13C2 4:2FTS	18	2.7	15	25-150	R	07/15/2022 22:21
13C5 PFHxA	19	1.7	9	25-150	R	07/15/2022 22:21
13C4 PFHpA	19	1.9	10	25-150	R	07/15/2022 22:21
13C3 PFHxS	18	1.6	9	25-150	R	07/15/2022 22:21
13C2 6:2FTS	18	2.2	12	25-150	R	07/15/2022 22:21
13C8 PFOA	19	1.9	10	25-150	R	07/15/2022 22:21
13C9 PFNA	19	2.1	11	25-150	R	07/15/2022 22:21
13C8 PFOS	18	2.1	12	25-150	R	07/15/2022 22:21
13C2 8:2FTS	18	3.0	16	25-150	R	07/15/2022 22:21
13C6 PFDA	19	2.5	13	25-150	R	07/15/2022 22:21
d3-MeFOSAA	19	3.0	16	25-150	R	07/15/2022 22:21
13C8 PFOSA	19	2.5	13	25-150	R	07/15/2022 22:21
d5-EtFOSAA	19	3.5	18	25-150	R	07/15/2022 22:21
13C7 PFUdA	19	3.9	21	25-150	R	07/15/2022 22:21
13C2 PFDoA	19	4.7	24	25-150	R	07/15/2022 22:21
13C2 PFTeDA	19	4.4	23	25-150	R	07/15/2022 22:21
13C3 HFPO-DA	19	1.6	8	25-150	R	07/15/2022 22:21
d7-N-MeFOSE	19	1.9	10	10-150		07/15/2022 22:21
d9-N-EtFOSE	19	1.8	10	10-150		07/15/2022 22:21
d3-N-MeFOSA	19	0.79	4	10-150	R	07/15/2022 22:21
d5-N-EtFOSA	19	0.51	3	10-150	R	07/15/2022 22:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Equipment Blank 20220622
 Lab Sample ID 10614143007
 Lab File ID B220715C_012
 Matrix Industrial_Water
 Collected 06/22/2022 08:00
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 264mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.6	1.9	0.42	0.42	1	375-22-4		07/15/2022 22:41
PFPeA	ND	1.9	0.41	0.41	1	2706-90-3		07/15/2022 22:41
HFPO-DA	0.63 J	1.9	0.50	0.50	1	13252-13-6		07/15/2022 22:41
PFBS	0.48 J	1.7	0.45	0.45	1	375-73-5		07/15/2022 22:41
PFHxA	ND	1.9	0.41	0.41	1	307-24-4		07/15/2022 22:41
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/15/2022 22:41
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		07/15/2022 22:41
PFHpA	ND	1.9	0.52	0.52	1	375-85-9		07/15/2022 22:41
DONA	ND	1.8	0.49	0.49	1	919005-14-4		07/15/2022 22:41
PFHxS	ND	1.7	0.48	0.48	1	355-46-4		07/15/2022 22:41
PFOA	ND	1.9	0.55	0.55	1	335-67-1		07/15/2022 22:41
6:2 FTS	ND	1.8	0.61	0.61	1	27619-97-2		07/15/2022 22:41
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 22:41
PFNA	ND	1.9	0.70	0.70	1	375-95-1		07/15/2022 22:41
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		07/15/2022 22:41
PFOS	ND	1.8	0.52	0.52	1	1763-23-1		07/15/2022 22:41
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 22:41
PFDA	ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 22:41
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		07/15/2022 22:41
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		07/15/2022 22:41
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 22:41
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 22:41
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		07/15/2022 22:41
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9		07/15/2022 22:41
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		07/15/2022 22:41
PFDS	ND	1.8	0.43	0.43	1	335-77-3		07/15/2022 22:41
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 22:41
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7		07/15/2022 22:41
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		07/15/2022 22:41
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 22:41
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/15/2022 22:41
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		07/15/2022 22:41
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		07/15/2022 22:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Equipment Blank 20220622	Total Amount Extracted	264mL
Lab Sample ID	10614143007	Ical ID	220715B02
Lab File ID	B220715C_012	CCal File	B220715C_001
Matrix	Industrial_Water	Ending CCal File	B220715C_013
Collected	06/22/2022 08:00	Blank File	B220715C_003
Received	06/23/2022 08:50		
Extraction Date	07/13/2022 14:35		

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	20	104	50-150		07/15/2022 22:41
13C4 PFOA	19	20	103	50-150		07/15/2022 22:41
13C2 PFDA	19	22	114	50-150		07/15/2022 22:41
13C4 PFOS	18	22	119	50-150		07/15/2022 22:41

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	0.89	5	25-150	R	07/15/2022 22:41
13C5 PFPeA	19	1.0	5	25-150	R	07/15/2022 22:41
13C3 PFBS	18	1.3	7	25-150	R	07/15/2022 22:41
13C2 4:2FTS	18	1.3	7	25-150	R	07/15/2022 22:41
13C5 PFHxA	19	1.1	6	25-150	R	07/15/2022 22:41
13C4 PFHpA	19	1.2	7	25-150	R	07/15/2022 22:41
13C3 PFHxS	18	1.5	9	25-150	R	07/15/2022 22:41
13C2 6:2FTS	18	1.3	8	25-150	R	07/15/2022 22:41
13C8 PFOA	19	1.4	7	25-150	R	07/15/2022 22:41
13C9 PFNA	19	1.7	9	25-150	R	07/15/2022 22:41
13C8 PFOS	18	2.2	12	25-150	R	07/15/2022 22:41
13C2 8:2FTS	18	2.2	12	25-150	R	07/15/2022 22:41
13C6 PFDA	19	2.6	14	25-150	R	07/15/2022 22:41
d3-MeFOSAA	19	4.8	26	25-150		07/15/2022 22:41
13C8 PFOSA	19	1.6	8	25-150	R	07/15/2022 22:41
d5-EtFOSAA	19	5.1	27	25-150		07/15/2022 22:41
13C7 PFUdA	19	4.4	23	25-150	R	07/15/2022 22:41
13C2 PFDoA	19	6.5	35	25-150		07/15/2022 22:41
13C2 PFTeDA	19	8.4	44	25-150		07/15/2022 22:41
13C3 HFPO-DA	19	1.2	7	25-150	R	07/15/2022 22:41
d7-N-MeFOSE	19	1.4	7	10-150	R	07/15/2022 22:41
d9-N-EtFOSE	19	1.3	7	10-150	R	07/15/2022 22:41
d3-N-MeFOSA	19	1.2	6	10-150	R	07/15/2022 22:41
d5-N-EtFOSA	19	0.75	4	10-150	R	07/15/2022 22:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Biosolids A-20220622
 Lab Sample ID 10614143008
 Lab File ID Q220708B_023
 Matrix Solid
 Collected 06/22/2022 08:08
 Received 06/23/2022 08:50
 Extraction Date 07/05/2022 11:39

Total Amount Extracted 5.09g
 Percent Moisture 75.727%
 Dry Weight Extracted 1.23g
 Ical ID 220629B01
 CCal File Q220708B_017
 Ending CCal File Q220708B_024
 Blank File Q220708A_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.9	0.40	0.11	0.11	1	375-22-4		07/08/2022 22:02
PFPeA	8.7	0.40	0.12	0.12	1	2706-90-3		07/08/2022 22:02
HFPO-DA	ND	0.40	0.11	0.11	1	13252-13-6		07/08/2022 22:02
PFBS	0.97	0.36	0.11	0.11	1	375-73-5		07/08/2022 22:02
PFHxA	23	0.40	0.11	0.11	1	307-24-4		07/08/2022 22:02
4:2 FTS	ND	0.38	0.09	0.09	1	757124-72-4		07/08/2022 22:02
PFPeS	ND	0.38	0.09	0.09	1	2706-91-4		07/08/2022 22:02
PFHpA	1.3	0.40	0.14	0.14	1	375-85-9		07/08/2022 22:02
DONA	ND	0.38	0.15	0.15	1	919005-14-4		07/08/2022 22:02
PFHxS	0.81	0.37	0.08	0.08	1	355-46-4		07/08/2022 22:02
PFOA	21	0.40	0.13	0.13	1	335-67-1		07/08/2022 22:02
6:2 FTS	1.2	0.38	0.17	0.17	1	27619-97-2		07/08/2022 22:02
PFHpS	0.25 IJ	0.38	0.11	0.11	1	375-92-8		07/08/2022 22:02
PFNA	1.2	0.40	0.13	0.13	1	375-95-1		07/08/2022 22:02
PFOSAm	1.6	0.40	0.12	0.12	1	754-91-6		07/08/2022 22:02
PFOS	24 ID	1.9	0.60	0.60	5	1763-23-1		07/08/2022 21:43
MeFOSA	0.17 J	0.40	0.11	0.11	1	31506-32-8		07/08/2022 22:02
PFDA	9.2	0.40	0.09	0.09	1	335-76-2		07/08/2022 22:02
EtFOSAm	0.30 IJ	0.40	0.10	0.10	1	4151-50-2		07/08/2022 22:02
8:2 FTS	1.0	0.39	0.18	0.18	1	39108-34-4		07/08/2022 22:02
9-CI-PF3ON	ND	0.38	0.10	0.10	1	756426-58-1		07/08/2022 22:02
PFNS	ND	0.39	0.14	0.14	1	68259-12-1		07/08/2022 22:02
PFUnDA	1.1	0.40	0.12	0.12	1	2058-94-8		07/08/2022 22:02
NMeFOSAA	28	0.40	0.11	0.11	1	2355-31-9		07/08/2022 22:02
NEtFOSAA	9.2	0.40	0.16	0.16	1	2991-50-6		07/08/2022 22:02
PFDS	1.5	0.39	0.11	0.11	1	335-77-3		07/08/2022 22:02
PFDOA	3.8	0.40	0.13	0.13	1	307-55-1		07/08/2022 22:02
MeFOSE	9.7	0.40	0.12	0.12	1	24448-09-7		07/08/2022 22:02
EtFOSE	3.4	0.40	0.13	0.13	1	1691-99-2		07/08/2022 22:02
11-CI-PF3OUdS	ND	0.38	0.10	0.10	1	763051-92-9		07/08/2022 22:02
PFTTrDA	0.50	0.40	0.13	0.13	1	72629-94-8		07/08/2022 22:02
PFDoS	ND	0.39	0.11	0.11	1	79780-39-5		07/08/2022 22:02
PFTDA	0.88	0.40	0.14	0.14	1	376-06-7		07/08/2022 22:02

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Biosolids A-20220622	Total Amount Extracted	5.09g
Lab Sample ID	10614143008	Percent Moisture	75.727%
Lab File ID	Q220708B_023	Dry Weight Extracted	1.23g
Matrix	Solid	Ical ID	220629B01
Collected	06/22/2022 08:08	CCal File	Q220708B_017
Received	06/23/2022 08:50	Ending CCal File	Q220708B_024
Extraction Date	07/05/2022 11:39	Blank File	Q220708A_005

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	4.0	3.2	78	50-150		07/08/2022 22:02
13C4 PFOA	4.0	2.5	62	50-150		07/08/2022 22:02
13C2 PFDA	4.0	3.4	83	50-150		07/08/2022 22:02
13C4 PFOS	3.9	4.4	114	50-150		07/08/2022 22:02

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	4.0	1.4	36	25-150		07/08/2022 22:02
13C5 PFPeA	4.0	1.9	46	25-150		07/08/2022 22:02
13C3 PFBS	3.8	1.9	49	25-150		07/08/2022 22:02
13C2 4:2FTS	3.8	7.5	197	25-150	R	07/08/2022 22:02
13C5 PFHxA	4.0	2.0	50	25-150		07/08/2022 22:02
13C4 PFHpA	4.0	1.9	47	25-150		07/08/2022 22:02
13C3 PFHxS	3.8	1.2	32	25-150		07/08/2022 22:02
13C2 6:2FTS	3.8	5.3	139	25-150		07/08/2022 22:02
13C8 PFOA	4.0	1.8	43	25-150		07/08/2022 22:02
13C9 PFNA	4.0	1.8	44	25-150		07/08/2022 22:02
13C8 PFOS	3.9	1.5	40	25-150		07/08/2022 22:02
13C2 8:2FTS	3.9	5.3	137	25-150		07/08/2022 22:02
13C6 PFDA	4.0	1.9	46	25-150		07/08/2022 22:02
d3-MeFOSAA	4.0	2.4	59	25-150		07/08/2022 22:02
13C8 PFOSA	4.0	1.5	37	25-150		07/08/2022 22:02
d5-EtFOSAA	4.0	2.1	52	25-150		07/08/2022 22:02
13C7 PFUdA	4.0	1.8	45	25-150		07/08/2022 22:02
13C2 PFDoA	4.0	1.7	42	25-150		07/08/2022 22:02
13C2 PFTeDA	4.0	1.2	30	25-150		07/08/2022 22:02
13C3 HFPO-DA	4.0	1.5	37	25-150		07/08/2022 22:02
d7-N-MeFOSE	4.0	1.2	30	10-150		07/08/2022 22:02
d9-N-EtFOSE	4.0	1.0	26	10-150		07/08/2022 22:02
d3-N-MeFOSA	4.0	0.57	14	10-150		07/08/2022 22:02
d5-N-EtFOSA	4.0	0.52	13	10-150		07/08/2022 22:02

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Biosolids B-20220622	Total Amount Extracted	5.04g
Lab Sample ID	10614143009	Percent Moisture	94.6556%
Lab File ID	Q220708A_009	Dry Weight Extracted	0.269g
Matrix	Solid	Ical ID	220629B01
Collected	06/22/2022 07:50	CCal File	Q220708A_008
Received	06/23/2022 08:50	Ending CCal File	Q220708A_013
Extraction Date	07/05/2022 11:39	Blank File	Q220708A_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.53	0.53	1	375-22-4		07/08/2022 10:53
PFPeA	0.73 J	1.9	0.53	0.53	1	2706-90-3		07/08/2022 10:53
HFPO-DA	ND	1.9	0.52	0.52	1	13252-13-6		07/08/2022 10:53
PFBS	1.9 I	1.6	0.49	0.49	1	375-73-5		07/08/2022 10:53
PFHxA	2.1	1.9	0.51	0.51	1	307-24-4		07/08/2022 10:53
4:2 FTS	ND	1.7	0.43	0.43	1	757124-72-4		07/08/2022 10:53
PFPeS	ND	1.7	0.45	0.45	1	2706-91-4		07/08/2022 10:53
PFHpA	ND	1.9	0.64	0.64	1	375-85-9		07/08/2022 10:53
DONA	ND	1.8	0.67	0.67	1	919005-14-4		07/08/2022 10:53
PFHxS	0.82 J	1.7	0.41	0.41	1	355-46-4		07/08/2022 10:53
PFOA	1.3 J	1.9	0.58	0.58	1	335-67-1		07/08/2022 10:53
6:2 FTS	ND	1.8	0.77	0.77	1	27619-97-2		07/08/2022 10:53
PFHpS	0.73 IJ	1.8	0.52	0.52	1	375-92-8		07/08/2022 10:53
PFNA	ND	1.9	0.58	0.58	1	375-95-1		07/08/2022 10:53
PFOSAm	0.81 J	1.9	0.55	0.55	1	754-91-6		07/08/2022 10:53
PFOS	7.5	1.7	0.55	0.55	1	1763-23-1		07/08/2022 10:53
MeFOSA	ND	1.9	0.51	0.51	1	31506-32-8		07/08/2022 10:53
PFDA	3.9	1.9	0.42	0.42	1	335-76-2		07/08/2022 10:53
EtFOSAm	ND	1.9	0.48	0.48	1	4151-50-2		07/08/2022 10:53
8:2 FTS	0.89 IJ	1.8	0.82	0.82	1	39108-34-4		07/08/2022 10:53
9-CI-PF3ON	ND	1.7	0.47	0.47	1	756426-58-1		07/08/2022 10:53
PFNS	ND	1.8	0.64	0.64	1	68259-12-1		07/08/2022 10:53
PFUnDA	0.68 J	1.9	0.56	0.56	1	2058-94-8		07/08/2022 10:53
NMeFOSAA	8.8	1.9	0.52	0.52	1	2355-31-9		07/08/2022 10:53
NEtFOSAA	5.7	1.9	0.75	0.75	1	2991-50-6		07/08/2022 10:53
PFDS	1.5 J	1.8	0.52	0.52	1	335-77-3		07/08/2022 10:53
PFDOA	1.9	1.9	0.61	0.61	1	307-55-1		07/08/2022 10:53
MeFOSE	5.4	1.9	0.56	0.56	1	24448-09-7		07/08/2022 10:53
EtFOSE	1.5 J	1.9	0.60	0.60	1	1691-99-2		07/08/2022 10:53
11-CI-PF3OUdS	ND	1.8	0.47	0.47	1	763051-92-9		07/08/2022 10:53
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/08/2022 10:53
PFDoS	ND	1.8	0.48	0.48	1	79780-39-5		07/08/2022 10:53
PFTDA	ND	1.9	0.64	0.64	1	376-06-7		07/08/2022 10:53

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Biosolids B-20220622	Total Amount Extracted	5.04g
Lab Sample ID	10614143009	Percent Moisture	94.6556%
Lab File ID	Q220708A_009	Dry Weight Extracted	0.269g
Matrix	Solid	Ical ID	220629B01
Collected	06/22/2022 07:50	CCal File	Q220708A_008
Received	06/23/2022 08:50	Ending CCal File	Q220708A_013
Extraction Date	07/05/2022 11:39	Blank File	Q220708A_005

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	13	73	50-150		07/08/2022 10:53
13C4 PFOA	19	12	65	50-150		07/08/2022 10:53
13C2 PFDA	19	16	89	50-150		07/08/2022 10:53
13C4 PFOS	18	11	64	50-150		07/08/2022 10:53

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	8.9	48	25-150		07/08/2022 10:53
13C5 PFPeA	19	13	71	25-150		07/08/2022 10:53
13C3 PFBS	17	12	72	25-150		07/08/2022 10:53
13C2 4:2FTS	17	45	260	25-150	R	07/08/2022 10:53
13C5 PFHxA	19	11	60	25-150		07/08/2022 10:53
13C4 PFHpA	19	11	59	25-150		07/08/2022 10:53
13C3 PFHxS	18	9.6	55	25-150		07/08/2022 10:53
13C2 6:2FTS	18	39	224	25-150	R	07/08/2022 10:53
13C8 PFOA	19	11	62	25-150		07/08/2022 10:53
13C9 PFNA	19	12	63	25-150		07/08/2022 10:53
13C8 PFOS	18	12	68	25-150		07/08/2022 10:53
13C2 8:2FTS	18	39	221	25-150	R	07/08/2022 10:53
13C6 PFDA	19	13	72	25-150		07/08/2022 10:53
d3-MeFOSAA	19	13	72	25-150		07/08/2022 10:53
13C8 PFOSA	19	10	55	25-150		07/08/2022 10:53
d5-EtFOSAA	19	21	112	25-150		07/08/2022 10:53
13C7 PFUdA	19	12	64	25-150		07/08/2022 10:53
13C2 PFDoA	19	14	78	25-150		07/08/2022 10:53
13C2 PFTeDA	19	14	77	25-150		07/08/2022 10:53
13C3 HFPO-DA	19	10	54	25-150		07/08/2022 10:53
d7-N-MeFOSE	19	6.6	35	10-150		07/08/2022 10:53
d9-N-EtFOSE	19	5.9	32	10-150		07/08/2022 10:53
d3-N-MeFOSA	19	1.6	9	10-150	R	07/08/2022 10:53
d5-N-EtFOSA	19	1.5	8	10-150	R	07/08/2022 10:53

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKNC
 Lab Sample ID BLANK-99818
 Lab File ID Q220708A_005
 Matrix Soil
 Collected 07/05/2022 09:54
 Received 07/05/2022 09:54
 Extraction Date 07/05/2022 11:39

Total Amount Extracted 5.04g
 Ical ID 220629B01
 CCal File Q220708A_003
 Ending CCal File Q220708A_008
 Blank File

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	0.09	0.02	0.02	1	375-22-4		07/08/2022 09:38
PFPeA	ND	0.09	0.02	0.02	1	2706-90-3		07/08/2022 09:38
HFPO-DA	ND	0.09	0.02	0.02	1	13252-13-6		07/08/2022 09:38
PFBS	ND	0.08	0.02	0.02	1	375-73-5		07/08/2022 09:38
PFHxA	ND	0.09	0.02	0.02	1	307-24-4		07/08/2022 09:38
4:2 FTS	ND	0.09	0.02	0.02	1	757124-72-4		07/08/2022 09:38
PFPeS	ND	0.09	0.02	0.02	1	2706-91-4		07/08/2022 09:38
PFHpA	ND	0.09	0.03	0.03	1	375-85-9		07/08/2022 09:38
DONA	ND	0.09	0.03	0.03	1	919005-14-4		07/08/2022 09:38
PFHxS	ND	0.09	0.02	0.02	1	355-46-4		07/08/2022 09:38
PFOA	ND	0.09	0.03	0.03	1	335-67-1		07/08/2022 09:38
6:2 FTS	ND	0.09	0.04	0.04	1	27619-97-2		07/08/2022 09:38
PFHpS	ND	0.09	0.02	0.02	1	375-92-8		07/08/2022 09:38
PFNA	ND	0.09	0.03	0.03	1	375-95-1		07/08/2022 09:38
PFOSAm	ND	0.09	0.02	0.02	1	754-91-6		07/08/2022 09:38
PFOS	ND	0.09	0.02	0.02	1	1763-23-1		07/08/2022 09:38
MeFOSA	ND	0.09	0.02	0.02	1	31506-32-8		07/08/2022 09:38
PFDA	ND	0.09	0.02	0.02	1	335-76-2		07/08/2022 09:38
EtFOSAm	ND	0.09	0.02	0.02	1	4151-50-2		07/08/2022 09:38
8:2 FTS	ND	0.09	0.04	0.04	1	39108-34-4		07/08/2022 09:38
9-CI-PF3ON	ND	0.09	0.02	0.02	1	756426-58-1		07/08/2022 09:38
PFNS	ND	0.09	0.03	0.03	1	68259-12-1		07/08/2022 09:38
PFUnDA	ND	0.09	0.03	0.03	1	2058-94-8		07/08/2022 09:38
NMeFOSAA	ND	0.09	0.02	0.02	1	2355-31-9		07/08/2022 09:38
NEtFOSAA	ND	0.09	0.04	0.04	1	2991-50-6		07/08/2022 09:38
PFDS	ND	0.09	0.02	0.02	1	335-77-3		07/08/2022 09:38
PFDOA	ND	0.09	0.03	0.03	1	307-55-1		07/08/2022 09:38
MeFOSE	ND	0.09	0.03	0.03	1	24448-09-7		07/08/2022 09:38
EtFOSE	ND	0.09	0.03	0.03	1	1691-99-2		07/08/2022 09:38
11-CI-PF3OUdS	ND	0.09	0.02	0.02	1	763051-92-9		07/08/2022 09:38
PFTTrDA	ND	0.09	0.03	0.03	1	72629-94-8		07/08/2022 09:38
PFDoS	ND	0.09	0.02	0.02	1	79780-39-5		07/08/2022 09:38
PFTDA	ND	0.09	0.03	0.03	1	376-06-7		07/08/2022 09:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKNC
 Lab Sample ID BLANK-99818
 Lab File ID Q220708A_005
 Matrix Soil
 Collected 07/05/2022 09:54
 Received 07/05/2022 09:54
 Extraction Date 07/05/2022 11:39

Total Amount Extracted 5.04g
 Ical ID 220629B01
 CCal File Q220708A_003
 Ending CCal File Q220708A_008
 Blank File

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	0.99	0.83	84	50-150		07/08/2022 09:38
13C4 PFOA	0.99	0.84	85	50-150		07/08/2022 09:38
13C2 PFDA	0.99	0.88	88	50-150		07/08/2022 09:38
13C4 PFOS	0.95	0.81	85	50-150		07/08/2022 09:38

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	0.99	0.91	92	50-150		07/08/2022 09:38
13C5 PFPeA	0.99	0.86	86	50-150		07/08/2022 09:38
13C3 PFBS	0.92	0.78	84	50-150		07/08/2022 09:38
13C2 4:2FTS	0.93	0.70	76	50-150		07/08/2022 09:38
13C5 PFHxA	0.99	0.86	87	50-150		07/08/2022 09:38
13C4 PFHpA	0.99	0.91	92	50-150		07/08/2022 09:38
13C3 PFHxS	0.94	0.83	88	50-150		07/08/2022 09:38
13C2 6:2FTS	0.94	0.80	85	50-150		07/08/2022 09:38
13C8 PFOA	0.99	0.85	85	50-150		07/08/2022 09:38
13C9 PFNA	0.99	0.82	83	50-150		07/08/2022 09:38
13C8 PFOS	0.95	0.92	97	50-150		07/08/2022 09:38
13C2 8:2FTS	0.95	0.79	83	50-150		07/08/2022 09:38
13C6 PFDA	0.99	0.81	81	50-150		07/08/2022 09:38
d3-MeFOSAA	0.99	0.91	92	50-150		07/08/2022 09:38
13C8 PFOSA	0.99	0.77	78	50-150		07/08/2022 09:38
d5-EtFOSAA	0.99	0.73	74	50-150		07/08/2022 09:38
13C7 PFUdA	0.99	0.83	83	50-150		07/08/2022 09:38
13C2 PFDaA	0.99	0.72	73	50-150		07/08/2022 09:38
13C2 PFTeDA	0.99	0.76	76	50-150		07/08/2022 09:38
13C3 HFPO-DA	0.99	0.82	83	50-150		07/08/2022 09:38
d7-N-MeFOSE	0.99	0.77	78	20-150		07/08/2022 09:38
d9-N-EtFOSE	0.99	0.75	76	20-150		07/08/2022 09:38
d3-N-MeFOSA	0.99	0.71	72	20-150		07/08/2022 09:38
d5-N-EtFOSA	0.99	0.61	62	20-150		07/08/2022 09:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKLX
 Lab Sample ID BLANK-99736
 Lab File ID B220715C_003
 Matrix Water
 Collected 06/29/2022 13:15
 Received 06/29/2022 13:15
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 268mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.41	0.41	1	375-22-4		07/15/2022 19:40
PFPeA	ND	1.9	0.41	0.41	1	2706-90-3		07/15/2022 19:40
HFPO-DA	ND	1.9	0.49	0.49	1	13252-13-6		07/15/2022 19:40
PFBS	ND	1.6	0.44	0.44	1	375-73-5		07/15/2022 19:40
PFHxA	ND	1.9	0.41	0.41	1	307-24-4		07/15/2022 19:40
4:2 FTS	ND	1.7	0.52	0.52	1	757124-72-4		07/15/2022 19:40
PFPeS	ND	1.8	0.44	0.44	1	2706-91-4		07/15/2022 19:40
PFHpA	ND	1.9	0.51	0.51	1	375-85-9		07/15/2022 19:40
DONA	ND	1.8	0.48	0.48	1	919005-14-4		07/15/2022 19:40
PFHxS	ND	1.7	0.47	0.47	1	355-46-4		07/15/2022 19:40
PFOA	ND	1.9	0.55	0.55	1	335-67-1		07/15/2022 19:40
6:2 FTS	ND	1.8	0.60	0.60	1	27619-97-2		07/15/2022 19:40
PFHpS	ND	1.8	0.38	0.38	1	375-92-8		07/15/2022 19:40
PFNA	ND	1.9	0.69	0.69	1	375-95-1		07/15/2022 19:40
PFOSAm	ND	1.9	0.76	0.76	1	754-91-6		07/15/2022 19:40
PFOS	ND	1.7	0.51	0.51	1	1763-23-1		07/15/2022 19:40
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 19:40
PFDA	ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 19:40
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		07/15/2022 19:40
8:2 FTS	ND	1.8	0.61	0.61	1	39108-34-4		07/15/2022 19:40
9-CI-PF3ON	ND	1.7	0.28	0.28	1	756426-58-1		07/15/2022 19:40
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 19:40
PFUnDA	ND	1.9	0.50	0.50	1	2058-94-8		07/15/2022 19:40
NMeFOSAA	ND	1.9	0.40	0.40	1	2355-31-9		07/15/2022 19:40
NEtFOSAA	ND	1.9	0.52	0.52	1	2991-50-6		07/15/2022 19:40
PFDS	ND	1.8	0.42	0.42	1	335-77-3		07/15/2022 19:40
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		07/15/2022 19:40
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7		07/15/2022 19:40
EtFOSE	ND	1.9	0.46	0.46	1	1691-99-2		07/15/2022 19:40
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 19:40
PFTTrDA	ND	1.9	0.58	0.58	1	72629-94-8		07/15/2022 19:40
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		07/15/2022 19:40
PFTDA	ND	1.9	0.44	0.44	1	376-06-7		07/15/2022 19:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKLX
 Lab Sample ID BLANK-99736
 Lab File ID B220715C_003
 Matrix Water
 Collected 06/29/2022 13:15
 Received 06/29/2022 13:15
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 268mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	18	96	50-150		07/15/2022 19:40
13C4 PFOA	19	17	92	50-150		07/15/2022 19:40
13C2 PFDA	19	17	90	50-150		07/15/2022 19:40
13C4 PFOS	18	18	99	50-150		07/15/2022 19:40

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	9.8	53	50-150		07/15/2022 19:40
13C5 PFPeA	19	9.8	53	50-150		07/15/2022 19:40
13C3 PFBS	17	9.0	52	50-150		07/15/2022 19:40
13C2 4:2FTS	17	9.0	52	50-150		07/15/2022 19:40
13C5 PFHxA	19	9.5	51	50-150		07/15/2022 19:40
13C4 PFHpA	19	9.6	52	50-150		07/15/2022 19:40
13C3 PFHxS	18	9.0	51	50-150		07/15/2022 19:40
13C2 6:2FTS	18	9.1	52	50-150		07/15/2022 19:40
13C8 PFOA	19	10	56	50-150		07/15/2022 19:40
13C9 PFNA	19	10	54	50-150		07/15/2022 19:40
13C8 PFOS	18	10	59	50-150		07/15/2022 19:40
13C2 8:2FTS	18	8.6	48	50-150	R	07/15/2022 19:40
13C6 PFDA	19	11	57	50-150		07/15/2022 19:40
d3-MeFOSAA	19	11	57	50-150		07/15/2022 19:40
13C8 PFOSA	19	9.6	52	50-150		07/15/2022 19:40
d5-EtFOSAA	19	10	56	50-150		07/15/2022 19:40
13C7 PFUdA	19	11	60	50-150		07/15/2022 19:40
13C2 PFDoA	19	11	59	50-150		07/15/2022 19:40
13C2 PFTeDA	19	10	55	50-150		07/15/2022 19:40
13C3 HFPO-DA	19	10.0	54	50-150		07/15/2022 19:40
d7-N-MeFOSE	19	9.7	52	20-150		07/15/2022 19:40
d9-N-EtFOSE	19	8.9	48	20-150		07/15/2022 19:40
d3-N-MeFOSA	19	9.0	48	20-150		07/15/2022 19:40
d5-N-EtFOSA	19	7.0	37	20-150		07/15/2022 19:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-99819	Instrument ID	10LCMS01
Run File Name	Q220708A_006	Column ID	118AB10133
Analyzed	07/08/2022 09:57	Ical ID	220629B01
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	0.99	0.75	75	50-150	
13C4_PFOA	0.99	0.76	77	50-150	
13C2_PFDA	0.99	0.80	81	50-150	
13C4_PFOS	0.95	0.74	78	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	0.99	0.75	76	50-150	
13C5_PFPeA	0.99	0.70	70	50-150	
13C3_PFBFS	0.92	0.61	66	50-150	
13C2_4:2FTS	0.93	0.65	70	50-150	
13C5_PFHxA	0.99	0.70	70	50-150	
13C4_PFHpA	0.99	0.76	76	50-150	
13C3_PFHxS	0.94	0.71	76	50-150	
13C2_6:2FTS	0.94	0.62	66	50-150	
13C8_PFOA	0.99	0.74	74	50-150	
13C9_PFNA	0.99	0.70	71	50-150	
13C8_PFOS	0.95	0.81	86	50-150	
13C2_8:2FTS	0.95	0.65	68	50-150	
13C6_PFDA	0.99	0.70	71	50-150	
d3-MeFOSAA	0.99	0.66	67	50-150	
13C8_PFOA	0.99	0.64	65	50-150	
d5-EtFOSAA	0.99	0.67	68	50-150	
13C7_PFUdA	0.99	0.71	71	50-150	
13C2_PFDaA	0.99	0.69	70	50-150	
13C2_PFTeDA	0.99	0.64	64	50-150	
13C3_HFPO-DA	0.99	0.58	58	50-150	
d7-N-MeFOSE	0.99	0.37	37	20-150	
d9-N-EtFOSE	0.99	0.31	32	20-150	
d3-N-MeFOSA	0.99	0.049	5	20-150	R
d5-N-EtFOSA	0.99	0.037	4	20-150	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99819
 Run File Name Q220708A_006
 Analyzed 07/08/2022 09:57
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.20	0.20	103	50-150		375-22-4
PFPeA	0.20	0.22	110	50-150		2706-90-3
HFPO-DA	0.20	0.21	106	50-150		13252-13-6
PFBS	0.18	0.20	112	50-150		375-73-5
PFHxA	0.20	0.22	110	50-150		307-24-4
4:2 FTS	0.19	0.17	91	50-150		757124-72-4
PFPeS	0.19	0.19	100	50-150		2706-91-4
PFHpA	0.20	0.18	92	50-150		375-85-9
DONA	0.19	0.18	98	50-150		919005-14-4
PFHxS	0.18	0.17	97	50-150		355-46-4
PFOA	0.20	0.20	103	50-150		335-67-1
6:2 FTS	0.19	0.19	103	50-150		27619-97-2
PFHpS	0.19	0.19	100	50-150		375-92-8
PFNA	0.20	0.19	96	50-150		375-95-1
PFOSAm	0.20	0.21	108	50-150		754-91-6
PFOS	0.18	0.19	104	50-150		1763-23-1
MeFOSA	0.20	0.18	93	50-150		31506-32-8
PFDA	0.20	0.20	98	50-150		335-76-2
EtFOSAm	0.20	0.16	80	50-150		4151-50-2
8:2 FTS	0.19	0.18	95	50-150		39108-34-4
9-CI-PF3ON	0.18	0.17	91	50-150		756426-58-1
PFNS	0.19	0.16	86	50-150		68259-12-1
PFUnDA	0.20	0.21	104	50-150		2058-94-8
NMeFOSAA	0.20	0.18	88	50-150		2355-31-9
NEtFOSAA	0.20	0.21	107	50-150		2991-50-6
PFDS	0.19	0.19	98	50-150		335-77-3
PFDOA	0.20	0.18	92	50-150		307-55-1
MeFOSE	0.20	0.21	107	50-150		24448-09-7
EtFOSE	0.20	0.20	101	50-150		1691-99-2
11-CI-PF3OUdS	0.19	0.17	90	50-150		763051-92-9
PFTrDA	0.20	0.18	93	50-150		72629-94-8
PFDoS	0.19	0.17	87	50-150		79780-39-5
PFTDA	0.20	0.20	101	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99819
 Run File Name Q220708A_006
 Analyzed 07/08/2022 09:57
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	6.21	6.25	1221	
13C4 PFOA	N/A	N/A	7.51	7.59	1636	
13C2 PFDA	N/A	N/A	8.84	8.83	1523	
13C4 PFOS	N/A	N/A	9.26	9.26	2111	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.72	4.75	2341	
13C5 PFPeA	N/A	N/A	5.55	5.53	1652	
13C3 PFBS	N/A	N/A	6.43	6.42	1660	
13C2 4:2FTS	N/A	N/A	5.94	5.93	429	
13C5 PFHxA	N/A	N/A	6.21	6.25	1070	
13C4 PFHpA	N/A	N/A	6.86	6.87	1382	
13C3 PFHxS	N/A	N/A	7.89	7.97	1745	
13C2 6:2FTS	N/A	N/A	7.17	7.19	2427	
13C8 PFOA	N/A	N/A	7.51	7.59	1595	
13C9 PFNA	N/A	N/A	8.17	8.25	1284	
13C8 PFOS	N/A	N/A	9.27	9.34	1272	
13C2 8:2FTS	N/A	N/A	8.47	8.54	705	
13C6 PFDA	N/A	N/A	8.84	8.84	1311	
d3-MeFOSAA	N/A	N/A	8.75	8.72	1260	
13C8 PFOSA	N/A	N/A	11.34	11.32	250123	
d5-EtFOSAA	N/A	N/A	9.06	9.03	473	
13C7 PFUdA	N/A	N/A	9.50	9.46	1752	
13C2 PFDoA	N/A	N/A	10.16	10.12	558	
13C2 PFTeDA	N/A	N/A	11.42	11.40	809	
13C3 HFPO-DA	N/A	N/A	6.47	6.48	1069	
d7-N-MeFOSE	N/A	N/A	13.02	13.01	290	
d9-N-EtFOSE	N/A	N/A	13.50	13.49	355	
d3-N-MeFOSA	N/A	N/A	13.22	13.21	50775	R
d5-N-EtFOSA	N/A	N/A	13.66	13.65	374	R

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99819
 Run File Name Q220708A_006
 Analyzed 07/08/2022 09:57
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.73	4.77	146	
PFPeA	N/A	N/A	5.55	5.54	408	
HFPO-DA	0.44	0.46	6.49	6.44	829	
PFBS	0.28	0.29	6.43	6.43	767	
PFHxA	0.08	0.08	6.22	6.21	215	
4:2 FTS	1.10	1.10	5.95	5.98	2191006	
PFPeS	0.35	0.45	7.18	7.22	1476	
PFHpA	0.50	0.39	6.87	6.81	16	
DONA	0.44	0.44	7.10	7.18	804	
PFHxS	0.30	0.28	7.89	7.89	560	
PFOA	0.29	0.32	7.52	7.51	154	
6:2 FTS	1.20	1.50	7.18	7.17	42	
PFHpS	0.36	0.38	8.60	8.57	1245	
PFNA	0.25	0.24	8.18	8.16	330	
PFOSAm	N/A	N/A	11.34	11.33	782	
PFOS	0.21	0.22	9.28	9.24	464	
MeFOSA	0.34	0.46	13.24	13.23	354100	
PFDA	0.18	0.14	8.85	8.82	128	
EtFOSAm	0.37	0.36	13.69	13.68	19088	
8:2 FTS	1.40	1.30	8.48	8.45	117236	
9-CI-PF3ON	0.04	0.04	9.76	9.72	756	
PFNS	0.23	0.23	9.94	9.90	1833	
PFUnDA	0.15	0.14	9.50	9.47	211	
NMeFOSAA	0.93	0.91	8.76	8.73	12126	
NEtFOSAA	0.59	0.55	9.07	9.04	257	
PFDS	0.26	0.30	10.59	10.55	1082	
PFDOA	0.21	0.21	10.17	10.13	239	
MeFOSE	N/A	N/A	13.06	13.05	252	
EtFOSE	0.00	0.00	13.53	13.53	182	
11-CI-PF3OUdS	0.02	0.03	11.04	11.01	756	
PFTrDA	0.23	0.18	10.81	10.77	238	
PFDoS	0.24	0.25	11.78	11.75	4651	
PFTDA	0.16	0.20	11.43	11.40	169	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-99737	Instrument ID	10LCMS02
Run File Name	B220715C_004	Column ID	1071B00011
Analyzed	07/15/2022 20:00	Ical ID	220715B02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	19	96	50-150	
13C4_PFOA	19	19	100	50-150	
13C2_PFDA	19	19	97	50-150	
13C4_PFOS	18	19	105	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	19	9.9	51	50-150	
13C5_PFPeA	19	9.4	49	50-150	R
13C3_PFBFS	18	9.0	50	50-150	
13C2_4:2FTS	18	8.8	49	50-150	R
13C5_PFHxA	19	9.2	48	50-150	R
13C4_PFHpA	19	9.7	50	50-150	
13C3_PFHxS	18	10.0	55	50-150	
13C2_6:2FTS	18	8.5	46	50-150	R
13C8_PFOA	19	10	52	50-150	
13C9_PFNA	19	10	55	50-150	
13C8_PFOS	18	10	55	50-150	
13C2_8:2FTS	18	10.0	54	50-150	
13C6_PFDA	19	11	56	50-150	
d3-MeFOSAA	19	12	60	50-150	
13C8_PFOSA	19	9.8	51	50-150	
d5-EtFOSAA	19	12	61	50-150	
13C7_PFUdA	19	13	66	50-150	
13C2_PFDaA	19	12	64	50-150	
13C2_PFTeDA	19	12	62	50-150	
13C3_HFPO-DA	19	9.5	49	50-150	R
d7-N-MeFOSE	19	9.5	49	20-150	
d9-N-EtFOSE	19	9.1	47	20-150	
d3-N-MeFOSA	19	8.8	46	20-150	
d5-N-EtFOSA	19	7.6	40	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99737
 Run File Name B220715C_004
 Analyzed 07/15/2022 20:00
 Injected By NH

Instrument ID 10LCMS02
 Column ID 1071B00011
 Ical ID 220715B02
 Level L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.8	4.6	120	50-150		375-22-4
PFPeA	3.8	4.2	109	50-150		2706-90-3
HFPO-DA	3.8	4.0	103	50-150		13252-13-6
PFBS	3.4	3.5	103	50-150		375-73-5
PFHxA	3.8	4.2	109	50-150		307-24-4
4:2 FTS	3.6	4.0	112	50-150		757124-72-4
PFPeS	3.6	3.6	99	50-150		2706-91-4
PFHpA	3.8	3.9	102	50-150		375-85-9
DONA	3.6	3.9	108	50-150		919005-14-4
PFHxS	3.5	3.4	98	50-150		355-46-4
PFOA	3.8	4.1	106	50-150		335-67-1
6:2 FTS	3.7	4.4	121	50-150		27619-97-2
PFHpS	3.7	3.7	103	50-150		375-92-8
PFNA	3.8	4.0	104	50-150		375-95-1
PFOSAm	3.8	4.1	106	50-150		754-91-6
PFOS	3.6	3.5	99	50-150		1763-23-1
MeFOSA	3.8	4.1	107	50-150		31506-32-8
PFDA	3.8	4.4	113	50-150		335-76-2
EtFOSAm	3.8	3.9	101	50-150		4151-50-2
8:2 FTS	3.7	3.4	91	50-150		39108-34-4
9-CI-PF3ON	3.6	3.6	101	50-150		756426-58-1
PFNS	3.7	4.1	111	50-150		68259-12-1
PFUnDA	3.8	3.9	102	50-150		2058-94-8
NMeFOSAA	3.8	4.1	107	50-150		2355-31-9
NEtFOSAA	3.8	3.7	96	50-150		2991-50-6
PFDS	3.7	4.1	109	50-150		335-77-3
PFDOA	3.8	3.9	101	50-150		307-55-1
MeFOSE	3.8	4.1	106	50-150		24448-09-7
EtFOSE	3.8	4.3	112	50-150		1691-99-2
11-CI-PF3OUdS	3.6	3.9	107	50-150		763051-92-9
PFTrDA	3.8	3.7	95	50-150		72629-94-8
PFDoS	3.7	4.1	110	50-150		79780-39-5
PFTDA	3.8	4.0	103	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99737
 Run File Name B220715C_004
 Analyzed 07/15/2022 20:00
 Injected By NH

Instrument ID 10LCMS02
 Column ID 1071B00011
 Ical ID 220715B02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	6.11	6.10	1624	
13C4 PFOA	N/A	N/A	7.46	7.46	1683	
13C2 PFDA	N/A	N/A	8.86	8.88	1359	
13C4 PFOS	N/A	N/A	9.38	9.39	1843	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.69	4.68	2154	
13C5 PFPeA	N/A	N/A	5.43	5.43	1739	R
13C3 PFBS	N/A	N/A	6.41	6.40	2554	
13C2 4:2FTS	N/A	N/A	5.81	5.81	679	R
13C5 PFHxA	N/A	N/A	6.11	6.10	1366	R
13C4 PFHpA	N/A	N/A	6.78	6.78	1642	
13C3 PFHxS	N/A	N/A	7.94	7.95	1525	
13C2 6:2FTS	N/A	N/A	7.09	7.09	1272	R
13C8 PFOA	N/A	N/A	7.47	7.47	1673	
13C9 PFNA	N/A	N/A	8.16	8.17	1804	
13C8 PFOS	N/A	N/A	9.39	9.40	1564	
13C2 8:2FTS	N/A	N/A	8.45	8.47	224313	
13C6 PFDA	N/A	N/A	8.86	8.88	1524	
d3-MeFOSAA	N/A	N/A	8.71	8.73	2026	
13C8 PFOSA	N/A	N/A	11.30	11.31	1311	
d5-EtFOSAA	N/A	N/A	9.03	9.05	643	
13C7 PFUdA	N/A	N/A	9.56	9.57	1473	
13C2 PFDoA	N/A	N/A	10.26	10.27	937	
13C2 PFTeDA	N/A	N/A	11.57	11.59	1082	
13C3 HFPO-DA	N/A	N/A	6.39	6.38	1524	R
d7-N-MeFOSE	N/A	N/A	12.95	12.96	352	
d9-N-EtFOSE	N/A	N/A	13.38	13.40	370	
d3-N-MeFOSA	N/A	N/A	13.13	13.15	539	
d5-N-EtFOSA	N/A	N/A	13.51	13.57	708	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-99737
 Run File Name B220715C_004
 Analyzed 07/15/2022 20:00
 Injected By NH

Instrument ID 10LCMS02
 Column ID 1071B00011
 Ical ID 220715B02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.70	4.69	121	
PFPeA	N/A	N/A	5.44	5.44	360	
HFPO-DA	0.27	0.29	6.40	6.39	677	
PFBS	0.44	0.40	6.42	6.41	665	
PFHxA	0.09	0.08	6.12	6.11	216	
4:2 FTS	0.87	0.93	5.82	5.81	1886	
PFPeS	0.42	0.42	7.20	7.19	1044	
PFHpA	0.30	0.32	6.79	6.78	237	
DONA	0.57	0.64	7.04	7.03	1030	
PFHxS	0.39	0.35	7.95	7.95	693	
PFOA	0.37	0.37	7.47	7.47	142	
6:2 FTS	0.82	0.97	7.10	7.10	509	
PFHpS	0.41	0.42	8.68	8.70	985	
PFNA	0.15	0.13	8.17	8.18	429	
PFOSAm	N/A	N/A	11.31	11.33	545	
PFOS	0.41	0.42	9.40	9.40	380	
MeFOSA	0.56	0.64	13.15	13.18	14303	
PFDA	0.12	0.12	8.87	8.89	309	
EtFOSAm	0.52	0.52	13.54	13.55	781	
8:2 FTS	0.98	1.10	8.46	8.48	13649	
9-CI-PF3ON	0.06	0.06	9.90	9.91	938	
PFNS	0.46	0.45	10.09	10.10	767	
PFUnDA	0.13	0.12	9.57	9.58	356	
NMeFOSAA	0.88	0.77	8.72	8.74	2992	
NEtFOSAA	0.73	0.70	9.04	9.06	215	
PFDS	0.38	0.40	10.76	10.77	1256	
PFDOA	0.18	0.19	10.27	10.27	335	
MeFOSE	N/A	N/A	12.99	13.00	304	
EtFOSE	0.00	0.00	13.42	13.44	378	
11-CI-PF3OUdS	0.02	0.01	11.24	11.25	692	
PFTrDA	0.14	0.15	10.95	10.94	270	
PFDoS	0.48	0.49	11.97	11.99	1282	
PFTDA	0.25	0.28	11.58	11.60	243	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-99738
 Run File Name B220715C_005
 Analyzed 07/15/2022 20:20
 Injected By NH

Instrument ID 10LCMS02
 Column ID 1071B00011
 Ical ID 220715B02
 Level L

Injection Internal Standards

Compound	Known Conc.	LCS Conc. Found	LCS Rec. %	LCSD Conc. Found	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
13C2 PFHxA	19	19	96	18	98	1.8	50-150	
13C4 PFOA	19	19	100	19	100	0.2	50-150	
13C2 PFDA	19	19	97	17	93	4.7	50-150	
13C4 PFOS	18	19	105	19	104	0.8	50-150	

Extracted Internal Standards

Compound	Known Conc.	LCS Conc. Found	LCS Rec. %	LCSD Conc. Found	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
13C4 PFBA	19	9.9	51	10.0	53	3.3	50-150	
13C5 PFPeA	19	9.4	49	10	55	10.9	50-150	
13C3 PFBS	17	9.0	50	9.1	52	3.4	50-150	
13C2 4:2FTS	18	8.8	49	9.1	52	5.8	50-150	
13C5 PFHxA	19	9.2	48	9.4	50	4.9	50-150	
13C4 PFHpA	19	9.7	50	9.8	52	3.6	50-150	
13C3 PFHxS	18	10.0	55	9.5	54	2.1	50-150	
13C2 6:2FTS	18	8.5	46	9.2	52	10.4	50-150	
13C8 PFOA	19	10	52	9.5	50	3.4	50-150	
13C9 PFNA	19	10	55	10	55	1.5	50-150	
13C8 PFOS	18	10	55	10	56	0.8	50-150	
13C2 8:2FTS	18	10.0	54	9.6	53	1.2	50-150	
13C6 PFDA	19	11	56	11	57	1.2	50-150	
d3-MeFOSAA	19	12	60	11	58	3.2	50-150	
13C8 PFOSA	19	9.8	51	10.0	53	3.4	50-150	
d5-EtFOSAA	19	12	61	11	58	5.3	50-150	
13C7 PFUdA	19	13	66	11	61	8.6	50-150	
13C2 PFDoA	19	12	64	11	59	8.1	50-150	
13C2 PFTeDA	19	12	62	10	55	13.0	50-150	
13C3 HFPO-DA	19	9.5	49	9.9	52	6.0	50-150	
d7-N-MeFOSE	19	9.5	49	9.8	52	5.3	20-150	
d9-N-EtFOSE	19	9.1	47	9.8	52	9.7	20-150	
d3-N-MeFOSA	19	8.8	46	9.1	49	6.1	20-150	
d5-N-EtFOSA	19	7.6	40	7.9	42	6.2	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-99738
 Run File Name B220715C_005
 Analyzed 07/15/2022 20:20
 Injected By NH

Instrument ID 10LCMS02
 Column ID 1071B00011
 Ical ID 220715B02
 Level L

Native Analytes

Compound	Known Conc.	LCS Conc. Found	LCS Rec. %	LCSD Conc. Found	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
PFBA	3.8	4.6	120	4.4	116	3.8	50-150	
PFPeA	3.8	4.2	109	3.9	104	5.3	50-150	
HFPO-DA	3.8	4.0	103	3.9	103	0.2	50-150	
PFBS	3.3	3.5	103	3.6	109	5.2	50-150	
PFHxA	3.8	4.2	109	4.1	110	0.6	50-150	
4:2 FTS	3.5	4.0	112	3.6	101	10.1	50-150	
PFPeS	3.5	3.6	99	3.8	108	9.0	50-150	
PFHpA	3.8	3.9	102	4.1	109	6.9	50-150	
DONA	3.6	3.9	108	4.1	114	5.2	50-150	
PFHxS	3.4	3.4	98	4.9	142	36.4	50-150	
PFOA	3.8	4.1	106	4.7	125	15.9	50-150	
6:2 FTS	3.6	4.4	121	3.5	99	20.4	50-150	
PFHpS	3.6	3.7	103	3.6	102	0.9	50-150	
PFNA	3.8	4.0	104	3.9	103	0.9	50-150	
PFOSAm	3.8	4.1	106	3.8	102	3.9	50-150	
PFOS	3.5	3.5	99	4.5	129	26.7	50-150	
MeFOSA	3.8	4.1	107	3.8	101	5.4	50-150	
PFDA	3.8	4.4	113	3.8	102	10.3	50-150	
EtFOSAm	3.8	3.9	101	3.9	105	3.9	50-150	
8:2 FTS	3.6	3.4	91	3.4	93	1.5	50-150	
9-CI-PF3ON	3.5	3.6	101	3.8	109	7.2	50-150	
PFNS	3.6	4.1	111	3.7	102	8.3	50-150	
PFUnDA	3.8	3.9	102	3.9	103	0.7	50-150	
NMeFOSAA	3.8	4.1	107	3.9	103	3.7	50-150	
NEtFOSAA	3.8	3.7	96	3.1	82	15.4	50-150	
PFDS	3.6	4.1	109	3.7	101	8.2	50-150	
PFDOA	3.8	3.9	101	3.9	105	3.3	50-150	
MeFOSE	3.8	4.1	106	3.8	101	5.7	50-150	
EtFOSE	3.8	4.3	112	4.3	113	1.3	50-150	
11-CI-PF3OUdS	3.5	3.9	107	3.5	100	7.3	50-150	
PFTTrDA	3.8	3.7	95	3.8	101	6.1	50-150	
PFDoS	3.6	4.1	110	3.4	92	17.4	50-150	
PFTDA	3.8	4.0	103	4.2	112	8.8	50-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-99738
 Run File Name B220715C_005
 Analyzed 07/15/2022 20:20
 Injected By NH

Instrument ID 10LCMS02
 Column ID 1071B00011
 Ical ID 220715B02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	6.10	6.10	1773	
13C4 PFOA	N/A	N/A	7.45	7.46	1571	
13C2 PFDA	N/A	N/A	8.87	8.88	1346	
13C4 PFOS	N/A	N/A	9.39	9.39	1964	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.67	4.68	2383	
13C5 PFPeA	N/A	N/A	5.42	5.43	1594	
13C3 PFBS	N/A	N/A	6.40	6.40	2300	
13C2 4:2FTS	N/A	N/A	5.80	5.81	633	
13C5 PFHxA	N/A	N/A	6.10	6.10	1492	
13C4 PFHpA	N/A	N/A	6.77	6.78	2103	
13C3 PFHxS	N/A	N/A	7.92	7.95	1597	
13C2 6:2FTS	N/A	N/A	7.08	7.09	6554937	
13C8 PFOA	N/A	N/A	7.45	7.47	1889	
13C9 PFNA	N/A	N/A	8.15	8.17	1601	
13C8 PFOS	N/A	N/A	9.39	9.40	1888	
13C2 8:2FTS	N/A	N/A	8.45	8.47	500	
13C6 PFDA	N/A	N/A	8.87	8.88	1756	
d3-MeFOSAA	N/A	N/A	8.71	8.73	833	
13C8 PFOSA	N/A	N/A	11.28	11.31	1314	
d5-EtFOSAA	N/A	N/A	9.03	9.05	573	
13C7 PFUdA	N/A	N/A	9.56	9.57	2118	
13C2 PFDoA	N/A	N/A	10.25	10.27	1030	
13C2 PFTeDA	N/A	N/A	11.56	11.59	1266	
13C3 HFPO-DA	N/A	N/A	6.38	6.38	1503	
d7-N-MeFOSE	N/A	N/A	12.92	12.96	409	
d9-N-EtFOSE	N/A	N/A	13.36	13.40	314	
d3-N-MeFOSA	N/A	N/A	13.10	13.15	543	
d5-N-EtFOSA	N/A	N/A	13.48	13.57	727	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-99738
 Run File Name B220715C_005
 Analyzed 07/15/2022 20:20
 Injected By NH

Instrument ID 10LCMS02
 Column ID 1071B00011
 Ical ID 220715B02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.68	4.69	123	
PFPeA	N/A	N/A	5.43	5.44	350	
HFPO-DA	0.26	0.29	6.39	6.39	742	
PFBS	0.42	0.40	6.41	6.41	869	
PFHxA	0.08	0.08	6.11	6.11	261	
4:2 FTS	0.94	0.93	5.81	5.81	955	
PFPeS	0.40	0.42	7.18	7.19	1263	
PFHpA	0.29	0.32	6.78	6.78	226	
DONA	0.62	0.64	7.03	7.03	874	
PFHxS	0.35	0.35	7.93	7.95	994	
PFOA	0.39	0.37	7.45	7.47	200	
6:2 FTS	1.00	0.97	7.09	7.10	312	
PFHpS	0.41	0.42	8.69	8.70	630	
PFNA	0.15	0.13	8.16	8.18	372	
PFOSAm	N/A	N/A	11.30	11.33	666	
PFOS	0.39	0.42	9.40	9.40	364	
MeFOSA	0.56	0.64	13.13	13.18	343	
PFDA	0.13	0.12	8.88	8.89	355	
EtFOSAm	0.56	0.52	13.51	13.55	646	
8:2 FTS	1.00	1.10	8.45	8.48	2286	
9-CI-PF3ON	0.06	0.06	9.90	9.91	1118	
PFNS	0.50	0.45	10.08	10.10	932	
PFUnDA	0.14	0.12	9.57	9.58	327	
NMeFOSAA	0.91	0.77	8.72	8.74	770	
NEtFOSAA	0.79	0.70	9.04	9.06	312	
PFDS	0.40	0.40	10.75	10.77	766	
PFDOA	0.18	0.19	10.25	10.27	266	
MeFOSE	N/A	N/A	12.96	13.00	272	
EtFOSE	0.00	0.00	13.39	13.44	369	
11-CI-PF3OUdS	0.02	0.01	11.22	11.25	767	
PFTrDA	0.15	0.15	10.93	10.94	326	
PFDoS	0.46	0.49	11.95	11.99	1765	
PFTDA	0.23	0.28	11.57	11.60	254	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143001-MS
 Run File Name Q220719A_010
 Analyzed 07/19/2022 11:18
 Injected By NH

Instrument ID 10LCMS01
 Column ID 125GA90033
 Ical ID 220718B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	12	60	50-150	
13C4_PFOA	19	11	59	50-150	
13C2_PFDA	19	10	53	50-150	
13C4_PFOS	19	12	66	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	19	14	72	25-150	
13C5_PFPeA	19	15	79	25-150	
13C3_PFBFS	18	16	87	25-150	
13C2_4:2FTS	18	43	238	25-150	R
13C5_PFHxA	19	13	68	25-150	
13C4_PFHpA	19	15	77	25-150	
13C3_PFHxS	18	16	87	25-150	
13C2_6:2FTS	18	51	279	25-150	R
13C8_PFOA	19	15	75	25-150	
13C9_PFNA	19	16	82	25-150	
13C8_PFOS	19	13	69	25-150	
13C2_8:2FTS	19	35	187	25-150	R
13C6_PFDA	19	13	67	25-150	
d3-MeFOSAA	19	12	61	25-150	
13C8_PFOSA	19	5.0	26	25-150	
d5-EtFOSAA	19	9.8	51	25-150	
13C7_PFUdA	19	9.9	51	25-150	
13C2_PFDaA	19	6.9	36	25-150	
13C2_PFTeDA	19	3.9	20	25-150	R
13C3_HFPO-DA	19	12	63	25-150	
d7-N-MeFOSE	19	7.0	36	10-150	
d9-N-EtFOSE	19	6.7	35	10-150	
d3-N-MeFOSA	19	4.0	21	10-150	
d5-N-EtFOSA	19	1.9	10	10-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143001-MS
 Run File Name Q220719A_010
 Analyzed 07/19/2022 11:18
 Injected By NH

Instrument ID 10LCMS01
 Column ID 125GA90033
 Ical ID 220718B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	7.5	3.9	7.9	10	50-150	R	375-22-4
PFPeA	4.2	3.9	7.3	81	50-150		2706-90-3
HFPO-DA	1.2 IJ	3.9	3.3	53	50-150		13252-13-6
PFBS	4.3	3.4	5.5	36	50-150	R	375-73-5
PFHxA	6.3	3.9	9.8	91	50-150		307-24-4
4:2 FTS	0.00	3.6	3.5	97	50-150		757124-72-4
PFPeS	1.3 J	3.6	3.9	71	50-150		2706-91-4
PFHpA	3.5	3.9	5.6	52	50-150		375-85-9
DONA	0.00	3.7	3.4	94	50-150		919005-14-4
PFHxS	17	3.5	8.0	0	50-150	R	355-46-4
PFOA	7.3	3.9	8.2	23	50-150	R	335-67-1
6:2 FTS	1.9	3.7	5.6	102	50-150		27619-97-2
PFHpS	0.00	3.7	4.8	131	50-150		375-92-8
PFNA	0.00	3.9	4.6	119	50-150		375-95-1
PFOSAm	0.00	3.9	4.3	110	50-150		754-91-6
PFOS	16	3.6	9.8	0	50-150	R	1763-23-1
MeFOSA	0.00	3.9	3.6	94	50-150		31506-32-8
PFDA	1.2 J	3.9	4.4	83	50-150		335-76-2
EtFOSAm	0.00	3.9	4.2	110	50-150		4151-50-2
8:2 FTS	0.00	3.7	4.0	108	50-150		39108-34-4
9-CI-PF3ON	0.00	3.6	3.5	97	50-150		756426-58-1
PFNS	0.00	3.6	2.6	72	50-150		68259-12-1
PFUnDA	0.00	3.9	3.7	96	50-150		2058-94-8
NMeFOSAA	0.73 J	3.9	5.1	113	50-150		2355-31-9
NEtFOSAA	1.7 J	3.9	4.7	77	50-150	I	2991-50-6
PFDS	1.3 J	3.7	2.3	27	50-150	R	335-77-3
PFDOA	0.00	3.9	4.7	121	50-150		307-55-1
MeFOSE	12	3.9	6.8	0	50-150	R	24448-09-7
EtFOSE	0.00	3.9	1.8	47	50-150	JR	1691-99-2
11-CI-PF3OUdS	0.00	3.6	2.2	61	50-150		763051-92-9
PFTTrDA	0.00	3.9	3.8	99	50-150		72629-94-8
PFDoS	0.00	3.7	1.3	36	50-150	JR	79780-39-5
PFTDA	0.00	3.9	3.7	96	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143001-MS
 Run File Name Q220719A_010
 Analyzed 07/19/2022 11:18
 Injected By NH

Instrument ID 10LCMS01
 Column ID 125GA90033
 Ical ID 220718B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	6.25	6.25	1115	
13C4 PFOA	N/A	N/A	7.55	7.57	1756	
13C2 PFDA	N/A	N/A	8.83	8.86	1545	
13C4 PFOS	N/A	N/A	9.23	9.23	288	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.70	4.71	1174	
13C5 PFPeA	N/A	N/A	5.56	5.57	955	
13C3 PFBS	N/A	N/A	6.46	6.47	187	
13C2 4:2FTS	N/A	N/A	5.98	5.98	168	R
13C5 PFHxA	N/A	N/A	6.25	6.26	925	
13C4 PFHpA	N/A	N/A	6.92	6.93	1381	
13C3 PFHxS	N/A	N/A	7.91	7.94	234	
13C2 6:2FTS	N/A	N/A	7.24	7.25	243	R
13C8 PFOA	N/A	N/A	7.56	7.58	2327	
13C9 PFNA	N/A	N/A	8.20	8.23	2456	
13C8 PFOS	N/A	N/A	9.23	9.30	317	
13C2 8:2FTS	N/A	N/A	8.49	8.52	432	R
13C6 PFDA	N/A	N/A	8.84	8.89	1175	
d3-MeFOSAA	N/A	N/A	8.76	8.80	859	
13C8 PFOSA	N/A	N/A	11.41	11.40	1220	
d5-EtFOSAA	N/A	N/A	9.05	9.10	286780	
13C7 PFUdA	N/A	N/A	9.48	9.54	2698	
13C2 PFDoA	N/A	N/A	10.14	10.20	517	
13C2 PFTeDA	N/A	N/A	11.46	11.47	2135	R
13C3 HFPO-DA	N/A	N/A	6.52	6.53	506	
d7-N-MeFOSE	N/A	N/A	13.09	13.06	158	
d9-N-EtFOSE	N/A	N/A	13.56	13.54	56	
d3-N-MeFOSA	N/A	N/A	13.30	13.27	456	
d5-N-EtFOSA	N/A	N/A	13.74	13.70	481	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143001-MS
 Run File Name Q220719A_010
 Analyzed 07/19/2022 11:18
 Injected By NH

Instrument ID 10LCMS01
 Column ID 125GA90033
 Ical ID 220718B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.70	4.72	30	R
PFPeA	N/A	N/A	5.57	5.57	187	
HFPO-DA	0.47	0.40	6.54	6.54	366	
PFBS	0.33	0.36	6.47	6.48	52	R
PFHxA	0.07	0.08	6.26	6.25	94	
4:2 FTS	0.99	1.10	5.98	5.98	150	
PFPeS	0.34	0.39	7.23	7.22	74	
PFHpA	0.39	0.52	6.93	6.93	95	
DONA	0.44	0.38	7.16	7.18	480	
PFHxS	0.38	0.31	7.92	7.94	108	R
PFOA	0.29	0.32	7.56	7.58	264	R
6:2 FTS	1.40	1.40	7.24	7.25	43	
PFHpS	0.35	0.45	8.61	8.64	42	
PFNA	0.22	0.26	8.21	8.23	249	
PFOSAm	N/A	N/A	11.42	11.42	516	
PFOS	0.20	0.23	9.24	9.32	65	R
MeFOSA	0.40	0.44	13.32	13.29	224	
PFDA	0.15	0.14	8.84	8.89	350	
EtFOSAm	0.35	0.37	13.76	13.73	308	
8:2 FTS	1.70	1.60	8.50	8.53	34604	
9-Cl-PF3ON	0.04	0.03	9.73	9.79	1364358	
PFNS	0.17	0.22	9.83	9.97	273	
PFUnDA	0.15	0.18	9.49	9.55	547	
NMeFOSAA	0.62	0.83	8.77	8.81	951972	
NEtFOSAA	0.68	0.42	9.06	9.13	1373	I
PFDS	0.28	0.24	10.56	10.63	205	R
PFDOA	0.17	0.19	10.14	10.21	424	
MeFOSE	N/A	N/A	13.14	13.11	123	R
EtFOSE	0.00	0.00	13.60	13.58	62	JR
11-Cl-PF3OUdS	0.04	0.04	11.06	11.08	26082	
PFTrDA	0.22	0.24	10.83	10.86	855	
PFDoS	0.25	0.21	11.82	11.82	214	JR
PFTDA	0.14	0.12	11.46	11.47	685	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MS
 Run File Name Q220708A_010
 Analyzed 07/08/2022 11:11
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	18	15	82	50-150	
13C4_PFOA	18	15	79	50-150	
13C2_PFDA	18	20	107	50-150	
13C4_PFOS	18	13	75	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	18	8.7	47	25-150	
13C5_PFPeA	18	14	77	25-150	
13C3_PFBS	17	12	73	25-150	
13C2_4:2FTS	17	52	300	25-150	R
13C5_PFHxA	18	13	71	25-150	
13C4_PFHpA	18	12	65	25-150	
13C3_PFHxS	17	13	73	25-150	
13C2_6:2FTS	17	49	278	25-150	R
13C8_PFOA	18	14	76	25-150	
13C9_PFNA	18	13	73	25-150	
13C8_PFOS	18	14	82	25-150	
13C2_8:2FTS	18	46	263	25-150	R
13C6_PFDA	18	16	89	25-150	
d3-MeFOSAA	18	14	76	25-150	
13C8_PFOA	18	12	65	25-150	
d5-EtFOSAA	18	23	127	25-150	
13C7_PFUdA	18	14	76	25-150	
13C2_PFDoA	18	16	86	25-150	
13C2_PFTeDA	18	16	87	25-150	
13C3_HFPO-DA	18	9.7	53	25-150	
d7-N-MeFOSE	18	9.0	49	10-150	
d9-N-EtFOSE	18	8.2	44	10-150	
d3-N-MeFOSA	18	2.5	14	10-150	
d5-N-EtFOSA	18	2.4	13	10-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MS
 Run File Name Q220708A_010
 Analyzed 07/08/2022 11:11
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.00	3.7	3.6	96	50-150		375-22-4
PFPeA	0.73 J	3.7	4.6	104	50-150		2706-90-3
HFPO-DA	0.00	3.7	4.1	111	50-150		13252-13-6
PFBS	1.9 I	3.3	5.8	120	50-150		375-73-5
PFHxA	2.1	3.7	5.9	105	50-150		307-24-4
4:2 FTS	0.00	3.4	3.8	112	50-150		757124-72-4
PFPeS	0.00	3.5	4.2	123	50-150		2706-91-4
PFHpA	0.00	3.7	3.8	104	50-150		375-85-9
DONA	0.00	3.5	3.9	112	50-150		919005-14-4
PFHxS	0.82 J	3.3	3.5	79	50-150		355-46-4
PFOA	1.3 J	3.7	5.6	118	50-150		335-67-1
6:2 FTS	0.00	3.5	3.8	108	50-150		27619-97-2
PFHpS	0.73 IJ	3.5	5.3	132	50-150		375-92-8
PFNA	0.00	3.7	4.8	132	50-150		375-95-1
PFOSAm	0.81 J	3.7	5.2	120	50-150		754-91-6
PFOS	7.5	3.4	10	87	50-150		1763-23-1
MeFOSA	0.00	3.7	3.5	96	50-150		31506-32-8
PFDA	3.9	3.7	7.9	107	50-150		335-76-2
EtFOSAm	0.00	3.7	4.3	116	50-150		4151-50-2
8:2 FTS	0.89 IJ	3.5	5.3	126	50-150		39108-34-4
9-CI-PF3ON	0.00	3.4	3.7	107	50-150		756426-58-1
PFNS	0.00	3.4	3.3	96	50-150		68259-12-1
PFUnDA	0.68 J	3.7	4.3	99	50-150		2058-94-8
NMeFOSAA	8.8	3.7	14	137	50-150		2355-31-9
NEtFOSAA	5.7	3.7	9.7	109	50-150		2991-50-6
PFDS	1.5 J	3.6	4.6	88	50-150		335-77-3
PFDOA	1.9	3.7	6.0	111	50-150		307-55-1
MeFOSE	5.4	3.7	12	174	50-150	R	24448-09-7
EtFOSE	1.5 J	3.7	4.9	91	50-150		1691-99-2
11-CI-PF3OUdS	0.00	3.5	3.1	89	50-150		763051-92-9
PFTTrDA	0.00	3.7	4.2	115	50-150		72629-94-8
PFDoS	0.00	3.6	2.4	67	50-150		79780-39-5
PFTDA	0.00	3.7	4.9	134	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MS
 Run File Name Q220708A_010
 Analyzed 07/08/2022 11:11
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	6.24	6.25	837	
13C4 PFOA	N/A	N/A	7.54	7.59	1825	
13C2 PFDA	N/A	N/A	8.83	8.83	1283	
13C4 PFOS	N/A	N/A	9.23	9.26	246	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.71	4.75	1300	
13C5 PFPeA	N/A	N/A	5.56	5.53	1413	
13C3 PFBS	N/A	N/A	6.46	6.42	313	
13C2 4:2FTS	N/A	N/A	5.97	5.93	356	R
13C5 PFHxA	N/A	N/A	6.24	6.25	681	
13C4 PFHpA	N/A	N/A	6.90	6.87	1330	
13C3 PFHxS	N/A	N/A	7.91	7.91	318	
13C2 6:2FTS	N/A	N/A	7.21	7.19	222	R
13C8 PFOA	N/A	N/A	7.54	7.59	1412	
13C9 PFNA	N/A	N/A	8.19	8.25	1466	
13C8 PFOS	N/A	N/A	9.23	9.23	298	
13C2 8:2FTS	N/A	N/A	8.48	8.54	355	R
13C6 PFDA	N/A	N/A	8.83	8.92	1010	
d3-MeFOSAA	N/A	N/A	8.75	8.72	620	
13C8 PFOSA	N/A	N/A	11.34	11.32	834	
d5-EtFOSAA	N/A	N/A	9.04	9.03	351	
13C7 PFUdA	N/A	N/A	9.46	9.46	9277	
13C2 PFDoA	N/A	N/A	10.11	10.12	595	
13C2 PFTeDA	N/A	N/A	11.43	11.40	1480	
13C3 HFPO-DA	N/A	N/A	6.51	6.48	721	
d7-N-MeFOSE	N/A	N/A	13.03	13.01	243	
d9-N-EtFOSE	N/A	N/A	13.51	13.49	220	
d3-N-MeFOSA	N/A	N/A	13.24	13.21	218	
d5-N-EtFOSA	N/A	N/A	13.68	13.65	361	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MS
 Run File Name Q220708A_010
 Analyzed 07/08/2022 11:11
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.72	4.77	81	
PFPeA	N/A	N/A	5.57	5.54	216	
HFPO-DA	0.53	0.47	6.52	6.44	336	
PFBS	0.22	0.34	6.47	6.43	106	
PFHxA	0.08	0.08	6.25	6.21	114	
4:2 FTS	1.00	0.97	5.97	5.98	468	
PFPeS	0.37	0.37	7.22	7.22	161	
PFHpA	0.44	0.38	6.91	6.81	17	
DONA	0.46	0.46	7.14	7.18	817	
PFHxS	0.39	0.33	7.91	7.89	59	
PFOA	0.33	0.33	7.55	7.51	242	
6:2 FTS	1.50	1.20	7.22	7.17	43	
PFHpS	0.34	0.37	8.61	8.57	55	
PFNA	0.24	0.25	8.20	8.16	232	
PFOSAm	N/A	N/A	11.35	11.33	503	
PFOS	0.22	0.20	9.24	9.24	165	
MeFOSA	0.47	0.46	13.26	13.23	71	
PFDA	0.13	0.21	8.84	8.82	357	
EtFOSAm	0.34	0.40	13.70	13.68	244	
8:2 FTS	1.50	1.60	8.48	8.45	15936	
9-Cl-PF3ON	0.03	0.04	9.71	9.72	6391	
PFNS	0.21	0.22	9.80	9.90	147	
PFUnDA	0.13	0.14	9.47	9.47	595	
NMeFOSAA	0.68	0.76	8.76	8.73	9096	
NEtFOSAA	0.49	0.40	9.06	9.04	1311	
PFDS	0.26	0.25	10.54	10.55	207	
PFDOA	0.17	0.20	10.12	10.13	1022	
MeFOSE	N/A	N/A	13.07	13.05	142	R
EtFOSE	0.00	0.00	13.54	13.53	134	
11-Cl-PF3OUdS	0.04	0.03	11.04	11.01	3837	
PFTrDA	0.20	0.20	10.80	10.77	660	
PFDoS	0.29	0.24	11.78	11.75	220	
PFTDA	0.15	0.14	11.43	11.40	1002	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MSD
 Run File Name Q220708A_011
 Analyzed 07/08/2022 11:30
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2 PFHxA	19	16	84	50-150	2.4	
13C4 PFOA	19	14	77	50-150	3.3	
13C2 PFDA	19	16	86	50-150	22.0	
13C4 PFOS	18	14	78	50-150	3.0	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4 PFBA	19	8.9	48	25-150	1.9	
13C5 PFPeA	19	14	75	25-150	2.0	
13C3 PFBS	17	13	74	25-150	1.4	
13C2 4:2FTS	17	49	282	25-150	6.1	R
13C5 PFHxA	19	13	71	25-150	0.1	
13C4 PFHpA	19	11	61	25-150	7.0	
13C3 PFHxS	18	12	67	25-150	9.0	
13C2 6:2FTS	18	46	261	25-150	6.4	R
13C8 PFOA	19	13	72	25-150	6.0	
13C9 PFNA	19	13	73	25-150	0.0	
13C8 PFOS	18	14	80	25-150	1.9	
13C2 8:2FTS	18	46	261	25-150	0.8	R
13C6 PFDA	19	15	83	25-150	7.5	
d3-MeFOSAA	19	14	73	25-150	3.8	
13C8 PFOSA	19	11	59	25-150	9.5	
d5-EtFOSAA	19	25	135	25-150	6.1	
13C7 PFUdA	19	13	70	25-150	7.4	
13C2 PFDoA	19	16	88	25-150	2.5	
13C2 PFTeDA	19	16	86	25-150	2.1	
13C3 HFPO-DA	19	11	57	25-150	8.4	
d7-N-MeFOSE	19	9.2	50	10-150	1.7	
d9-N-EtFOSE	19	7.8	42	10-150	4.8	
d3-N-MeFOSA	19	2.1	12	10-150	15.8	
d5-N-EtFOSA	19	2.1	11	10-150	16.7	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MSD
 Run File Name Q220708A_011
 Analyzed 07/08/2022 11:30
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	0.00	3.7	3.8	102	50-150	5.2		375-22-4
PFPeA	0.73 J	3.7	4.6	104	50-150	0.8		2706-90-3
HFPO-DA	0.00	3.7	3.8	103	50-150	6.9		13252-13-6
PFBS	1.9 I	3.3	5.7	114	50-150	3.3		375-73-5
PFHxA	2.1	3.7	6.2	111	50-150	3.6		307-24-4
4:2 FTS	0.00	3.5	3.5	102	50-150	9.2		757124-72-4
PFPeS	0.00	3.5	3.8	111	50-150	10.5		2706-91-4
PFHpA	0.00	3.7	4.4	119	50-150	13.1		375-85-9
DONA	0.00	3.5	3.9	112	50-150	0.5		919005-14-4
PFHxS	0.82 J	3.4	5.2	129	50-150	38.3		355-46-4
PFOA	1.3 J	3.7	5.8	122	50-150	2.5		335-67-1
6:2 FTS	0.00	3.5	3.8	107	50-150	0.5		27619-97-2
PFHpS	0.73 IJ	3.5	5.4	134	50-150	1.0		375-92-8
PFNA	0.00	3.7	4.7	126	50-150	4.1		375-95-1
PFOSAm	0.81 J	3.7	5.0	113	50-150	5.5		754-91-6
PFOS	7.5	3.4	9.9	72	50-150	5.8		1763-23-1
MeFOSA	0.00	3.7	3.1	83	50-150	14.6		31506-32-8
PFDA	3.9	3.7	7.9	106	50-150	0.7		335-76-2
EtFOSAm	0.00	3.7	3.5	94	50-150	21.2		4151-50-2
8:2 FTS	0.89 IJ	3.6	4.4	100	50-150	18.7		39108-34-4
9-CI-PF3ON	0.00	3.5	4.0	116	50-150	8.1		756426-58-1
PFNS	0.00	3.4	3.0	87	50-150	10.2		68259-12-1
PFUnDA	0.68 J	3.7	4.6	107	50-150	7.1		2058-94-8
NMeFOSAA	8.8	3.7	14	147	50-150	2.0		2355-31-9
NEtFOSAA	5.7	3.7	8.3	69	50-150	16.7		2991-50-6
PFDS	1.5 J	3.6	4.2	78	50-150	8.9		335-77-3
PFDOA	1.9	3.7	6.3	118	50-150	4.1		307-55-1
MeFOSE	5.4	3.7	12	169	50-150	2.1	R	24448-09-7
EtFOSE	1.5 J	3.7	5.2	100	50-150	6.1		1691-99-2
11-CI-PF3OUdS	0.00	3.5	3.1	89	50-150	0.4		763051-92-9
PFTTrDA	0.00	3.7	4.2	114	50-150	1.0		72629-94-8
PFDoS	0.00	3.6	2.4	67	50-150	0.1		79780-39-5
PFTDA	0.00	3.7	4.3	116	50-150	14.7		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MSD
 Run File Name Q220708A_011
 Analyzed 07/08/2022 11:30
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	6.25	6.25	807	
13C4 PFOA	N/A	N/A	7.54	7.59	1856	
13C2 PFDA	N/A	N/A	8.83	8.83	1618	
13C4 PFOS	N/A	N/A	9.23	9.26	258	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.71	4.75	1457	
13C5 PFPeA	N/A	N/A	5.56	5.53	1289	
13C3 PFBS	N/A	N/A	6.47	6.42	304	
13C2 4:2FTS	N/A	N/A	5.98	5.93	292	R
13C5 PFHxA	N/A	N/A	6.25	6.25	1157	
13C4 PFHpA	N/A	N/A	6.90	6.87	1099	
13C3 PFHxS	N/A	N/A	7.91	7.97	300	
13C2 6:2FTS	N/A	N/A	7.21	7.19	213	R
13C8 PFOA	N/A	N/A	7.54	7.59	1325	
13C9 PFNA	N/A	N/A	8.19	8.25	1766	
13C8 PFOS	N/A	N/A	9.23	9.34	389	
13C2 8:2FTS	N/A	N/A	8.48	8.54	288	R
13C6 PFDA	N/A	N/A	8.83	8.92	1007	
d3-MeFOSAA	N/A	N/A	8.75	8.72	747	
13C8 PFOSA	N/A	N/A	11.35	11.32	2505	
d5-EtFOSAA	N/A	N/A	9.05	9.03	6916	
13C7 PFUdA	N/A	N/A	9.46	9.46	1764	
13C2 PFDoA	N/A	N/A	10.12	10.12	631	
13C2 PFTeDA	N/A	N/A	11.43	11.40	843	
13C3 HFPO-DA	N/A	N/A	6.52	6.48	1006	
d7-N-MeFOSE	N/A	N/A	13.04	13.01	240	
d9-N-EtFOSE	N/A	N/A	13.51	13.49	215	
d3-N-MeFOSA	N/A	N/A	13.24	13.21	221	
d5-N-EtFOSA	N/A	N/A	13.68	13.65	369	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10614143009-MSD
 Run File Name Q220708A_011
 Analyzed 07/08/2022 11:30
 Injected By NH

Instrument ID 10LCMS01
 Column ID 118AB10133
 Ical ID 220629B01
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.72	4.77	82	
PFPeA	N/A	N/A	5.57	5.54	204	
HFPO-DA	0.55	0.47	6.53	6.44	304	
PFBS	0.17	0.34	6.47	6.43	101	
PFHxA	0.09	0.08	6.26	6.21	109	
4:2 FTS	1.10	0.97	5.98	5.98	363	
PFPeS	0.45	0.37	7.21	7.22	115	
PFHpA	0.40	0.38	6.91	6.81	19	
DONA	0.47	0.46	7.14	7.18	597	
PFHxS	0.28	0.33	7.91	7.89	52	
PFOA	0.30	0.33	7.55	7.51	218	
6:2 FTS	1.60	1.20	7.22	7.17	41	
PFHpS	0.28	0.37	8.61	8.57	40	
PFNA	0.23	0.25	8.20	8.16	181	
PFOSAm	N/A	N/A	11.36	11.33	445	
PFOS	0.22	0.20	9.24	9.24	135	
MeFOSA	0.57	0.46	13.26	13.23	120	
PFDA	0.16	0.21	8.84	8.82	402	
EtFOSAm	0.38	0.40	13.69	13.68	217	
8:2 FTS	1.60	1.60	8.49	8.45	99089	
9-Cl-PF3ON	0.03	0.04	9.72	9.72	5032565	
PFNS	0.21	0.22	9.80	9.90	117	
PFUnDA	0.13	0.14	9.47	9.47	494	
NMeFOSAA	0.70	0.76	8.76	8.73	3154	
NEtFOSAA	0.49	0.40	9.06	9.04	157	
PFDS	0.26	0.25	10.54	10.55	156	
PFDOA	0.15	0.20	10.13	10.13	747	
MeFOSE	N/A	N/A	13.07	13.05	135	R
EtFOSE	0.00	0.00	13.55	13.53	108	
11-Cl-PF3OUdS	0.03	0.03	11.05	11.01	4386	
PFTrDA	0.20	0.20	10.81	10.77	712	
PFDoS	0.28	0.24	11.79	11.75	234	
PFTDA	0.14	0.14	11.44	11.40	572	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LELAP Certificate Number: 01955
A2LA Accredited (DoD ELAP-QSM 5.4) Certificate Number: 6429.01

ANALYTICAL RESULTS

PERFORMED BY

Pace Analytical Gulf Coast
7979 Innovation Park Dr.
Baton Rouge, LA 70820
(225) 769-4900

Report Date 10/13/2022

Report # 222062951



Project 10614143 MMSD PFAS

Samples Collected 6/20/22 - 6/22/22

Deliver To	Additional Recipients
Kirsten Hogberg Pace Analytical Services, Inc. 1700 Elm St. Suite 200 Minneapolis, MN 55414 (612) 607-1700	NONE



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics - The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature
Pace Gulf Coast Report 222062951

Certifications

Certification	Certification Number
A2LA Accredited (DoD ELAP-QSM 5.4)	6429.01
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: Pace Analytical Services **Report:** 222062951

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report is being revised on 8/24/22 to correct the requested analyte list and the format for the QC data.

This report is being revised and reissued on 10/13/22 to correct the reported results for percent moisture content for PFAS compounds. The results provided in the previous report were not corrected for moisture content.

This report supersedes and replaces any prior reports issued under this workorder.

SEMI-VOLATILES MASS SPECTROMETRY

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 22206295101 (INFLUENT-02-20220620) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d7-NMeFOSE is outside the control limits for sample 22206295102 (INFLUENT-07-20220620) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA, d7-NMeFOSE andd9-NEtFOSE is outside the control limits for sample 22206295103 (INFLUENT-08-20220620) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 22206295104 (INFLUENT-11-20220620) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 2365800 (MB for HBN 744482 [LCMS/6054]) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2367051 (MB for HBN 744694 [LCMS/6077]) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 22206295101 (INFLUENT-02-20220620) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 22206295103 (INFLUENT-08-20220620) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 22206295106 (EFFLUENT-20220621) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 22206295107 (BIOSOLIDS A-20220622) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 22206295108 (BIOSOLIDS B-20220622) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA, d9-NEtFOSE, M2 4:2 FTS, M2 8:2 FTS andM2PFHxDA is outside the control limits for sample 22206295107 (BIOSOLIDS A-20220622) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA, d7-NMeFOSE andd9-NEtFOSE is outside the control limits for sample 22206295108 (BIOSOLIDS B-20220622) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA and d-NMeFOSA is outside the control limits for sample 22206295102 (INFLUENT-07-20220620) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA, d7-NMeFOSE, d9-NEtFOSE, M2PFHxDA and M2PFTA is outside the control limits for sample 22206295105 (INFLUENT-18-20220620) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard M2 4:2 FTS, M3HFPODA, M4PFHpA, M5PFHxA, M5PFPeA and MPFBA is outside the control limits for sample 2368946 (MB for HBN 744695 [LCMS/6078]) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2365802 (LCSD for HBN 744482 [LCMS/6054]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2365802 (LCSD for HBN 744482 [LCMS/6054]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2367072 (LCS for HBN 744694 [LCMS/6077]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2367072 (LCS for HBN 744694 [LCMS/6077]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d5-NEtFOSAA is outside the control limits for sample 2367061 (LCS for HBN 744695 [LCMS/6078]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2367072 (LCS for HBN 744694 [LCMS/6077]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2367072 (LCS for HBN 744694 [LCMS/6077]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d5-NEtFOSAA is outside the control limits for sample 2367061 (LCS for HBN 744695 [LCMS/6078]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 22206295107 (BIOSOLIDS A-20220622) . The sample was re-extracted with similar results for this extracted internal standard.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 22206295107 (BIOSOLIDS A-20220622) . The sample was re-extracted with similar results for this extracted internal standard.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 22206295108 (BIOSOLIDS B-20220622) . The sample was re-extracted with similar results for this extracted internal standard.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 22206295108 (BIOSOLIDS B-20220622) . The sample was re-extracted with similar results for this extracted internal standard.



Report#: 222062951
Project ID: 10614143 MMSD PFAS

Report Date: 10/13/2022

In the PFAS Top Assay QSM B15 (Pre) analysis for prep batch 744482, the LCS and/or LCSD recoveries are outside control limits for PFODA.

In the PFAS Top Assay QSM B15 (Pre) analysis for prep batch 744481, the LCS and/or LCSD recoveries are above the upper control limits for NEtFOSA, NEtFOSE, NMeFOSA and NMeFOSE. This analyte was not detected in the associated samples.



Sample Summary

Lab ID	Client ID	Matrix	Collect Date	Receive Date
22206295101	INFLUENT-02-20220620	Water	6/20/22 23:59	6/29/22 09:28
22206295102	INFLUENT-07-20220620	Water	6/20/22 23:59	6/29/22 09:28
22206295103	INFLUENT-08-20220620	Water	6/20/22 23:59	6/29/22 09:28
22206295104	INFLUENT-11-20220620	Water	6/20/22 23:59	6/29/22 09:28
22206295105	INFLUENT-18-20220620	Water	6/20/22 23:59	6/29/22 09:28
22206295106	EFFLUENT-20220621	Water	6/20/22 23:59	6/29/22 09:28
22206295107	BIOSOLIDS A-20220622	Solid	6/22/22 08:08	6/29/22 09:28
22206295108	BIOSOLIDS B-20220622	Solid	6/22/22 07:50	6/29/22 09:28

Detect Summary

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Post)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22206295101	INFLUENT-02-20220620	Perfluorobutanoic acid (PFBA)	ng/L	20.7	1	NA
22206295101	INFLUENT-02-20220620	Perfluoroheptanoic acid (PFHpA)	ng/L	6.59J	1	NA
22206295101	INFLUENT-02-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	8.92J	1	NA
22206295101	INFLUENT-02-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	3.02J	1	NA
22206295101	INFLUENT-02-20220620	Perfluorooctanoic acid (PFOA)	ng/L	5.93J	1	NA
22206295101	INFLUENT-02-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	29.2	1	NA
22206295102	INFLUENT-07-20220620	Perfluorobutanesulfonic acid (PFBS)	ng/L	1.99J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorobutanoic acid (PFBA)	ng/L	29.7	1	NA
22206295102	INFLUENT-07-20220620	Perfluoroheptanoic acid (PFHpA)	ng/L	9.69J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorohexanesulfonic acid (PFHxS)	ng/L	4.76J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	14.4	1	NA
22206295102	INFLUENT-07-20220620	Perfluorononanoic acid (PFNA)	ng/L	2.64J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	2.50J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorooctanoic acid (PFOA)	ng/L	7.43J	1	NA
22206295102	INFLUENT-07-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	40.8	1	NA
22206295103	INFLUENT-08-20220620	Perfluorobutanoic acid (PFBA)	ng/L	21.1	1	NA
22206295103	INFLUENT-08-20220620	Perfluoroheptanoic acid (PFHpA)	ng/L	10.0	1	NA
22206295103	INFLUENT-08-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	10.8	1	NA
22206295103	INFLUENT-08-20220620	Perfluorononanoic acid (PFNA)	ng/L	2.79J	1	NA
22206295103	INFLUENT-08-20220620	Perfluorooctanoic acid (PFOA)	ng/L	5.27J	1	NA
22206295103	INFLUENT-08-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	32.6	1	NA
22206295104	INFLUENT-11-20220620	Perfluorobutanoic acid (PFBA)	ng/L	22.6	1	NA
22206295104	INFLUENT-11-20220620	Perfluoroheptanoic acid (PFHpA)	ng/L	10.4	1	NA
22206295104	INFLUENT-11-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	11.4	1	NA
22206295104	INFLUENT-11-20220620	Perfluorononanoic acid (PFNA)	ng/L	2.61J	1	NA
22206295104	INFLUENT-11-20220620	Perfluorooctanoic acid (PFOA)	ng/L	5.46J	1	NA
22206295104	INFLUENT-11-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	31.4	1	NA
22206295105	INFLUENT-18-20220620	Perfluorobutanesulfonic acid (PFBS)	ng/L	2.07J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorobutanoic acid (PFBA)	ng/L	27.1	1	NA
22206295105	INFLUENT-18-20220620	Perfluoroheptanoic acid (PFHpA)	ng/L	9.51J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorohexanesulfonic acid (PFHxS)	ng/L	6.23J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	13.1	1	NA
22206295105	INFLUENT-18-20220620	Perfluorononanoic acid (PFNA)	ng/L	2.45J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	3.76J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorooctanoic acid (PFOA)	ng/L	7.23J	1	NA
22206295105	INFLUENT-18-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	43.7	1	NA
22206295106	EFFLUENT-20220621	Perfluorobutanoic acid (PFBA)	ng/L	9.25J	1	NA
22206295106	EFFLUENT-20220621	Perfluorohexanoic acid (PFHxA)	ng/L	6.61J	1	NA
22206295106	EFFLUENT-20220621	Perfluorooctanoic acid (PFOA)	ng/L	3.36J	1	NA

Detect Summary (Continued)

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Post)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22206295106	EFFLUENT-20220621	Perfluoropentanoic acid (PFPeA)	ng/L	8.37J	1	NA
22206295107	BIOSOLIDS A-20220622	Perfluorobutanesulfonic acid (PFBS)	ug/Kg	0.204J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorobutanoic acid (PFBA)	ug/Kg	15.0	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorodecane sulfonic acid (PFDS)	ug/Kg	0.212J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorodecanoic acid (PFDA)	ug/Kg	1.73J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorododecanoic acid (PFDoA)	ug/Kg	0.615J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluoroheptanoic acid (PFHpA)	ug/Kg	3.30J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.322J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorohexanoic acid (PFHxA)	ug/Kg	6.31	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorononanoic acid (PFNA)	ug/Kg	1.41J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	1.56J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorooctanoic acid (PFOA)	ug/Kg	6.76	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluoropentanoic acid (PFPeA)	ug/Kg	8.91	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorotetradecanoic acid (PFTA)	ug/Kg	0.188J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorotridecanoic acid (PFTrDA)	ug/Kg	0.189J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluoroundecanoic acid (PFUnA)	ug/Kg	0.602J	1	75.68
22206295108	BIOSOLIDS B-20220622	Perfluorobutanoic acid (PFBA)	ug/Kg	5.59J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluoroheptanoic acid (PFHpA)	ug/Kg	1.68J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorohexanoic acid (PFHxA)	ug/Kg	1.95J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorononanoic acid (PFNA)	ug/Kg	0.699J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	1.06J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorooctanoic acid (PFOA)	ug/Kg	2.17J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluoropentanoic acid (PFPeA)	ug/Kg	4.30J	1	94.43

PFAS Top Assay QSM B15 (Pre)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22206295101	INFLUENT-02-20220620	Perfluorobutanesulfonic acid (PFBS)	ng/L	1.67J	1	NA
22206295101	INFLUENT-02-20220620	Perfluorohexanesulfonic acid (PFHxS)	ng/L	4.60J	1	NA
22206295101	INFLUENT-02-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	4.00J	1	NA
22206295101	INFLUENT-02-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	5.20J	1	NA
22206295101	INFLUENT-02-20220620	Perfluorooctanoic acid (PFOA)	ng/L	2.23J	1	NA
22206295101	INFLUENT-02-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	13.0	1	NA
22206295102	INFLUENT-07-20220620	Perfluorobutanesulfonic acid (PFBS)	ng/L	2.06J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorobutanoic acid (PFBA)	ng/L	5.58J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorohexanesulfonic acid (PFHxS)	ng/L	5.40J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	6.10J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	5.34J	1	NA
22206295102	INFLUENT-07-20220620	Perfluorooctanoic acid (PFOA)	ng/L	2.82J	1	NA
22206295102	INFLUENT-07-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	13.8	1	NA
22206295103	INFLUENT-08-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	3.15J	1	NA
22206295103	INFLUENT-08-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	3.25J	1	NA
22206295103	INFLUENT-08-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	11.9	1	NA

Detect Summary (Continued)

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Pre)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22206295104	INFLUENT-11-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	3.06J	1	NA
22206295104	INFLUENT-11-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	4.12J	1	NA
22206295104	INFLUENT-11-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	19.0	1	NA
22206295105	INFLUENT-18-20220620	Perfluorobutanesulfonic acid (PFBS)	ng/L	2.53J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorobutanoic acid (PFBA)	ng/L	4.43J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorohexanesulfonic acid (PFHxS)	ng/L	6.98J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorohexanoic acid (PFHxA)	ng/L	5.37J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorooctanesulfonic acid (PFOS)	ng/L	4.25J	1	NA
22206295105	INFLUENT-18-20220620	Perfluorooctanoic acid (PFOA)	ng/L	3.03J	1	NA
22206295105	INFLUENT-18-20220620	Perfluoropentanoic acid (PFPeA)	ng/L	16.5	1	NA
22206295106	EFFLUENT-20220621	Perfluorohexanoic acid (PFHxA)	ng/L	6.18J	1	NA
22206295106	EFFLUENT-20220621	Perfluorooctanesulfonic acid (PFOS)	ng/L	1.98J	1	NA
22206295106	EFFLUENT-20220621	Perfluorooctanoic acid (PFOA)	ng/L	2.84J	1	NA
22206295106	EFFLUENT-20220621	Perfluoropentanoic acid (PFPeA)	ng/L	5.17J	1	NA
22206295107	BIOSOLIDS A-20220622	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ug/Kg	0.511J	1	75.68
22206295107	BIOSOLIDS A-20220622	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ug/Kg	0.443J	1	75.68
22206295107	BIOSOLIDS A-20220622	NEtFOSAA	ug/Kg	3.14J	1	75.68
22206295107	BIOSOLIDS A-20220622	NEtFOSE	ug/Kg	1.07J	1	75.68
22206295107	BIOSOLIDS A-20220622	NMeFOSAA	ug/Kg	10.3	1	75.68
22206295107	BIOSOLIDS A-20220622	NMeFOSE	ug/Kg	3.81J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorobutanesulfonic acid (PFBS)	ug/Kg	0.234J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorobutanoic acid (PFBA)	ug/Kg	1.74J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorodecane sulfonic acid (PFDS)	ug/Kg	0.574J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorodecanoic acid (PFDA)	ug/Kg	3.48J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorododecanoic acid (PFDoA)	ug/Kg	1.33J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluoroheptanesulfonic acid (PFHpS)	ug/Kg	0.167J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluoroheptanoic acid (PFHpA)	ug/Kg	0.433J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.353J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorohexanoic acid (PFHxA)	ug/Kg	8.43	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorononanoic acid (PFNA)	ug/Kg	0.442J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorooctane Sulfonamide (FOSA)	ug/Kg	0.497J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	3.74J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorooctanoic acid (PFOA)	ug/Kg	7.81	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluoropentanoic acid (PFPeA)	ug/Kg	3.15J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorotetradecanoic acid (PFTA)	ug/Kg	0.354J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluorotridecanoic acid (PFTrDA)	ug/Kg	0.212J	1	75.68
22206295107	BIOSOLIDS A-20220622	Perfluoroundecanoic acid (PFUnA)	ug/Kg	0.485J	1	75.68
22206295107	BIOSOLIDS A-20220622	PFDoS	ug/Kg	2.14J	1	75.68
22206295108	BIOSOLIDS B-20220622	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ug/Kg	0.852J	1	94.43
22206295108	BIOSOLIDS B-20220622	NEtFOSAA	ug/Kg	1.96J	1	94.43
22206295108	BIOSOLIDS B-20220622	NEtFOSE	ug/Kg	0.746J	1	94.43
22206295108	BIOSOLIDS B-20220622	NMeFOSAA	ug/Kg	3.55J	1	94.43

Detect Summary (Continued)

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Pre)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22206295108	BIOSOLIDS B-20220622	NMeFOSE	ug/Kg	2.53J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorodecane sulfonic acid (PFDS)	ug/Kg	0.730J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorodecanoic acid (PFDA)	ug/Kg	1.59J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorododecanoic acid (PFDoA)	ug/Kg	0.787J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	2.74J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorohexanoic acid (PFHxA)	ug/Kg	1.01J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	3.77J	1	94.43
22206295108	BIOSOLIDS B-20220622	Perfluoroundecanoic acid (PFUnA)	ug/Kg	0.370J	1	94.43

Sample Results

INFLUENT-02-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295101
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 12:55	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.67J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.60J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	4.00J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.20J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.23J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	13.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-02-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295101
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 12:55	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	417	ng/L	83	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	113	ng/L	45*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	112	ng/L	45*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	243	ng/L	97	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	221	ng/L	89	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	137	ng/L	55	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	145	ng/L	58	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	293	ng/L	117	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	285	ng/L	114	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	238	ng/L	95	50 - 150
67905-19-5-EIS	M2PFHxDA	250	173	ng/L	69	50 - 150
376-06-7-EIS	M2PFFTA	250	199	ng/L	79	50 - 150
13252-13-6-EIS	M3HFPODA	250	203	ng/L	81	50 - 150
375-73-5-EIS	M3PFBS	250	220	ng/L	88	50 - 150
355-46-4-EIS	M3PFHxS	250	223	ng/L	89	50 - 150
375-85-9-EIS	M4PFHpA	250	215	ng/L	86	50 - 150
307-24-4-EIS	M5PFHxA	250	214	ng/L	86	50 - 150
2706-90-3-EIS	M5PFPeA	250	207	ng/L	83	50 - 150
335-76-2-EIS	M6PFDA	250	215	ng/L	86	50 - 150
2058-94-8-EIS	M7PFUnA	250	232	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	183	ng/L	73	50 - 150
335-67-1-EIS	M8PFOA	250	213	ng/L	85	50 - 150
1763-23-1-EIS	M8PFOS	250	220	ng/L	88	50 - 150
375-95-1-EIS	M9PFNA	250	217	ng/L	87	50 - 150
375-22-4-EIS	MPFBA	250	202	ng/L	81	50 - 150
307-55-1-EIS	MPFDoA	250	222	ng/L	89	50 - 150

Sample Results

INFLUENT-02-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295101
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 00:51	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	20.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.59J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	8.92J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.02J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.93J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	29.2	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-02-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295101
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 00:51	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L

CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	546	ng/L	109	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	45.5	ng/L	18*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	56.9	ng/L	23*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	221	ng/L	88	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	234	ng/L	94	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	162	ng/L	65	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	150	ng/L	60	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	253	ng/L	101	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	257	ng/L	103	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	236	ng/L	94	50 - 150
67905-19-5-EIS	M2PFHxDA	250	225	ng/L	90	50 - 150
376-06-7-EIS	M2PFFTA	250	217	ng/L	87	50 - 150
13252-13-6-EIS	M3HFPODA	250	262	ng/L	105	50 - 150
375-73-5-EIS	M3PFBS	250	236	ng/L	94	50 - 150
355-46-4-EIS	M3PFHxS	250	236	ng/L	94	50 - 150
375-85-9-EIS	M4PFHpA	250	240	ng/L	96	50 - 150
307-24-4-EIS	M5PFHxA	250	241	ng/L	96	50 - 150
2706-90-3-EIS	M5PFPeA	250	237	ng/L	95	50 - 150
335-76-2-EIS	M6PFDA	250	241	ng/L	96	50 - 150
2058-94-8-EIS	M7PFUnA	250	232	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	201	ng/L	80	50 - 150
335-67-1-EIS	M8PFOA	250	238	ng/L	95	50 - 150
1763-23-1-EIS	M8PFOS	250	235	ng/L	94	50 - 150
375-95-1-EIS	M9PFNA	250	236	ng/L	94	50 - 150
375-22-4-EIS	MPFBA	250	227	ng/L	91	50 - 150
307-55-1-EIS	MPFDoA	250	224	ng/L	90	50 - 150

Sample Results

INFLUENT-07-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295102
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:12	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.06J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	5.58J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.40J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	6.10J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.34J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.82J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	13.8	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-07-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295102
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:12	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	428	ng/L	86	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	145	ng/L	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	141	ng/L	56	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	249	ng/L	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	229	ng/L	92	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	123	ng/L	49*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	132	ng/L	53	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	323	ng/L	129	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	291	ng/L	116	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	241	ng/L	96	50 - 150
67905-19-5-EIS	M2PFHxDA	250	178	ng/L	71	50 - 150
376-06-7-EIS	M2PFFTA	250	195	ng/L	78	50 - 150
13252-13-6-EIS	M3HFPODA	250	201	ng/L	80	50 - 150
375-73-5-EIS	M3PFBS	250	226	ng/L	90	50 - 150
355-46-4-EIS	M3PFHxS	250	226	ng/L	90	50 - 150
375-85-9-EIS	M4PFHpA	250	224	ng/L	90	50 - 150
307-24-4-EIS	M5PFHxA	250	219	ng/L	88	50 - 150
2706-90-3-EIS	M5PFPeA	250	212	ng/L	85	50 - 150
335-76-2-EIS	M6PFDA	250	221	ng/L	88	50 - 150
2058-94-8-EIS	M7PFUnA	250	232	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	172	ng/L	69	50 - 150
335-67-1-EIS	M8PFOA	250	224	ng/L	90	50 - 150
1763-23-1-EIS	M8PFOS	250	220	ng/L	88	50 - 150
375-95-1-EIS	M9PFNA	250	225	ng/L	90	50 - 150
375-22-4-EIS	MPFBA	250	204	ng/L	81	50 - 150
307-55-1-EIS	MPFDoA	250	222	ng/L	89	50 - 150

Sample Results

INFLUENT-07-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295102
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.99J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	29.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.69J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.76J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	14.4	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.64J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.50J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.43J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	40.8	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-07-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295102
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	567	ng/L	113	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	16	ng/L	6*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	20.7	ng/L	8*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	202	ng/L	81	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	233	ng/L	93	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	137	ng/L	55	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	128	ng/L	51	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	255	ng/L	102	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	218	ng/L	87	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	239	ng/L	96	50 - 150
67905-19-5-EIS	M2PFHxDA	250	146	ng/L	58	50 - 150
376-06-7-EIS	M2PFATA	250	187	ng/L	75	50 - 150
13252-13-6-EIS	M3HFPODA	250	270	ng/L	108	50 - 150
375-73-5-EIS	M3PFBS	250	229	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	228	ng/L	91	50 - 150
375-85-9-EIS	M4PFHpA	250	233	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	231	ng/L	92	50 - 150
2706-90-3-EIS	M5PFPeA	250	231	ng/L	93	50 - 150
335-76-2-EIS	M6PFDA	250	236	ng/L	94	50 - 150
2058-94-8-EIS	M7PFUnA	250	230	ng/L	92	50 - 150
754-91-6-EIS	M8FOSA	250	198	ng/L	79	50 - 150
335-67-1-EIS	M8PFOA	250	230	ng/L	92	50 - 150
1763-23-1-EIS	M8PFOS	250	227	ng/L	91	50 - 150
375-95-1-EIS	M9PFNA	250	232	ng/L	93	50 - 150
375-22-4-EIS	MPFBA	250	221	ng/L	88	50 - 150
307-55-1-EIS	MPFDoA	250	213	ng/L	85	50 - 150

Sample Results

INFLUENT-08-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295103
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:27	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	3.15J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.25J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.10U	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	11.9	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-08-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295103
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:27	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	397	ng/L	79	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	121	ng/L	48*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	126	ng/L	50	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	248	ng/L	99	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	207	ng/L	83	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	94.5	ng/L	38*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	104	ng/L	42*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	271	ng/L	109	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	275	ng/L	110	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	243	ng/L	97	50 - 150
67905-19-5-EIS	M2PFHxDA	250	128	ng/L	51	50 - 150
376-06-7-EIS	M2PFFTA	250	134	ng/L	54	50 - 150
13252-13-6-EIS	M3HFPODA	250	200	ng/L	80	50 - 150
375-73-5-EIS	M3PFBS	250	216	ng/L	87	50 - 150
355-46-4-EIS	M3PFHxS	250	216	ng/L	87	50 - 150
375-85-9-EIS	M4PFHpA	250	206	ng/L	82	50 - 150
307-24-4-EIS	M5PFHxA	250	203	ng/L	81	50 - 150
2706-90-3-EIS	M5PFPeA	250	201	ng/L	80	50 - 150
335-76-2-EIS	M6PFDA	250	206	ng/L	82	50 - 150
2058-94-8-EIS	M7PFUnA	250	218	ng/L	87	50 - 150
754-91-6-EIS	M8FOSA	250	173	ng/L	69	50 - 150
335-67-1-EIS	M8PFOA	250	207	ng/L	83	50 - 150
1763-23-1-EIS	M8PFOS	250	211	ng/L	84	50 - 150
375-95-1-EIS	M9PFNA	250	208	ng/L	83	50 - 150
375-22-4-EIS	MPFBA	250	198	ng/L	79	50 - 150
307-55-1-EIS	MPFDoA	250	194	ng/L	78	50 - 150

Sample Results

INFLUENT-08-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295103
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:20	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	21.1	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.0	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	10.8	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.79J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.90U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.27J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	32.6	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-08-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295103
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:20	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	575	ng/L	115	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	89.3	ng/L	36*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	99.3	ng/L	40*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	209	ng/L	84	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	235	ng/L	94	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	176	ng/L	70	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	167	ng/L	67	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	267	ng/L	107	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	216	ng/L	86	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	236	ng/L	94	50 - 150
67905-19-5-EIS	M2PFHxDA	250	167	ng/L	67	50 - 150
376-06-7-EIS	M2PFFTA	250	210	ng/L	84	50 - 150
13252-13-6-EIS	M3HFPODA	250	282	ng/L	113	50 - 150
375-73-5-EIS	M3PFBS	250	246	ng/L	99	50 - 150
355-46-4-EIS	M3PFHxS	250	239	ng/L	96	50 - 150
375-85-9-EIS	M4PFHpA	250	244	ng/L	97	50 - 150
307-24-4-EIS	M5PFHxA	250	248	ng/L	99	50 - 150
2706-90-3-EIS	M5PFPeA	250	243	ng/L	97	50 - 150
335-76-2-EIS	M6PFDA	250	240	ng/L	96	50 - 150
2058-94-8-EIS	M7PFUnA	250	234	ng/L	94	50 - 150
754-91-6-EIS	M8FOSA	250	206	ng/L	82	50 - 150
335-67-1-EIS	M8PFOA	250	241	ng/L	97	50 - 150
1763-23-1-EIS	M8PFOS	250	233	ng/L	93	50 - 150
375-95-1-EIS	M9PFNA	250	239	ng/L	96	50 - 150
375-22-4-EIS	MPFBA	250	240	ng/L	96	50 - 150
307-55-1-EIS	MPFDoA	250	222	ng/L	89	50 - 150

Sample Results

INFLUENT-11-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295104
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:42	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	3.06J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.12J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.10U	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	19.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-11-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295104
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:42	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	444	ng/L	89	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	129	ng/L	51	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	122	ng/L	49*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	249	ng/L	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	222	ng/L	89	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	129	ng/L	52	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	128	ng/L	51	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	291	ng/L	116	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	293	ng/L	117	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	232	ng/L	93	50 - 150
67905-19-5-EIS	M2PFHxDA	250	155	ng/L	62	50 - 150
376-06-7-EIS	M2PFFTA	250	176	ng/L	70	50 - 150
13252-13-6-EIS	M3HFPODA	250	202	ng/L	81	50 - 150
375-73-5-EIS	M3PFBS	250	229	ng/L	91	50 - 150
355-46-4-EIS	M3PFHxS	250	227	ng/L	91	50 - 150
375-85-9-EIS	M4PFHpA	250	224	ng/L	90	50 - 150
307-24-4-EIS	M5PFHxA	250	219	ng/L	88	50 - 150
2706-90-3-EIS	M5PFPeA	250	212	ng/L	85	50 - 150
335-76-2-EIS	M6PFDA	250	213	ng/L	85	50 - 150
2058-94-8-EIS	M7PFUnA	250	233	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	169	ng/L	67	50 - 150
335-67-1-EIS	M8PFOA	250	225	ng/L	90	50 - 150
1763-23-1-EIS	M8PFOS	250	218	ng/L	87	50 - 150
375-95-1-EIS	M9PFNA	250	225	ng/L	90	50 - 150
375-22-4-EIS	MPFBA	250	204	ng/L	82	50 - 150
307-55-1-EIS	MPFDoA	250	212	ng/L	85	50 - 150

Sample Results

INFLUENT-11-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295104
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:35	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	22.6	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.4	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	11.4	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.61J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.90U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.46J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	31.4	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-11-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295104
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:35	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	454	ng/L	91	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	190	ng/L	76	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	185	ng/L	74	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	197	ng/L	79	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	219	ng/L	88	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	170	ng/L	68	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	179	ng/L	72	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	247	ng/L	99	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	235	ng/L	94	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	231	ng/L	92	50 - 150
67905-19-5-EIS	M2PFHxDA	250	243	ng/L	97	50 - 150
376-06-7-EIS	M2PFFTA	250	221	ng/L	88	50 - 150
13252-13-6-EIS	M3HFPODA	250	247	ng/L	99	50 - 150
375-73-5-EIS	M3PFBS	250	231	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	230	ng/L	92	50 - 150
375-85-9-EIS	M4PFHpA	250	215	ng/L	86	50 - 150
307-24-4-EIS	M5PFHxA	250	215	ng/L	86	50 - 150
2706-90-3-EIS	M5PFPeA	250	212	ng/L	85	50 - 150
335-76-2-EIS	M6PFDA	250	223	ng/L	89	50 - 150
2058-94-8-EIS	M7PFUnA	250	230	ng/L	92	50 - 150
754-91-6-EIS	M8FOSA	250	191	ng/L	76	50 - 150
335-67-1-EIS	M8PFOA	250	218	ng/L	87	50 - 150
1763-23-1-EIS	M8PFOS	250	228	ng/L	91	50 - 150
375-95-1-EIS	M9PFNA	250	218	ng/L	87	50 - 150
375-22-4-EIS	MPFBA	250	208	ng/L	83	50 - 150
307-55-1-EIS	MPFDoA	250	221	ng/L	88	50 - 150

Sample Results

INFLUENT-18-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295105
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:56	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.53J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	4.43J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.98J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	5.37J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.25J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	3.03J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	16.5	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-18-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295105
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:56	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	456	ng/L	91	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	143	ng/L	57	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	139	ng/L	56	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	308	ng/L	123	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	255	ng/L	102	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	139	ng/L	56	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	138	ng/L	55	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	369	ng/L	148	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	346	ng/L	138	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	270	ng/L	108	50 - 150
67905-19-5-EIS	M2PFHxDA	250	151	ng/L	60	50 - 150
376-06-7-EIS	M2PFFTA	250	195	ng/L	78	50 - 150
13252-13-6-EIS	M3HFPODA	250	194	ng/L	77	50 - 150
375-73-5-EIS	M3PFBS	250	235	ng/L	94	50 - 150
355-46-4-EIS	M3PFHxS	250	236	ng/L	95	50 - 150
375-85-9-EIS	M4PFHpA	250	232	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	232	ng/L	93	50 - 150
2706-90-3-EIS	M5PFPeA	250	220	ng/L	88	50 - 150
335-76-2-EIS	M6PFDA	250	232	ng/L	93	50 - 150
2058-94-8-EIS	M7PFUnA	250	255	ng/L	102	50 - 150
754-91-6-EIS	M8FOSA	250	180	ng/L	72	50 - 150
335-67-1-EIS	M8PFOA	250	235	ng/L	94	50 - 150
1763-23-1-EIS	M8PFOS	250	224	ng/L	90	50 - 150
375-95-1-EIS	M9PFNA	250	234	ng/L	94	50 - 150
375-22-4-EIS	MPFBA	250	209	ng/L	83	50 - 150
307-55-1-EIS	MPFDoA	250	243	ng/L	97	50 - 150

Sample Results

INFLUENT-18-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295105
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:50	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.07J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	27.1	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.51J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.23J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	13.1	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.76J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.23J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	43.7	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-18-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295105
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:50	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	544	ng/L	109	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	1.52	ng/L	.6*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	3.76	ng/L	2*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	197	ng/L	79	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	217	ng/L	87	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	26.8	ng/L	11*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	21.5	ng/L	9*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	260	ng/L	104	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	219	ng/L	88	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	223	ng/L	89	50 - 150
67905-19-5-EIS	M2PFHxDA	250	19.3	ng/L	8*	50 - 150
376-06-7-EIS	M2PFATA	250	100	ng/L	40*	50 - 150
13252-13-6-EIS	M3HFPODA	250	269	ng/L	108	50 - 150
375-73-5-EIS	M3PFBS	250	230	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	234	ng/L	94	50 - 150
375-85-9-EIS	M4PFHpA	250	235	ng/L	94	50 - 150
307-24-4-EIS	M5PFHxA	250	237	ng/L	95	50 - 150
2706-90-3-EIS	M5PFPeA	250	229	ng/L	92	50 - 150
335-76-2-EIS	M6PFDA	250	226	ng/L	90	50 - 150
2058-94-8-EIS	M7PFUnA	250	210	ng/L	84	50 - 150
754-91-6-EIS	M8FOSA	250	181	ng/L	72	50 - 150
335-67-1-EIS	M8PFOA	250	233	ng/L	93	50 - 150
1763-23-1-EIS	M8PFOS	250	224	ng/L	90	50 - 150
375-95-1-EIS	M9PFNA	250	228	ng/L	91	50 - 150
375-22-4-EIS	MPFBA	250	221	ng/L	88	50 - 150
307-55-1-EIS	MPFDoA	250	179	ng/L	71	50 - 150

Sample Results

EFFLUENT-20220621	Collect Date	06/20/2022 23:59	Lab ID	22206295106
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 14:11	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	6.18J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.98J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.84J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	5.17J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT-20220621	Collect Date	06/20/2022 23:59	Lab ID	22206295106
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 14:11	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	448	ng/L	90	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	176	ng/L	70	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	171	ng/L	68	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	223	ng/L	89	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	219	ng/L	88	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	164	ng/L	66	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	179	ng/L	72	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	283	ng/L	113	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	273	ng/L	109	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	249	ng/L	100	50 - 150
67905-19-5-EIS	M2PFHxDA	250	206	ng/L	82	50 - 150
376-06-7-EIS	M2PFFTA	250	200	ng/L	80	50 - 150
13252-13-6-EIS	M3HFPODA	250	232	ng/L	93	50 - 150
375-73-5-EIS	M3PFBS	250	230	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	231	ng/L	92	50 - 150
375-85-9-EIS	M4PFHpA	250	232	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	230	ng/L	92	50 - 150
2706-90-3-EIS	M5PFPeA	250	228	ng/L	91	50 - 150
335-76-2-EIS	M6PFDA	250	217	ng/L	87	50 - 150
2058-94-8-EIS	M7PFUnA	250	227	ng/L	91	50 - 150
754-91-6-EIS	M8FOSA	250	196	ng/L	78	50 - 150
335-67-1-EIS	M8PFOA	250	230	ng/L	92	50 - 150
1763-23-1-EIS	M8PFOS	250	221	ng/L	88	50 - 150
375-95-1-EIS	M9PFNA	250	228	ng/L	91	50 - 150
375-22-4-EIS	MPFBA	250	225	ng/L	90	50 - 150
307-55-1-EIS	MPFDoA	250	224	ng/L	90	50 - 150

Sample Results

EFFLUENT-20220621	Collect Date	06/20/2022 23:59	Lab ID	22206295106
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 02:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	9.25J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	6.61J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.90U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	3.36J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	8.37J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT-20220621	Collect Date	06/20/2022 23:59	Lab ID	22206295106
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 02:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	583	ng/L	117	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	86.4	ng/L	35*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	120	ng/L	48*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	228	ng/L		50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	259	ng/L	104	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	179	ng/L	72	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	169	ng/L	68	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	269	ng/L	108	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	249	ng/L	99	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	263	ng/L	105	50 - 150
67905-19-5-EIS	M2PFHxDA	250	256	ng/L	103	50 - 150
376-06-7-EIS	M2PFATA	250	228	ng/L	91	50 - 150
13252-13-6-EIS	M3HFPODA	250	278	ng/L	111	50 - 150
375-73-5-EIS	M3PFBS	250	248	ng/L	99	50 - 150
355-46-4-EIS	M3PFHxS	250	250	ng/L	100	50 - 150
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150
307-24-4-EIS	M5PFHxA	250	254	ng/L	101	50 - 150
2706-90-3-EIS	M5PFPeA	250	252	ng/L	101	50 - 150
335-76-2-EIS	M6PFDA	250	259	ng/L	104	50 - 150
2058-94-8-EIS	M7PFUnA	250	255	ng/L	102	50 - 150
754-91-6-EIS	M8FOSA	250	233	ng/L	93	50 - 150
335-67-1-EIS	M8PFOA	250	252	ng/L	101	50 - 150
1763-23-1-EIS	M8PFOS	250	249	ng/L	100	50 - 150
375-95-1-EIS	M9PFNA	250	254	ng/L	101	50 - 150
375-22-4-EIS	MPFBA	250	226	ng/L	90	50 - 150
307-55-1-EIS	MPFDoA	250	237	ng/L	95	50 - 150

Sample Results

BIOSOLIDS A-20220622	Collect Date	06/22/2022 08:08	Lab ID	22206295107
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:29	745316	SLR2	75.68

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.079U	0.079	3.93	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.197U	0.197	3.93	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	0.511J	0.236	3.93	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.443J	0.118	3.93	ug/Kg
756426-58-1	9Cl-PF3ONS	0.118U	0.118	3.93	ug/Kg
919005-14-4	ADONA	0.039U	0.039	3.93	ug/Kg
4151-50-2	NEtFOSA	0.157U	0.157	3.93	ug/Kg
2991-50-6	NEtFOSAA	3.14J	0.118	3.93	ug/Kg
1691-99-2	NEtFOSE	1.07J	0.118	3.93	ug/Kg
31506-32-8	NMeFOSA	0.157U	0.157	3.93	ug/Kg
2355-31-9	NMeFOSAA	10.3	0.079	3.93	ug/Kg
24448-09-7	NMeFOSE	3.81J	0.118	3.93	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.550U	0.550	7.86	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.234J	0.079	3.93	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	1.74J	0.157	3.93	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.574J	0.118	3.93	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	3.48J	0.157	3.93	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.33J	0.079	3.93	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.167J	0.079	3.93	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.433J	0.079	3.93	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.353J	0.118	3.93	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	8.43	0.079	3.93	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.118U	0.118	3.93	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.442J	0.079	3.93	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.497J	0.079	3.93	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.74J	0.197	3.93	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	7.81	0.315	3.93	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.079U	0.079	3.93	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	3.15J	0.079	3.93	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.354J	0.079	3.93	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.212J	0.118	3.93	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.485J	0.079	3.93	ug/Kg

Sample Results

BIOSOLIDS A-20220622	Collect Date	06/22/2022 08:08	Lab ID	22206295107
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:29	745316	SLR2	75.68

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	2.14J	0.118	3.93	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	95.6	25.4	ug/Kg	27*	50 - 150
335-67-1-SUR	MPFOA	4.78	4.36	ug/Kg	91	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.6	23	ug/Kg	24*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.6	95.2	ug/Kg	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.6	103	ug/Kg	108	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.6	48	ug/Kg	50	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.6	41.4	ug/Kg	43*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.6	158	ug/Kg	165*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.6	134	ug/Kg	141	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.6	179	ug/Kg	187*	50 - 150
67905-19-5-EIS	M2PFHxDA	95.6	46.6	ug/Kg	49*	50 - 150
376-06-7-EIS	M2PFATA	95.6	72.9	ug/Kg	76	50 - 150
13252-13-6-EIS	M3HFPODA	95.6	73.3	ug/Kg	77	50 - 150
375-73-5-EIS	M3PFBS	95.6	89.8	ug/Kg	94	50 - 150
355-46-4-EIS	M3PFHxS	95.6	84.1	ug/Kg	88	50 - 150
375-85-9-EIS	M4PFHpA	95.6	92.3	ug/Kg	97	50 - 150
307-24-4-EIS	M5PFHxA	95.6	95.6	ug/Kg	100	50 - 150
2706-90-3-EIS	M5PFPeA	95.6	90.8	ug/Kg	95	50 - 150
335-76-2-EIS	M6PFDA	95.6	95.8	ug/Kg	100	50 - 150
2058-94-8-EIS	M7PFUnA	95.6	96.8	ug/Kg	101	50 - 150
754-91-6-EIS	M8FOSA	95.6	66.4	ug/Kg	69	50 - 150
335-67-1-EIS	M8PFOA	95.6	99.5	ug/Kg	104	50 - 150
1763-23-1-EIS	M8PFOS	95.6	86.1	ug/Kg	90	50 - 150
375-95-1-EIS	M9PFNA	95.6	95.1	ug/Kg	100	50 - 150
375-22-4-EIS	MPFBA	95.6	76.8	ug/Kg	80	50 - 150
307-55-1-EIS	MPFDoA	95.6	78.6	ug/Kg	82	50 - 150

Sample Results

BIOSOLIDS A-20220622	Collect Date 06/22/2022 08:08	Lab ID 22206295107
	Receive Date 06/29/2022 09:28	Matrix Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 03:49	744833	SXA	75.68

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.079U	0.079	3.97	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.198U	0.198	3.97	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	0.238U	0.238	3.97	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.119U	0.119	3.97	ug/Kg
756426-58-1	9Cl-PF3ONS	0.119U	0.119	3.97	ug/Kg
919005-14-4	ADONA	0.040U	0.040	3.97	ug/Kg
4151-50-2	NEtFOSA	0.159U	0.159	3.97	ug/Kg
2991-50-6	NEtFOSAA	0.119U	0.119	3.97	ug/Kg
1691-99-2	NEtFOSE	0.119U	0.119	3.97	ug/Kg
31506-32-8	NMeFOSA	0.159U	0.159	3.97	ug/Kg
2355-31-9	NMeFOSAA	0.079U	0.079	3.97	ug/Kg
24448-09-7	NMeFOSE	0.119U	0.119	3.97	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.556U	0.556	7.94	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.204J	0.079	3.97	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	15.0	0.159	3.97	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.212J	0.119	3.97	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	1.73J	0.159	3.97	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	0.615J	0.079	3.97	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.079U	0.079	3.97	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.30J	0.079	3.97	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.322J	0.119	3.97	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	6.31	0.079	3.97	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.119U	0.119	3.97	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	1.41J	0.079	3.97	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.079U	0.079	3.97	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.56J	0.198	3.97	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	6.76	0.318	3.97	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.079U	0.079	3.97	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	8.91	0.079	3.97	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.188J	0.079	3.97	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	0.189J	0.119	3.97	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.602J	0.079	3.97	ug/Kg

Sample Results

BIOSOLIDS A-20220622	Collect Date	06/22/2022 08:08	Lab ID	22206295107
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 03:49	744833	SXA	75.68

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.119U	0.119	3.97	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.83	4.17	ug/Kg	86	50 - 150
4151-50-2-EIS	d-NEtFOSA	96.5	37.8	ug/Kg	39*	50 - 150
31506-32-8-EIS	d-NMeFOSA	96.5	41.9	ug/Kg	43*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	96.5	81.7	ug/Kg	85	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	96.5	89.8	ug/Kg	93	50 - 150
24448-09-7-EIS	d7-NMeFOSE	96.5	66.1	ug/Kg	69	50 - 150
1691-99-2-EIS	d9-NEtFOSE	96.5	67.1	ug/Kg	70	50 - 150
757124-72-4-EIS	M2 4:2 FTS	96.5	93.9	ug/Kg	97	50 - 150
27619-97-2-EIS	M2 6:2 FTS	96.5	83.5	ug/Kg	86	50 - 150
39108-34-4-EIS	M2 8:2 FTS	96.5	90.4	ug/Kg	94	50 - 150
67905-19-5-EIS	M2PFHxDA	96.5	50.7	ug/Kg	52	50 - 150
376-06-7-EIS	M2PFFTA	96.5	71.4	ug/Kg	74	50 - 150
13252-13-6-EIS	M3HFPODA	96.5	106	ug/Kg	110	50 - 150
375-73-5-EIS	M3PFBS	96.5	89.1	ug/Kg	92	50 - 150
355-46-4-EIS	M3PFHxS	96.5	90.3	ug/Kg	94	50 - 150
375-85-9-EIS	M4PFHpA	96.5	90.3	ug/Kg	94	50 - 150
307-24-4-EIS	M5PFHxA	96.5	90.5	ug/Kg	94	50 - 150
2706-90-3-EIS	M5PFPeA	96.5	89.5	ug/Kg	93	50 - 150
335-76-2-EIS	M6PFDA	96.5	91.4	ug/Kg	95	50 - 150
2058-94-8-EIS	M7PFUnA	96.5	91.9	ug/Kg	95	50 - 150
754-91-6-EIS	M8FOSA	96.5	79.2	ug/Kg	82	50 - 150
335-67-1-EIS	M8PFOA	96.5	90.7	ug/Kg	94	50 - 150
1763-23-1-EIS	M8PFOS	96.5	90.2	ug/Kg	93	50 - 150
375-95-1-EIS	M9PFNA	96.5	89.9	ug/Kg	93	50 - 150
375-22-4-EIS	MPFBA	96.5	88	ug/Kg	91	50 - 150
307-55-1-EIS	MPFDoA	96.5	83.1	ug/Kg	86	50 - 150

Sample Results

BIOSOLIDS B-20220622	Collect Date 06/22/2022 07:50	Lab ID 22206295108
	Receive Date 06/29/2022 09:28	Matrix Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:44	745316	SLR2	94.43

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.352U	0.352	17.6	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.880U	0.880	17.6	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	1.06U	1.06	17.6	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.852J	0.528	17.6	ug/Kg
756426-58-1	9Cl-PF3ONS	0.528U	0.528	17.6	ug/Kg
919005-14-4	ADONA	0.176U	0.176	17.6	ug/Kg
4151-50-2	NEtFOSA	0.704U	0.704	17.6	ug/Kg
2991-50-6	NEtFOSAA	1.96J	0.528	17.6	ug/Kg
1691-99-2	NEtFOSE	0.746J	0.528	17.6	ug/Kg
31506-32-8	NMeFOSA	0.704U	0.704	17.6	ug/Kg
2355-31-9	NMeFOSAA	3.55J	0.352	17.6	ug/Kg
24448-09-7	NMeFOSE	2.53J	0.528	17.6	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.47U	2.47	35.2	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.352U	0.352	17.6	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	0.704U	0.704	17.6	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.730J	0.528	17.6	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	1.59J	0.704	17.6	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	0.787J	0.352	17.6	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.352U	0.352	17.6	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.352U	0.352	17.6	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.74J	0.528	17.6	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	1.01J	0.352	17.6	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.528U	0.528	17.6	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.352U	0.352	17.6	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.352U	0.352	17.6	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.77J	0.880	17.6	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	1.41U	1.41	17.6	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.352U	0.352	17.6	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.352U	0.352	17.6	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.352U	0.352	17.6	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.528U	0.528	17.6	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.370J	0.352	17.6	ug/Kg

Sample Results

BIOSOLIDS B-20220622	Collect Date	06/22/2022 07:50	Lab ID	22206295108
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:44	745316	SLR2	94.43

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.528U	0.528	17.6	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	98	5.5	ug/Kg	6*	50 - 150
335-67-1-SUR	MPFOA	4.9	4.12	ug/Kg	84	50 - 150
31506-32-8-EIS	d-NMeFOSA	98	6.37	ug/Kg	7*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	98	81.3	ug/Kg	83	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	98	105	ug/Kg	107	50 - 150
24448-09-7-EIS	d7-NMeFOSE	98	29.1	ug/Kg	30*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	98	23.2	ug/Kg	24*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	98	125	ug/Kg	128	50 - 150
27619-97-2-EIS	M2 6:2 FTS	98	120	ug/Kg	122	50 - 150
39108-34-4-EIS	M2 8:2 FTS	98	122	ug/Kg	125	50 - 150
67905-19-5-EIS	M2PFHxDA	98	52.8	ug/Kg	54	50 - 150
376-06-7-EIS	M2PFFTA	98	70.7	ug/Kg	72	50 - 150
13252-13-6-EIS	M3HFPODA	98	74.2	ug/Kg	76	50 - 150
375-73-5-EIS	M3PFBS	98	83.5	ug/Kg	85	50 - 150
355-46-4-EIS	M3PFHxS	98	78.4	ug/Kg	80	50 - 150
375-85-9-EIS	M4PFHpA	98	85.9	ug/Kg	88	50 - 150
307-24-4-EIS	M5PFHxA	98	86.4	ug/Kg	88	50 - 150
2706-90-3-EIS	M5PFPeA	98	83	ug/Kg	85	50 - 150
335-76-2-EIS	M6PFDA	98	95.1	ug/Kg	97	50 - 150
2058-94-8-EIS	M7PFUnA	98	91.1	ug/Kg	93	50 - 150
754-91-6-EIS	M8FOSA	98	50.4	ug/Kg	51	50 - 150
335-67-1-EIS	M8PFOA	98	89.9	ug/Kg	92	50 - 150
1763-23-1-EIS	M8PFOS	98	86.6	ug/Kg	88	50 - 150
375-95-1-EIS	M9PFNA	98	90.2	ug/Kg	92	50 - 150
375-22-4-EIS	MPFBA	98	78	ug/Kg	80	50 - 150
307-55-1-EIS	MPFDoA	98	76.3	ug/Kg	78	50 - 150

Sample Results

BIOSOLIDS B-20220622	Collect Date 06/22/2022 07:50	Lab ID 22206295108
	Receive Date 06/29/2022 09:28	Matrix Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 04:03	744833	SXA	94.43

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.343U	0.343	17.2	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.859U	0.859	17.2	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	1.03U	1.03	17.2	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.515U	0.515	17.2	ug/Kg
756426-58-1	9Cl-PF3ONS	0.515U	0.515	17.2	ug/Kg
919005-14-4	ADONA	0.172U	0.172	17.2	ug/Kg
4151-50-2	NEtFOSA	0.687U	0.687	17.2	ug/Kg
2991-50-6	NEtFOSAA	0.515U	0.515	17.2	ug/Kg
1691-99-2	NEtFOSE	0.515U	0.515	17.2	ug/Kg
31506-32-8	NMeFOSA	0.687U	0.687	17.2	ug/Kg
2355-31-9	NMeFOSAA	0.343U	0.343	17.2	ug/Kg
24448-09-7	NMeFOSE	0.515U	0.515	17.2	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.40U	2.40	34.3	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.343U	0.343	17.2	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	5.59J	0.687	17.2	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.515U	0.515	17.2	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	0.687U	0.687	17.2	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	0.343U	0.343	17.2	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.343U	0.343	17.2	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.68J	0.343	17.2	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.515U	0.515	17.2	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	1.95J	0.343	17.2	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.515U	0.515	17.2	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.699J	0.343	17.2	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.343U	0.343	17.2	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.06J	0.859	17.2	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	2.17J	1.37	17.2	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.343U	0.343	17.2	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	4.30J	0.343	17.2	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.343U	0.343	17.2	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.515U	0.515	17.2	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.343U	0.343	17.2	ug/Kg

Sample Results

BIOSOLIDS B-20220622	Collect Date	06/22/2022 07:50	Lab ID	22206295108
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 04:03	744833	SXA	94.43

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.515U	0.515	17.2	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.78	4.01	ug/Kg	84	50 - 150
4151-50-2-EIS	d-NEtFOSA	95.6	24.5	ug/Kg	26*	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.6	27.1	ug/Kg	28*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.6	80.9	ug/Kg	85	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.6	85.3	ug/Kg	89	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.6	60.4	ug/Kg	63	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.6	60.1	ug/Kg	63	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.6	94.3	ug/Kg	99	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.6	89.8	ug/Kg	94	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.6	86.6	ug/Kg	91	50 - 150
67905-19-5-EIS	M2PFHxDA	95.6	89.9	ug/Kg	94	50 - 150
376-06-7-EIS	M2PFFTA	95.6	86.3	ug/Kg	90	50 - 150
13252-13-6-EIS	M3HFPODA	95.6	106	ug/Kg	111	50 - 150
375-73-5-EIS	M3PFBS	95.6	92.4	ug/Kg	97	50 - 150
355-46-4-EIS	M3PFHxS	95.6	92.2	ug/Kg	96	50 - 150
375-85-9-EIS	M4PFHpA	95.6	90.7	ug/Kg	95	50 - 150
307-24-4-EIS	M5PFHxA	95.6	89.9	ug/Kg	94	50 - 150
2706-90-3-EIS	M5PFPeA	95.6	89.5	ug/Kg	94	50 - 150
335-76-2-EIS	M6PFDA	95.6	92.3	ug/Kg	96	50 - 150
2058-94-8-EIS	M7PFUnA	95.6	91.7	ug/Kg	96	50 - 150
754-91-6-EIS	M8FOSA	95.6	73.3	ug/Kg	77	50 - 150
335-67-1-EIS	M8PFOA	95.6	92.2	ug/Kg	96	50 - 150
1763-23-1-EIS	M8PFOS	95.6	89	ug/Kg	93	50 - 150
375-95-1-EIS	M9PFNA	95.6	91	ug/Kg	95	50 - 150
375-22-4-EIS	MPFBA	95.6	87.4	ug/Kg	91	50 - 150
307-55-1-EIS	MPFDoA	95.6	87.9	ug/Kg	92	50 - 150

LC-MS/MS QC Summary

Analytical Batch 744833		Client ID	MB744695
Prep Batch 744695		Lab ID	2367058
Prep Method PFAS Top Assay QSM B15 (Post)		Sample Type	MB
		Prep Date	07/05/22 13:50
		Analysis Date	07/07/22 02:49
		Matrix	Solid
PFAS Top Assay QSM B15 (Post)		Units Result	ug/Kg DL
11CI-PF3OUdS	763051-92-9	0.020U	0.020
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.050U	0.050
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	0.060U	0.060
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.030U	0.030
9CI-PF3ONS	756426-58-1	0.030U	0.030
ADONA	919005-14-4	0.010U	0.010
NEtFOSA	4151-50-2	0.040U	0.040
NEtFOSAA	2991-50-6	0.030U	0.030
NEtFOSE	1691-99-2	0.030U	0.030
NMeFOSA	31506-32-8	0.040U	0.040
NMeFOSAA	2355-31-9	0.020U	0.020
NMeFOSE	24448-09-7	0.030U	0.030
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	0.140U	0.140
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.020U	0.020
Perfluorobutanoic acid (PFBA)	375-22-4	0.040U	0.040
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.030U	0.030
Perfluorodecanoic acid (PFDA)	335-76-2	0.040U	0.040
Perfluorododecanoic acid (PFDoA)	307-55-1	0.020U	0.020
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.020U	0.020
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.020U	0.020
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.030U	0.030
Perfluorohexanoic acid (PFHxA)	307-24-4	0.020U	0.020
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.030U	0.030
Perfluorononanoic acid (PFNA)	375-95-1	0.020U	0.020
Perfluorooctane Sulfonamide (FOSA)	754-91-6	0.020U	0.020
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.050U	0.050
Perfluorooctanoic acid (PFOA)	335-67-1	0.080U	0.080
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.020U	0.020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.020U	0.020
Perfluorotetradecanoic acid (PFTA)	376-06-7	0.020U	0.020
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.030U	0.030
Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.020U	0.020
PFDoS	79780-39-5	0.030U	0.030
Extracted Internal Standard(EIS)	CAS#	Area	%R
d3-NMeFOSAA	2355-31-9-EIS	96.7	97
d5-NEtFOSAA	2991-50-6-EIS	105	105
d7-NMeFOSE	24448-09-7-EIS	80.6	81
d9-NEtFOSE	1691-99-2-EIS	81.5	82
d-NEtFOSA	4151-50-2-EIS	81.8	82
d-NMeFOSA	31506-32-8-EIS	81	81
M2 4:2 FTS	757124-72-4-EIS	107	107
M2 6:2 FTS	27619-97-2-EIS	109	109
M2 8:2 FTS	39108-34-4-EIS	117	117
M2PFHxDA	67905-19-5-EIS	117	117
M2PFTA	376-06-7-EIS	102	102
M3HFPODA	13252-13-6-EIS	110	110
M3PFBS	375-73-5-EIS	100	100
M3PFHxS	355-46-4-EIS	103	103
M4PFHpA	375-85-9-EIS	99	99
M5PFHxA	307-24-4-EIS	98.9	99
M5PFPeA	2706-90-3-EIS	98.3	98
M6PFDA	335-76-2-EIS	107	107
M7PFUnA	2058-94-8-EIS	107	107
M8FOSA	754-91-6-EIS	93	93
M8PFOA	335-67-1-EIS	102	102
M8PFOS	1763-23-1-EIS	104	104
M9PFNA	375-95-1-EIS	103	103
MPFBA	375-22-4-EIS	95	95



Report#: 222062951
Project ID: 10614143 MMSD PFAS

Report Date: 10/13/2022

LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	MB744695	
Prep Batch 744695	Lab ID	2367058	
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	MB	
	Prep Date	07/05/22 13:50	
	Analysis Date	07/07/22 02:49	
	Matrix	Solid	
PFAS Top Assay QSM B15 (Post)		Units Result	ug/Kg DL
MPFDoA	307-55-1-EIS	101	101
MPFOA	335-67-1-SUR	4.89	98

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744695				LCSD744695				
744833		Lab ID	2367059				2367060				
Prep Batch		Sample Type	LCS				LCSD				
744695		Prep Date	07/05/22 13:50				07/05/22 13:50				
Prep Method		Analysis Date	07/07/22 03:04				07/07/22 03:19				
PFAS Top Assay QSM B15 (Post)		Matrix	Solid				Solid				
PFAS Top Assay QSM B15 (Post)			Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
11CI-PF3OUdS	763051-92-9	1.89	2.21	117	70 - 130	1.89	2.16	114	2	30	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	1.87	2.33	125	70 - 130	1.87	2.37	126	1	30	
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	1.90	2.28	120	70 - 130	1.90	2.33	123	2	30	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	1.92	2.35	122	70 - 130	1.92	2.43	127	3	30	
9CI-PF3ONS	756426-58-1	1.87	2.19	117	70 - 130	1.87	2.15	115	2	30	
ADONA	919005-14-4	1.89	2.22	118	70 - 130	1.89	2.21	117	1	30	
NEtFOSA	4151-50-2	2.00	2.29	115	70 - 130	2.00	2.29	114	0	30	
NEtFOSAA	2991-50-6	2.00	2.43	121	70 - 130	2.00	2.35	117	3	30	
NEtFOSE	1691-99-2	2.00	2.39	120	70 - 130	2.00	2.49	125	4	30	
NMeFOSA	31506-32-8	2.00	2.43	122	70 - 130	2.00	2.41	121	1	30	
NMeFOSAA	2355-31-9	2.00	2.39	120	70 - 130	2.00	2.43	121	1	30	
NMeFOSE	24448-09-7	2.00	2.43	122	70 - 130	2.00	2.34	117	4	30	
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	4.00	4.80	120	70 - 130	4.00	4.91	123	2	30	
Perfluorobutanesulfonic acid (PFBS)	375-73-5	1.77	2.19	124	70 - 130	1.77	2.13	120	3	30	
Perfluorobutanoic acid (PFBA)	375-22-4	2.00	2.47	123	70 - 130	2.00	2.41	120	2	30	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	1.93	2.33	121	70 - 130	1.93	2.25	117	4	30	
Perfluorodecanoic acid (PFDA)	335-76-2	2.00	2.39	120	70 - 130	2.00	2.39	120	0	30	
Perfluorododecanoic acid (PFDoA)	307-55-1	2.00	2.41	121	70 - 130	2.00	2.41	120	0	30	
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	1.91	2.32	122	70 - 130	1.91	2.28	119	2	30	
Perfluoroheptanoic acid (PFHpA)	375-85-9	2.00	2.38	119	70 - 130	2.00	2.34	117	2	30	
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	1.83	2.21	121	70 - 130	1.83	2.19	120	1	30	
Perfluorohexanoic acid (PFHxA)	307-24-4	2.00	2.41	120	70 - 130	2.00	2.36	118	2	30	
Perfluorononanesulfonic acid (PFNS)	68259-12-1	1.92	2.34	122	70 - 130	1.92	2.30	119	2	30	
Perfluorononanoic acid (PFNA)	375-95-1	2.00	2.41	120	70 - 130	2.00	2.38	119	1	30	
Perfluorooctane Sulfonamide (FOSA)	754-91-6	2.00	2.45	123	70 - 130	2.00	2.32	116	5	30	
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.86	2.19	118	70 - 130	1.86	2.18	118	1	30	
Perfluorooctanoic acid (PFOA)	335-67-1	2.00	2.38	119	70 - 130	2.00	2.35	117	1	30	
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	1.88	2.29	122	70 - 130	1.88	2.23	118	3	30	
Perfluoropentanoic acid (PFPeA)	2706-90-3	2.00	2.40	120	70 - 130	2.00	2.40	120	0	30	
Perfluorotetradecanoic acid (PFTA)	376-06-7	2.00	2.40	120	70 - 130	2.00	2.41	121	0	30	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2.00	2.46	123	70 - 130	2.00	2.42	121	2	30	
Perfluoroundecanoic acid (PFUnA)	2058-94-8	2.00	2.44	122	70 - 130	2.00	2.34	117	4	30	
PFDoS	79780-39-5	1.94	2.36	122	70 - 130	1.94	2.39	123	1	30	
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%	RPD	Limit			
d3-NMeFOSAA	2355-31-9-EIS	100	94.8	95	50 - 150	100	94.4	94	NA	NA	
d5-NEtFOSAA	2991-50-6-EIS	100	97.2	97	50 - 150	100	99.7	100	NA	NA	
d7-NMeFOSE	24448-09-7-EIS	100	73.9	74	50 - 150	100	80	80	NA	NA	
d9-NEtFOSE	1691-99-2-EIS	100	77.7	78	50 - 150	100	78.1	78	NA	NA	
d-NEtFOSA	4151-50-2-EIS	100	69.3	69	50 - 150	100	89.4	89	NA	NA	
d-NMeFOSA	31506-32-8-EIS	100	65.7	66	50 - 150	100	88	88	NA	NA	
M2 4:2 FTS	757124-72-4-EIS	100	103	103	50 - 150	100	101	101	NA	NA	
M2 6:2 FTS	27619-97-2-EIS	100	98.6	99	50 - 150	100	94.5	95	NA	NA	
M2 8:2 FTS	39108-34-4-EIS	100	106	106	50 - 150	100	106	106	NA	NA	
M2PFHxDA	67905-19-5-EIS	100	115	115	50 - 150	100	114	114	NA	NA	
M2PFTA	376-06-7-EIS	100	103	103	50 - 150	100	99.4	99	NA	NA	
M3HFPODA	13252-13-6-EIS	100	114	114	50 - 150	100	109	109	NA	NA	
M3PFBS	375-73-5-EIS	100	98.7	99	50 - 150	100	98.6	99	NA	NA	
M3PFHxS	355-46-4-EIS	100	99.7	100	50 - 150	100	99	99	NA	NA	
M4PFHpA	375-85-9-EIS	100	101	101	50 - 150	100	98.3	98	NA	NA	
M5PFHxA	307-24-4-EIS	100	99.1	99	50 - 150	100	97.4	97	NA	NA	
M5PFPeA	2706-90-3-EIS	100	99.5	100	50 - 150	100	96.2	96	NA	NA	
M6PFDA	335-76-2-EIS	100	105	105	50 - 150	100	102	102	NA	NA	
M7PFUnA	2058-94-8-EIS	100	102	102	50 - 150	100	103	103	NA	NA	
M8FOSA	754-91-6-EIS	100	87	87	50 - 150	100	93	93	NA	NA	
M8PFOA	335-67-1-EIS	100	101	101	50 - 150	100	98.6	99	NA	NA	
M8PFOS	1763-23-1-EIS	100	103	103	50 - 150	100	102	102	NA	NA	
M9PFNA	375-95-1-EIS	100	103	103	50 - 150	100	101	101	NA	NA	
MPFBA	375-22-4-EIS	100	95.4	95	50 - 150	100	94.5	95	NA	NA	



LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	LCS744695				LCSD744695				
Prep Batch 744695	Lab ID	2367059				2367060				
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	LCS				LCSD				
	Prep Date	07/05/22 13:50				07/05/22 13:50				
	Analysis Date	07/07/22 03:04				07/07/22 03:19				
	Matrix	Solid				Solid				
PFAS Top Assay QSM B15 (Post)		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS	100	99.8	100	50 - 150	100	102	102	NA	NA
MPFOA	335-67-1-SUR	5	5.03	101	50 - 150	5	4.83	97	NA	NA

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744695		
744833		Lab ID	2367061		
Prep Batch		Sample Type	LCS		
744695		Prep Date	07/05/22 13:50		
Prep Method		Analysis Date	07/07/22 03:34		
PFAS Top Assay QSM B15 (Post)		Matrix	Solid		
PFAS Top Assay QSM B15 (Post)		Spike Added	Result	%R	Control Limits %R
11CI-PF3OUdS	763051-92-9	0.943	1.01	107	70 - 130
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.937	1.02	109	70 - 130
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	0.951	1.10	116	70 - 130
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.960	1.15	120	70 - 130
9CI-PF3ONS	756426-58-1	0.933	1.00	108	70 - 130
ADONA	919005-14-4	0.945	1.00	106	70 - 130
NEtFOSA	4151-50-2	1.00	1.07	107	70 - 130
NEtFOSAA	2991-50-6	1.00	1.01	101	70 - 130
NEtFOSE	1691-99-2	1.00	1.10	110	70 - 130
NMeFOSA	31506-32-8	1.00	1.08	108	70 - 130
NMeFOSAA	2355-31-9	1.00	1.10	110	70 - 130
NMeFOSE	24448-09-7	1.00	1.09	109	70 - 130
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	2.00	2.32	116	70 - 130
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.887	0.992	112	70 - 130
Perfluorobutanoic acid (PFBA)	375-22-4	1.00	1.12	112	70 - 130
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.965	1.07	111	70 - 130
Perfluorodecanoic acid (PFDA)	335-76-2	1.00	1.13	113	70 - 130
Perfluorododecanoic acid (PFDoA)	307-55-1	1.00	1.12	112	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.953	1.08	113	70 - 130
Perfluoroheptanoic acid (PFHpA)	375-85-9	1.00	1.11	111	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.914	1.05	114	70 - 130
Perfluorohexanoic acid (PFHxA)	307-24-4	1.00	1.12	112	70 - 130
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.962	1.09	113	70 - 130
Perfluorononanoic acid (PFNA)	375-95-1	1.00	1.12	112	70 - 130
Perfluorooctane Sulfonamide (FOSA)	754-91-6	1.00	1.07	107	70 - 130
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.928	1.00	108	70 - 130
Perfluorooctanoic acid (PFOA)	335-67-1	1.00	1.10	110	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.941	1.04	111	70 - 130
Perfluoropentanoic acid (PFPeA)	2706-90-3	1.00	1.13	113	70 - 130
Perfluorotetradecanoic acid (PFTA)	376-06-7	1.00	1.10	110	70 - 130
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1.00	1.16	116	70 - 130
Perfluoroundecanoic acid (PFUnA)	2058-94-8	1.00	1.11	111	70 - 130
PFDoS	79780-39-5	0.970	1.06	110	70 - 130
Extracted Internal Standard(EIS)	CAS#	Area	%R		
d3-NMeFOSAA	2355-31-9-EIS	100	132	132	50 - 150
d5-NEtFOSAA	2991-50-6-EIS	100	184	184*	50 - 150
d7-NMeFOSE	24448-09-7-EIS	100	78.9	79	50 - 150
d9-NEtFOSE	1691-99-2-EIS	100	80.8	81	50 - 150
d-NEtFOSA	4151-50-2-EIS	100	91.5	92	50 - 150
d-NMeFOSA	31506-32-8-EIS	100	90	90	50 - 150
M2 4:2 FTS	757124-72-4-EIS	100	114	114	50 - 150
M2 6:2 FTS	27619-97-2-EIS	100	106	106	50 - 150
M2 8:2 FTS	39108-34-4-EIS	100	116	116	50 - 150
M2PFHxDA	67905-19-5-EIS	100	114	114	50 - 150
M2PFTA	376-06-7-EIS	100	102	102	50 - 150
M3HFPODA	13252-13-6-EIS	100	113	113	50 - 150
M3PFBS	375-73-5-EIS	100	99.2	99	50 - 150
M3PFHxS	355-46-4-EIS	100	101	101	50 - 150
M4PFHpA	375-85-9-EIS	100	102	102	50 - 150
M5PFHxA	307-24-4-EIS	100	101	101	50 - 150
M5PFPeA	2706-90-3-EIS	100	99.7	100	50 - 150
M6PFDA	335-76-2-EIS	100	116	116	50 - 150
M7PFUnA	2058-94-8-EIS	100	141	141	50 - 150
M8FOSA	754-91-6-EIS	100	101	101	50 - 150
M8PFOA	335-67-1-EIS	100	104	104	50 - 150
M8PFOS	1763-23-1-EIS	100	106	106	50 - 150
M9PFNA	375-95-1-EIS	100	107	107	50 - 150
MPFBA	375-22-4-EIS	100	96.8	97	50 - 150



LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	LCS744695			
Prep Batch 744695	Lab ID	2367061			
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	LCS			
	Prep Date	07/05/22 13:50			
	Analysis Date	07/07/22 03:34			
	Matrix	Solid			
PFAS Top Assay QSM B15 (Post)		Spike Added	Result	%R	Control Limits%R
MPFDoA	307-55-1-EIS	100	100	100	50 - 150
MPFOA	335-67-1-SUR	5	4.99	100	50 - 150

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB744695
744833		Lab ID	2368946
Prep Batch		Sample Type	MB
744695		Prep Date	07/05/22 13:50
Prep Method		Analysis Date	07/07/22 04:18
PFAS Top Assay QSM B15 (Post)		Matrix	Solid
PFAS Top Assay QSM B15 (Post)		Units Result	ug/Kg DL
11CI-PF3OUdS	763051-92-9	0.020U	0.020
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.050U	0.050
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	0.060U	0.060
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.030U	0.030
9CI-PF3ONS	756426-58-1	0.030U	0.030
ADONA	919005-14-4	0.010U	0.010
NEtFOSA	4151-50-2	0.040U	0.040
NEtFOSAA	2991-50-6	0.030U	0.030
NEtFOSE	1691-99-2	0.030U	0.030
NMeFOSA	31506-32-8	0.040U	0.040
NMeFOSAA	2355-31-9	0.020U	0.020
NMeFOSE	24448-09-7	0.030U	0.030
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	0.140U	0.140
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.020U	0.020
Perfluorobutanoic acid (PFBA)	375-22-4	0.091J	0.040
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.030U	0.030
Perfluorodecanoic acid (PFDA)	335-76-2	0.040U	0.040
Perfluorododecanoic acid (PFDoA)	307-55-1	0.020U	0.020
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.020U	0.020
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.020U	0.020
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.030U	0.030
Perfluorohexanoic acid (PFHxA)	307-24-4	0.044J	0.020
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.030U	0.030
Perfluorononanoic acid (PFNA)	375-95-1	0.020U	0.020
Perfluorooctane Sulfonamide (FOSA)	754-91-6	0.020U	0.020
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.050U	0.050
Perfluorooctanoic acid (PFOA)	335-67-1	0.080U	0.080
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.020U	0.020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.057J	0.020
Perfluorotetradecanoic acid (PFTA)	376-06-7	0.020U	0.020
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.030U	0.030
Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.020U	0.020
PFDoS	79780-39-5	0.030U	0.030
Extracted Internal Standard(EIS)	CAS#	Area	%R
d3-NMeFOSAA	2355-31-9-EIS	88.6	89
d5-NEtFOSAA	2991-50-6-EIS	96.6	97
d7-NMeFOSE	24448-09-7-EIS	58.1	58
d9-NEtFOSE	1691-99-2-EIS	67.1	67
d-NEtFOSA	4151-50-2-EIS	77.6	78
d-NMeFOSA	31506-32-8-EIS	74.6	75
M2 4:2 FTS	757124-72-4-EIS	10.3	10*
M2 6:2 FTS	27619-97-2-EIS	51.5	51
M2 8:2 FTS	39108-34-4-EIS	97.8	98
M2PFHxDA	67905-19-5-EIS	112	112
M2PFTA	376-06-7-EIS	96.9	97
M3HFPODA	13252-13-6-EIS	10.9	11*
M3PFBS	375-73-5-EIS	50.8	51
M3PFHxS	355-46-4-EIS	86.8	87
M4PFHpA	375-85-9-EIS	29.7	30*
M5PFHxA	307-24-4-EIS	12.5	12*
M5PFPeA	2706-90-3-EIS	5.04	5*
M6PFDA	335-76-2-EIS	95.8	96
M7PFUnA	2058-94-8-EIS	100	100
M8FOSA	754-91-6-EIS	82.2	82
M8PFOA	335-67-1-EIS	56.9	57
M8PFOS	1763-23-1-EIS	101	101
M9PFNA	375-95-1-EIS	81.5	81
MPFBA	375-22-4-EIS	1.84	2*



LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	MB744695	
Prep Batch 744695	Lab ID	2368946	
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	MB	
	Prep Date	07/05/22 13:50	
	Analysis Date	07/07/22 04:18	
	Matrix	Solid	
PFAS Top Assay QSM B15 (Post)		Units Result	ug/Kg DL
MPFDoA	307-55-1-EIS	98.3	98
MPFOA	335-67-1-SUR	3.91	78

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB744694	
744833		Lab ID	2367051	
Prep Batch		Sample Type	MB	
744694		Prep Date	07/05/22 12:30	
Prep Method		Analysis Date	07/06/22 23:51	
PFAS Top Assay QSM B15 (Post)		Matrix	Water	
PFAS Top Assay QSM B15 (Post)			Units	ng/L
			Result	DL
11CI-PF3OUdS	763051-92-9		2.25U	2.25
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4		3.10U	3.10
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2		3.75U	3.75
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4		2.65U	2.65
9CI-PF3ONS	756426-58-1		2.25U	2.25
ADONA	919005-14-4		2.15U	2.15
NEtFOSA	4151-50-2		3.50U	3.50
NEtFOSAA	2991-50-6		3.95U	3.95
NEtFOSE	1691-99-2		2.53U	2.53
NMeFOSA	31506-32-8		4.15U	4.15
NMeFOSAA	2355-31-9		2.25U	2.25
NMeFOSE	24448-09-7		3.25U	3.25
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6		16.7U	16.7
Perfluorobutanesulfonic acid (PFBS)	375-73-5		1.55U	1.55
Perfluorobutanoic acid (PFBA)	375-22-4		3.80U	3.80
Perfluorodecane sulfonic acid (PFDS)	335-77-3		3.05U	3.05
Perfluorodecanoic acid (PFDA)	335-76-2		3.60U	3.60
Perfluorododecanoic acid (PFDoA)	307-55-1		3.25U	3.25
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8		3.05U	3.05
Perfluoroheptanoic acid (PFHpA)	375-85-9		2.90U	2.90
Perfluorohexanesulfonic acid (PFHxS)	355-46-4		3.10U	3.10
Perfluorohexanoic acid (PFHxA)	307-24-4		2.35U	2.35
Perfluorononanesulfonic acid (PFNS)	68259-12-1		4.35U	4.35
Perfluorononanoic acid (PFNA)	375-95-1		2.45U	2.45
Perfluorooctane Sulfonamide (FOSA)	754-91-6		1.85U	1.85
Perfluorooctanesulfonic acid (PFOS)	1763-23-1		1.90U	1.90
Perfluorooctanoic acid (PFOA)	335-67-1		2.10U	2.10
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4		2.55U	2.55
Perfluoropentanoic acid (PFPeA)	2706-90-3		2.20U	2.20
Perfluorotetradecanoic acid (PFTA)	376-06-7		2.85U	2.85
Perfluorotridecanoic acid (PFTrDA)	72629-94-8		3.08U	3.08
Perfluoroundecanoic acid (PFUnA)	2058-94-8		3.10U	3.10
PFDoS	79780-39-5		3.28U	3.28
Extracted Internal Standard(EIS)		CAS#	Area	%R
d3-NMeFOSAA	2355-31-9-EIS		233	93
d5-NEtFOSAA	2991-50-6-EIS		245	98
d7-NMeFOSE	24448-09-7-EIS		171	69
d9-NEtFOSE	1691-99-2-EIS		162	65
d-NEtFOSA	4151-50-2-EIS		121	48*
d-NMeFOSA	31506-32-8-EIS		124	50
M2 4:2 FTS	757124-72-4-EIS		270	108
M2 6:2 FTS	27619-97-2-EIS		235	94
M2 8:2 FTS	39108-34-4-EIS		257	103
M2PFHxDA	67905-19-5-EIS		263	105
M2PFTA	376-06-7-EIS		223	89
M3HFPODA	13252-13-6-EIS		275	110
M3PFBS	375-73-5-EIS		233	93
M3PFHxS	355-46-4-EIS		233	93
M4PFHpA	375-85-9-EIS		238	95
M5PFHxA	307-24-4-EIS		238	95
M5PFPeA	2706-90-3-EIS		234	93
M6PFDA	335-76-2-EIS		242	97
M7PFUnA	2058-94-8-EIS		242	97
M8FOSA	754-91-6-EIS		219	88
M8PFOA	335-67-1-EIS		242	97
M8PFOS	1763-23-1-EIS		235	94
M9PFNA	375-95-1-EIS		242	97
MPFBA	375-22-4-EIS		231	92



LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	MB744694	
Prep Batch 744694	Lab ID	2367051	
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	MB	
	Prep Date	07/05/22 12:30	
	Analysis Date	07/06/22 23:51	
	Matrix	Water	
PFAS Top Assay QSM B15 (Post)		Units Result	ng/L DL
MPFDoA	307-55-1-EIS	232	93
MPFOA	335-67-1-SUR	486	97

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744694				LCSD744694				
744833		Lab ID	2367052				2367053				
Prep Batch		Sample Type	LCS				LCSD				
744694		Prep Date	07/05/22 12:30				07/05/22 12:30				
Prep Method		Analysis Date	07/07/22 00:06				07/07/22 00:21				
PFAS Top Assay QSM B15 (Post)		Matrix	Water				Water				
PFAS Top Assay QSM B15 (Post)		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit	
11CI-PF3OUdS	763051-92-9	189	218	116	70 - 130	189	209	111	4	20	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	187	226	121	70 - 130	187	231	123	2	20	
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	190	233	122	70 - 130	190	235	123	1	20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	192	228	119	70 - 130	192	245	128	7	20	
9CI-PF3ONS	756426-58-1	187	214	115	70 - 130	187	210	112	2	20	
ADONA	919005-14-4	189	221	117	70 - 130	189	218	115	2	20	
NEtFOSA	4151-50-2	200	234	117	70 - 130	200	232	116	1	20	
NEtFOSAA	2991-50-6	200	225	113	70 - 130	200	244	122	8	20	
NEtFOSE	1691-99-2	200	240	120	70 - 130	200	242	121	1	20	
NMeFOSA	31506-32-8	200	231	116	70 - 130	200	238	119	3	20	
NMeFOSAA	2355-31-9	200	232	116	70 - 130	200	240	120	3	20	
NMeFOSE	24448-09-7	200	245	123	70 - 130	200	227	114	8	20	
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	400	467	117	70 - 130	400	472	118	1	20	
Perfluorobutanesulfonic acid (PFBS)	375-73-5	177	211	119	70 - 130	177	211	119	0	20	
Perfluorobutanoic acid (PFBA)	375-22-4	200	239	119	70 - 130	200	239	120	0	20	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	193	224	116	70 - 130	193	222	115	1	20	
Perfluorodecanoic acid (PFDA)	335-76-2	200	235	118	70 - 130	200	240	120	2	20	
Perfluorododecanoic acid (PFDoA)	307-55-1	200	241	121	70 - 130	200	239	120	1	20	
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	191	225	118	70 - 130	191	228	120	2	20	
Perfluoroheptanoic acid (PFHpA)	375-85-9	200	235	117	70 - 130	200	235	118	0	20	
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	183	216	118	70 - 130	183	220	120	2	20	
Perfluorohexanoic acid (PFHxA)	307-24-4	200	235	117	70 - 130	200	237	119	1	20	
Perfluorononanesulfonic acid (PFNS)	68259-12-1	192	231	120	70 - 130	192	228	118	1	20	
Perfluorononanoic acid (PFNA)	375-95-1	200	237	119	70 - 130	200	238	119	0	20	
Perfluorooctane Sulfonamide (FOSA)	754-91-6	200	234	117	70 - 130	200	234	117	0	20	
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	186	218	117	70 - 130	186	211	114	3	20	
Perfluorooctanoic acid (PFOA)	335-67-1	200	236	118	70 - 130	200	235	117	0	20	
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	188	226	120	70 - 130	188	226	120	0	20	
Perfluoropentanoic acid (PFPeA)	2706-90-3	200	238	119	70 - 130	200	239	120	1	20	
Perfluorotetradecanoic acid (PFTA)	376-06-7	200	242	121	70 - 130	200	238	119	1	20	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	200	239	119	70 - 130	200	238	119	0	20	
Perfluoroundecanoic acid (PFUnA)	2058-94-8	200	232	116	70 - 130	200	237	118	2	20	
PFDoS	79780-39-5	194	226	117	70 - 130	194	218	113	3	20	
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%	RPD	Limit			
d3-NMeFOSAA	2355-31-9-EIS	250	236	94	50 - 150	250	236	94	NA	NA	
d5-NEtFOSAA	2991-50-6-EIS	250	243	97	50 - 150	250	239	96	NA	NA	
d7-NMeFOSE	24448-09-7-EIS	250	191	76	50 - 150	250	188	75	NA	NA	
d9-NEtFOSE	1691-99-2-EIS	250	193	77	50 - 150	250	180	72	NA	NA	
d-NEtFOSA	4151-50-2-EIS	250	160	64	50 - 150	250	138	55	NA	NA	
d-NMeFOSA	31506-32-8-EIS	250	163	65	50 - 150	250	138	55	NA	NA	
M2 4:2 FTS	757124-72-4-EIS	250	252	101	50 - 150	250	250	100	NA	NA	
M2 6:2 FTS	27619-97-2-EIS	250	233	93	50 - 150	250	234	94	NA	NA	
M2 8:2 FTS	39108-34-4-EIS	250	249	100	50 - 150	250	235	94	NA	NA	
M2PFHxDA	67905-19-5-EIS	250	268	107	50 - 150	250	271	108	NA	NA	
M2PFTA	376-06-7-EIS	250	218	87	50 - 150	250	222	89	NA	NA	
M3HFPODA	13252-13-6-EIS	250	274	109	50 - 150	250	274	110	NA	NA	
M3PFBS	375-73-5-EIS	250	232	93	50 - 150	250	233	93	NA	NA	
M3PFHxS	355-46-4-EIS	250	236	94	50 - 150	250	235	94	NA	NA	
M4PFHpA	375-85-9-EIS	250	238	95	50 - 150	250	241	97	NA	NA	
M5PFHxA	307-24-4-EIS	250	239	95	50 - 150	250	240	96	NA	NA	
M5PFPeA	2706-90-3-EIS	250	235	94	50 - 150	250	237	95	NA	NA	
M6PFDA	335-76-2-EIS	250	243	97	50 - 150	250	246	98	NA	NA	
M7PFUnA	2058-94-8-EIS	250	242	97	50 - 150	250	240	96	NA	NA	
M8FOSA	754-91-6-EIS	250	218	87	50 - 150	250	222	89	NA	NA	
M8PFOA	335-67-1-EIS	250	239	96	50 - 150	250	244	98	NA	NA	
M8PFOS	1763-23-1-EIS	250	237	95	50 - 150	250	245	98	NA	NA	
M9PFNA	375-95-1-EIS	250	241	96	50 - 150	250	245	98	NA	NA	
MPFBA	375-22-4-EIS	250	231	93	50 - 150	250	233	93	NA	NA	



Report#: 222062951
Project ID: 10614143 MMSD PFAS

Report Date: 10/13/2022

LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	LCS744694				LCSD744694				
Prep Batch 744694	Lab ID	2367052				2367053				
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	LCS				LCSD				
	Prep Date	07/05/22 12:30				07/05/22 12:30				
	Analysis Date	07/07/22 00:06				07/07/22 00:21				
	Matrix	Water				Water				
PFAS Top Assay QSM B15 (Post)		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS	250	233	93	50 - 150	250	232	93	NA	NA
MPFOA	335-67-1-SUR	500	485	97	50 - 150	500	464	93	NA	NA

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744694		
744833		Lab ID	2367072		
Prep Batch		Sample Type	LCS		
744694		Prep Date	07/05/22 12:30		
Prep Method		Analysis Date	07/07/22 02:20		
PFAS Top Assay QSM B15 (Post)		Matrix	Water		
PFAS Top Assay QSM B15 (Post)		Spike Added	Result	%R	Control Limits%R
11CI-PF3OUdS	763051-92-9	18.9	21.2	113	70 - 130
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	18.7	22.2	119	70 - 130
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	19.0	22.2	117	70 - 130
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	19.2	23.1	120	70 - 130
9CI-PF3ONS	756426-58-1	18.7	21.1	113	70 - 130
ADONA	919005-14-4	18.9	21.5	114	70 - 130
NEtFOSA	4151-50-2	20.0	25.5	128	70 - 130
NEtFOSAA	2991-50-6	20.0	20.9	104	70 - 130
NEtFOSE	1691-99-2	20.0	25.0	125	70 - 130
NMeFOSA	31506-32-8	20.0	24.5	122	70 - 130
NMeFOSAA	2355-31-9	20.0	25.7	129	70 - 130
NMeFOSE	24448-09-7	20.0	23.0	115	70 - 130
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	40.0	47.2	118	70 - 130
Perfluorobutanesulfonic acid (PFBS)	375-73-5	17.7	20.9	118	70 - 130
Perfluorobutanoic acid (PFBA)	375-22-4	20.0	23.2	116	70 - 130
Perfluorodecane sulfonic acid (PFDS)	335-77-3	19.3	22.6	117	70 - 130
Perfluorodecanoic acid (PFDA)	335-76-2	20.0	23.1	116	70 - 130
Perfluorododecanoic acid (PFDoA)	307-55-1	20.0	22.9	115	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	19.1	22.1	116	70 - 130
Perfluoroheptanoic acid (PFHpA)	375-85-9	20.0	23.0	115	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	18.3	21.3	116	70 - 130
Perfluorohexanoic acid (PFHxA)	307-24-4	20.0	22.9	115	70 - 130
Perfluorononanesulfonic acid (PFNS)	68259-12-1	19.2	22.8	118	70 - 130
Perfluorononanoic acid (PFNA)	375-95-1	20.0	23.3	117	70 - 130
Perfluorooctane Sulfonamide (FOSA)	754-91-6	20.0	22.8	114	70 - 130
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	18.6	21.8	118	70 - 130
Perfluorooctanoic acid (PFOA)	335-67-1	20.0	23.0	115	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	18.8	21.1	112	70 - 130
Perfluoropentanoic acid (PFPeA)	2706-90-3	20.0	23.6	118	70 - 130
Perfluorotetradecanoic acid (PFTA)	376-06-7	20.0	23.4	117	70 - 130
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	20.0	23.4	117	70 - 130
Perfluoroundecanoic acid (PFUnA)	2058-94-8	20.0	23.5	117	70 - 130
PFDoS	79780-39-5	19.4	23.7	122	70 - 130
Extracted Internal Standard(EIS)	CAS#	Area	%R		
d3-NMeFOSAA	2355-31-9-EIS	250	221	89	50 - 150
d5-NEtFOSAA	2991-50-6-EIS	250	249	100	50 - 150
d7-NMeFOSE	24448-09-7-EIS	250	174	69	50 - 150
d9-NEtFOSE	1691-99-2-EIS	250	171	69	50 - 150
d-NEtFOSA	4151-50-2-EIS	250	117	47*	50 - 150
d-NMeFOSA	31506-32-8-EIS	250	121	48*	50 - 150
M2 4:2 FTS	757124-72-4-EIS	250	258	103	50 - 150
M2 6:2 FTS	27619-97-2-EIS	250	296	119	50 - 150
M2 8:2 FTS	39108-34-4-EIS	250	254	102	50 - 150
M2PFHxDA	67905-19-5-EIS	250	282	113	50 - 150
M2PFTA	376-06-7-EIS	250	234	94	50 - 150
M3HFPODA	13252-13-6-EIS	250	278	111	50 - 150
M3PFBS	375-73-5-EIS	250	243	97	50 - 150
M3PFHxS	355-46-4-EIS	250	240	96	50 - 150
M4PFHpA	375-85-9-EIS	250	244	97	50 - 150
M5PFHxA	307-24-4-EIS	250	243	97	50 - 150
M5PFPeA	2706-90-3-EIS	250	239	96	50 - 150
M6PFDA	335-76-2-EIS	250	249	100	50 - 150
M7PFUnA	2058-94-8-EIS	250	244	97	50 - 150
M8FOSA	754-91-6-EIS	250	205	82	50 - 150
M8PFOA	335-67-1-EIS	250	242	97	50 - 150
M8PFOS	1763-23-1-EIS	250	241	97	50 - 150
M9PFNA	375-95-1-EIS	250	244	98	50 - 150
MPFBA	375-22-4-EIS	250	236	94	50 - 150



LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	LCS744694			
Prep Batch 744694	Lab ID	2367072			
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	LCS			
	Prep Date	07/05/22 12:30			
	Analysis Date	07/07/22 02:20			
	Matrix	Water			
PFAS Top Assay QSM B15 (Post)		Spike Added	Result	%R	Control Limits%R
MPFDoA	307-55-1-EIS	250	236	94	50 - 150
MPFOA	335-67-1-SUR	500	488	98	50 - 150

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB744694	
744833		Lab ID	2368945	
Prep Batch		Sample Type	MB	
744694		Prep Date	07/05/22 12:30	
Prep Method		Analysis Date	07/07/22 02:34	
PFAS Top Assay QSM B15 (Post)		Matrix	Water	
PFAS Top Assay QSM B15 (Post)			Units	ng/L
			Result	DL
11CI-PF3OUdS	763051-92-9		2.25U	2.25
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4		3.10U	3.10
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2		3.75U	3.75
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4		2.65U	2.65
9CI-PF3ONS	756426-58-1		2.25U	2.25
ADONA	919005-14-4		2.15U	2.15
NEtFOSA	4151-50-2		3.50U	3.50
NEtFOSAA	2991-50-6		3.95U	3.95
NEtFOSE	1691-99-2		2.53U	2.53
NMeFOSA	31506-32-8		4.15U	4.15
NMeFOSAA	2355-31-9		2.25U	2.25
NMeFOSE	24448-09-7		3.25U	3.25
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6		16.7U	16.7
Perfluorobutanesulfonic acid (PFBS)	375-73-5		1.55U	1.55
Perfluorobutanoic acid (PFBA)	375-22-4		3.80U	3.80
Perfluorodecane sulfonic acid (PFDS)	335-77-3		3.05U	3.05
Perfluorodecanoic acid (PFDA)	335-76-2		3.60U	3.60
Perfluorododecanoic acid (PFDoA)	307-55-1		3.25U	3.25
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8		3.05U	3.05
Perfluoroheptanoic acid (PFHpA)	375-85-9		2.90U	2.90
Perfluorohexanesulfonic acid (PFHxS)	355-46-4		3.10U	3.10
Perfluorohexanoic acid (PFHxA)	307-24-4		2.35U	2.35
Perfluorononanesulfonic acid (PFNS)	68259-12-1		4.35U	4.35
Perfluorononanoic acid (PFNA)	375-95-1		2.45U	2.45
Perfluorooctane Sulfonamide (FOSA)	754-91-6		1.85U	1.85
Perfluorooctanesulfonic acid (PFOS)	1763-23-1		1.90U	1.90
Perfluorooctanoic acid (PFOA)	335-67-1		2.10U	2.10
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4		2.55U	2.55
Perfluoropentanoic acid (PFPeA)	2706-90-3		2.20U	2.20
Perfluorotetradecanoic acid (PFTA)	376-06-7		2.85U	2.85
Perfluorotridecanoic acid (PFTrDA)	72629-94-8		3.08U	3.08
Perfluoroundecanoic acid (PFUnA)	2058-94-8		3.10U	3.10
PFDoS	79780-39-5		3.28U	3.28
Extracted Internal Standard(EIS)		CAS#	Area	%R
d3-NMeFOSAA	2355-31-9-EIS		220	88
d5-NEtFOSAA	2991-50-6-EIS		242	97
d7-NMeFOSE	24448-09-7-EIS		188	75
d9-NEtFOSE	1691-99-2-EIS		196	78
d-NEtFOSA	4151-50-2-EIS		206	82
d-NMeFOSA	31506-32-8-EIS		200	80
M2 4:2 FTS	757124-72-4-EIS		264	106
M2 6:2 FTS	27619-97-2-EIS		271	108
M2 8:2 FTS	39108-34-4-EIS		246	98
M2PFHxDA	67905-19-5-EIS		262	105
M2PFTA	376-06-7-EIS		236	94
M3HFPODA	13252-13-6-EIS		276	111
M3PFBS	375-73-5-EIS		239	95
M3PFHxS	355-46-4-EIS		244	98
M4PFHpA	375-85-9-EIS		247	99
M5PFHxA	307-24-4-EIS		244	98
M5PFPeA	2706-90-3-EIS		242	97
M6PFDA	335-76-2-EIS		252	101
M7PFUnA	2058-94-8-EIS		249	100
M8FOSA	754-91-6-EIS		226	90
M8PFOA	335-67-1-EIS		244	97
M8PFOS	1763-23-1-EIS		243	97
M9PFNA	375-95-1-EIS		247	99
MPFBA	375-22-4-EIS		229	91



LC-MS/MS QC Summary

Analytical Batch 744833	Client ID	MB744694	
Prep Batch 744694	Lab ID	2368945	
Prep Method PFAS Top Assay QSM B15 (Post)	Sample Type	MB	
	Prep Date	07/05/22 12:30	
	Analysis Date	07/07/22 02:34	
	Matrix	Water	
PFAS Top Assay QSM B15 (Post)		Units Result	ng/L DL
MPFDoA	307-55-1-EIS	235	94
MPFOA	335-67-1-SUR	614	123

LC-MS/MS QC Summary

Analytical Batch 744597		Client ID	MB744482	
Prep Batch 744482		Lab ID	2365800	
Prep Method PFAS Top Assay QSM B15 (Pre)		Sample Type	MB	
		Prep Date	06/30/22 17:30	
		Analysis Date	07/03/22 14:26	
		Matrix	Solid	
PFAS Top Assay QSM B15 (Pre)			Units Result	ug/Kg DL
11CI-PF3OUdS	763051-92-9		0.020U	0.020
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4		0.050U	0.050
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2		0.060U	0.060
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4		0.030U	0.030
9CI-PF3ONS	756426-58-1		0.030U	0.030
ADONA	919005-14-4		0.010U	0.010
NEtFOSA	4151-50-2		0.040U	0.040
NEtFOSAA	2991-50-6		0.030U	0.030
NEtFOSE	1691-99-2		0.030U	0.030
NMeFOSA	31506-32-8		0.040U	0.040
NMeFOSAA	2355-31-9		0.020U	0.020
NMeFOSE	24448-09-7		0.030U	0.030
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6		0.140U	0.140
Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.020U	0.020
Perfluorobutanoic acid (PFBA)	375-22-4		0.040U	0.040
Perfluorodecane sulfonic acid (PFDS)	335-77-3		0.030U	0.030
Perfluorodecanoic acid (PFDA)	335-76-2		0.040U	0.040
Perfluorododecanoic acid (PFDoA)	307-55-1		0.020U	0.020
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8		0.020U	0.020
Perfluoroheptanoic acid (PFHpA)	375-85-9		0.020U	0.020
Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.030U	0.030
Perfluorohexanoic acid (PFHxA)	307-24-4		0.020U	0.020
Perfluorononanesulfonic acid (PFNS)	68259-12-1		0.030U	0.030
Perfluorononanoic acid (PFNA)	375-95-1		0.020U	0.020
Perfluorooctane Sulfonamide (FOSA)	754-91-6		0.020U	0.020
Perfluorooctanesulfonic acid (PFOS)	1763-23-1		0.050U	0.050
Perfluorooctanoic acid (PFOA)	335-67-1		0.080U	0.080
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4		0.020U	0.020
Perfluoropentanoic acid (PFPeA)	2706-90-3		0.020U	0.020
Perfluorotetradecanoic acid (PFTA)	376-06-7		0.020U	0.020
Perfluorotridecanoic acid (PFTrDA)	72629-94-8		0.030U	0.030
Perfluoroundecanoic acid (PFUnA)	2058-94-8		0.020U	0.020
PFDoS	79780-39-5		0.030U	0.030
Extracted Internal Standard(EIS)	CAS#	Area	%R	
d3-NMeFOSAA	2355-31-9-EIS	97.8	98	
d5-NEtFOSAA	2991-50-6-EIS	106	106	
d7-NMeFOSE	24448-09-7-EIS	78.4	78	
d9-NEtFOSE	1691-99-2-EIS	75.3	75	
d-NEtFOSA	4151-50-2-EIS	40	40*	
d-NMeFOSA	31506-32-8-EIS	49.1	49*	
M2 4:2 FTS	757124-72-4-EIS	101	101	
M2 6:2 FTS	27619-97-2-EIS	112	112	
M2 8:2 FTS	39108-34-4-EIS	111	111	
M2PFHxDA	67905-19-5-EIS	96.6	97	
M2PFTA	376-06-7-EIS	91	91	
M3HFPODA	13252-13-6-EIS	98.3	98	
M3PFBS	375-73-5-EIS	99	99	
M3PFHxS	355-46-4-EIS	98.5	98	
M4PFHpA	375-85-9-EIS	99.4	99	
M5PFHxA	307-24-4-EIS	97.5	97	
M5PFPeA	2706-90-3-EIS	97.4	97	
M6PFDA	335-76-2-EIS	97.1	97	
M7PFUnA	2058-94-8-EIS	107	107	
M8FOSA	754-91-6-EIS	95.7	96	
M8PFOA	335-67-1-EIS	97.5	98	
M8PFOS	1763-23-1-EIS	97.3	97	
M9PFNA	375-95-1-EIS	96.8	97	
MPFBA	375-22-4-EIS	97.3	97	



LC-MS/MS QC Summary

Analytical Batch 744597	Client ID	MB744482	
Prep Batch 744482	Lab ID	2365800	
Prep Method PFAS Top Assay QSM B15 (Pre)	Sample Type	MB	
	Prep Date	06/30/22 17:30	
	Analysis Date	07/03/22 14:26	
	Matrix	Solid	
PFAS Top Assay QSM B15 (Pre)		Units Result	ug/Kg DL
MPFDoA	307-55-1-EIS	100	100
MPFOA	335-67-1-SUR	4.68	94



LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744482				LCSD744482			
744597		Lab ID	2365801				2365802			
Prep Batch		Sample Type	LCS				LCSD			
744482		Prep Date	06/30/22 17:30				06/30/22 17:30			
Prep Method		Analysis Date	07/03/22 14:41				07/03/22 14:56			
PFAS Top Assay QSM B15 (Pre)		Matrix	Solid				Solid			
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
11CI-PF3OUdS	763051-92-9	1.89	1.96	104	70 - 130	1.89	1.95	103	1	30
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	1.87	1.96	105	70 - 130	1.87	1.88	101	4	30
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	1.90	2.09	110	70 - 130	1.90	2.05	108	2	30
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	1.92	2.17	113	70 - 130	1.92	2.11	110	3	30
9CI-PF3ONS	756426-58-1	1.87	2.00	107	70 - 130	1.87	2.01	108	1	30
ADONA	919005-14-4	1.89	2.00	106	70 - 130	1.89	2.01	106	0	30
NEtFOSA	4151-50-2	2.00	2.20	110	70 - 130	2.00	2.03	101	8	30
NEtFOSAA	2991-50-6	2.00	2.22	111	70 - 130	2.00	2.15	107	3	30
NEtFOSE	1691-99-2	2.00	2.50	125	70 - 130	2.00	2.36	118	6	30
NMeFOSA	31506-32-8	2.00	2.35	118	70 - 130	2.00	2.16	108	9	30
NMeFOSAA	2355-31-9	2.00	2.22	111	70 - 130	2.00	2.13	107	4	30
NMeFOSE	24448-09-7	2.00	2.33	116	70 - 130	2.00	2.26	113	3	30
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	4.00	4.69	117	70 - 130	4.00	4.58	115	2	30
Perfluorobutanesulfonic acid (PFBS)	375-73-5	1.77	1.92	108	70 - 130	1.77	1.91	108	1	30
Perfluorobutanoic acid (PFBA)	375-22-4	2.00	2.17	108	70 - 130	2.00	2.14	107	2	30
Perfluorodecane sulfonic acid (PFDS)	335-77-3	1.93	2.12	110	70 - 130	1.93	2.01	104	5	30
Perfluorodecanoic acid (PFDA)	335-76-2	2.00	2.26	113	70 - 130	2.00	2.16	108	4	30
Perfluorododecanoic acid (PFDoA)	307-55-1	2.00	2.03	101	70 - 130	2.00	2.08	104	3	30
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	1.91	2.08	109	70 - 130	1.91	2.04	107	2	30
Perfluoroheptanoic acid (PFHpA)	375-85-9	2.00	2.16	108	70 - 130	2.00	2.11	105	2	30
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	1.83	1.94	106	70 - 130	1.83	1.94	106	0	30
Perfluorohexanoic acid (PFHxA)	307-24-4	2.00	2.16	108	70 - 130	2.00	2.11	106	2	30
Perfluorononanesulfonic acid (PFNS)	68259-12-1	1.92	2.11	110	70 - 130	1.92	2.11	110	0	30
Perfluorononanoic acid (PFNA)	375-95-1	2.00	2.16	108	70 - 130	2.00	2.12	106	2	30
Perfluorooctane Sulfonamide (FOSA)	754-91-6	2.00	2.12	106	70 - 130	2.00	2.08	104	2	30
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.86	1.95	105	70 - 130	1.86	1.96	105	0	30
Perfluorooctanoic acid (PFOA)	335-67-1	2.00	2.13	107	70 - 130	2.00	2.12	106	1	30
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	1.88	2.04	108	70 - 130	1.88	2.01	107	1	30
Perfluoropentanoic acid (PFPeA)	2706-90-3	2.00	2.14	107	70 - 130	2.00	2.13	106	1	30
Perfluorotetradecanoic acid (PFTA)	376-06-7	2.00	2.18	109	70 - 130	2.00	2.06	103	5	30
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2.00	2.07	104	70 - 130	2.00	2.09	105	1	30
Perfluoroundecanoic acid (PFUnA)	2058-94-8	2.00	2.20	110	70 - 130	2.00	2.16	108	2	30
PFDoS	79780-39-5	1.94	2.09	108	70 - 130	1.94	2.00	103	4	30
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%	RPD	Limit		
d3-NMeFOSAA	2355-31-9-EIS	100	97.2	97	50 - 150	100	98	98	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	100	98.5	99	50 - 150	100	101	101	NA	NA
d7-NMeFOSE	24448-09-7-EIS	100	85.6	86	50 - 150	100	71.3	71	NA	NA
d9-NEtFOSE	1691-99-2-EIS	100	80	80	50 - 150	100	61.7	62	NA	NA
d-NEtFOSA	4151-50-2-EIS	100	57.3	57	50 - 150	100	18.3	18*	NA	NA
d-NMeFOSA	31506-32-8-EIS	100	60.2	60	50 - 150	100	23.7	24*	NA	NA
M2 4:2 FTS	757124-72-4-EIS	100	98	98	50 - 150	100	105	105	NA	NA
M2 6:2 FTS	27619-97-2-EIS	100	123	123	50 - 150	100	108	108	NA	NA
M2 8:2 FTS	39108-34-4-EIS	100	108	108	50 - 150	100	112	112	NA	NA
M2PFHxDA	67905-19-5-EIS	100	106	106	50 - 150	100	62	62	NA	NA
M2PFTA	376-06-7-EIS	100	94.4	94	50 - 150	100	89.6	90	NA	NA
M3HFPODA	13252-13-6-EIS	100	100	100	50 - 150	100	101	101	NA	NA
M3PFBS	375-73-5-EIS	100	100	100	50 - 150	100	99.2	99	NA	NA
M3PFHxS	355-46-4-EIS	100	101	101	50 - 150	100	99.8	100	NA	NA
M4PFHpA	375-85-9-EIS	100	101	101	50 - 150	100	101	101	NA	NA
M5PFHxA	307-24-4-EIS	100	99.4	99	50 - 150	100	100	100	NA	NA
M5PFPeA	2706-90-3-EIS	100	99.7	100	50 - 150	100	98.2	98	NA	NA
M6PFDA	335-76-2-EIS	100	96.9	97	50 - 150	100	99.1	99	NA	NA
M7PFUnA	2058-94-8-EIS	100	99.3	99	50 - 150	100	99.4	99	NA	NA
M8FOSA	754-91-6-EIS	100	94.5	94	50 - 150	100	89.1	89	NA	NA
M8PFOA	335-67-1-EIS	100	99.9	100	50 - 150	100	98.6	99	NA	NA
M8PFOS	1763-23-1-EIS	100	101	101	50 - 150	100	98.6	99	NA	NA
M9PFNA	375-95-1-EIS	100	99.1	99	50 - 150	100	98.5	98	NA	NA
MPFBA	375-22-4-EIS	100	99.9	100	50 - 150	100	98.8	99	NA	NA



Report#: 222062951
Project ID: 10614143 MMSD PFAS

Report Date: 10/13/2022

LC-MS/MS QC Summary

Analytical Batch 744597	Client ID Lab ID	LCS744482 2365801				LCSD744482 2365802				
Prep Batch 744482	Sample Type	LCS				LCSD				
Prep Method PFAS Top Assay QSM B15 (Pre)	Prep Date	06/30/22 17:30				06/30/22 17:30				
	Analysis Date	07/03/22 14:41				07/03/22 14:56				
	Matrix	Solid				Solid				
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS	100	104	104	50 - 150	100	99.2	99	NA	NA
MPFOA	335-67-1-SUR	5	4.5	90	50 - 150	5	4.45	89	NA	NA

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744482		
744597		Lab ID	2365803		
Prep Batch		Sample Type	LCS		
744482		Prep Date	06/30/22 17:30		
Prep Method		Analysis Date	07/03/22 15:10		
PFAS Top Assay QSM B15 (Pre)		Matrix	Solid		
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits %R
11CI-PF3OUdS	763051-92-9	0.943	0.968	103	70 - 130
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.937	0.995	106	70 - 130
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	0.951	1.01	106	70 - 130
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.960	0.989	103	70 - 130
9CI-PF3ONS	756426-58-1	0.933	0.970	104	70 - 130
ADONA	919005-14-4	0.945	0.978	104	70 - 130
NEtFOSA	4151-50-2	1.00	1.08	108	70 - 130
NEtFOSAA	2991-50-6	1.00	1.08	108	70 - 130
NEtFOSE	1691-99-2	1.00	1.16	116	70 - 130
NMeFOSA	31506-32-8	1.00	1.09	109	70 - 130
NMeFOSAA	2355-31-9	1.00	1.09	109	70 - 130
NMeFOSE	24448-09-7	1.00	1.17	117	70 - 130
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	2.00	2.17	108	70 - 130
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.887	0.928	105	70 - 130
Perfluorobutanoic acid (PFBA)	375-22-4	1.00	1.05	105	70 - 130
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.965	1.02	106	70 - 130
Perfluorodecanoic acid (PFDA)	335-76-2	1.00	1.09	109	70 - 130
Perfluorododecanoic acid (PFDoA)	307-55-1	1.00	0.976	98	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.953	1.02	107	70 - 130
Perfluoroheptanoic acid (PFHpA)	375-85-9	1.00	1.04	104	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.914	0.973	106	70 - 130
Perfluorohexanoic acid (PFHxA)	307-24-4	1.00	1.05	105	70 - 130
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.962	1.02	106	70 - 130
Perfluorononanoic acid (PFNA)	375-95-1	1.00	1.04	104	70 - 130
Perfluorooctane Sulfonamide (FOSA)	754-91-6	1.00	1.05	105	70 - 130
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.928	0.972	105	70 - 130
Perfluorooctanoic acid (PFOA)	335-67-1	1.00	1.04	104	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.941	0.977	104	70 - 130
Perfluoropentanoic acid (PFPeA)	2706-90-3	1.00	1.04	104	70 - 130
Perfluorotetradecanoic acid (PFTA)	376-06-7	1.00	1.01	101	70 - 130
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1.00	0.971	97	70 - 130
Perfluoroundecanoic acid (PFUnA)	2058-94-8	1.00	1.06	106	70 - 130
PFDoS	79780-39-5	0.970	1.02	106	70 - 130
Extracted Internal Standard(EIS)	CAS#	Area	%R		
d3-NMeFOSAA	2355-31-9-EIS	100	91.3	91	50 - 150
d5-NEtFOSAA	2991-50-6-EIS	100	95.7	96	50 - 150
d7-NMeFOSE	24448-09-7-EIS	100	88.7	89	50 - 150
d9-NEtFOSE	1691-99-2-EIS	100	86.3	86	50 - 150
d-NEtFOSA	4151-50-2-EIS	100	81.5	82	50 - 150
d-NMeFOSA	31506-32-8-EIS	100	81.7	82	50 - 150
M2 4:2 FTS	757124-72-4-EIS	100	96.1	96	50 - 150
M2 6:2 FTS	27619-97-2-EIS	100	117	117	50 - 150
M2 8:2 FTS	39108-34-4-EIS	100	116	116	50 - 150
M2PFHxDA	67905-19-5-EIS	100	94.6	95	50 - 150
M2PFTA	376-06-7-EIS	100	96.2	96	50 - 150
M3HFPODA	13252-13-6-EIS	100	101	101	50 - 150
M3PFBS	375-73-5-EIS	100	98.4	98	50 - 150
M3PFHxS	355-46-4-EIS	100	97.1	97	50 - 150
M4PFHpA	375-85-9-EIS	100	99.1	99	50 - 150
M5PFHxA	307-24-4-EIS	100	97.7	98	50 - 150
M5PFPeA	2706-90-3-EIS	100	97.2	97	50 - 150
M6PFDA	335-76-2-EIS	100	95.9	96	50 - 150
M7PFUnA	2058-94-8-EIS	100	99.8	100	50 - 150
M8FOSA	754-91-6-EIS	100	95.3	95	50 - 150
M8PFOA	335-67-1-EIS	100	97.6	98	50 - 150
M8PFOS	1763-23-1-EIS	100	97.6	98	50 - 150
M9PFNA	375-95-1-EIS	100	97.5	98	50 - 150
MPFBA	375-22-4-EIS	100	97.4	97	50 - 150



LC-MS/MS QC Summary

Analytical Batch 744597	Client ID	LCS744482			
Prep Batch 744482	Lab ID	2365803			
Prep Method PFAS Top Assay QSM B15 (Pre)	Sample Type	LCS			
	Prep Date	06/30/22 17:30			
	Analysis Date	07/03/22 15:10			
	Matrix	Solid			
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits%R
MPFDoA	307-55-1-EIS	100	103	103	50 - 150
MPFOA	335-67-1-SUR	5	4.36	87	50 - 150

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB744481	
744597		Lab ID	2365794	
Prep Batch		Sample Type	MB	
744481		Prep Date	06/30/22 18:19	
Prep Method		Analysis Date	07/03/22 11:55	
PFAS Top Assay QSM B15 (Pre)		Matrix	Water	
PFAS Top Assay QSM B15 (Pre)			Units	ng/L
			Result	DL
11CI-PF3OUdS	763051-92-9		2.25U	2.25
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4		3.10U	3.10
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2		3.75U	3.75
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4		2.65U	2.65
9CI-PF3ONS	756426-58-1		2.25U	2.25
ADONA	919005-14-4		2.15U	2.15
NEtFOSA	4151-50-2		3.50U	3.50
NEtFOSAA	2991-50-6		3.95U	3.95
NEtFOSE	1691-99-2		2.53U	2.53
NMeFOSA	31506-32-8		4.15U	4.15
NMeFOSAA	2355-31-9		2.25U	2.25
NMeFOSE	24448-09-7		3.25U	3.25
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6		16.7U	16.7
Perfluorobutanesulfonic acid (PFBS)	375-73-5		1.55U	1.55
Perfluorobutanoic acid (PFBA)	375-22-4		3.80U	3.80
Perfluorodecane sulfonic acid (PFDS)	335-77-3		3.05U	3.05
Perfluorodecanoic acid (PFDA)	335-76-2		3.60U	3.60
Perfluorododecanoic acid (PFDoA)	307-55-1		3.25U	3.25
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8		3.05U	3.05
Perfluoroheptanoic acid (PFHpA)	375-85-9		2.90U	2.90
Perfluorohexanesulfonic acid (PFHxS)	355-46-4		3.10U	3.10
Perfluorohexanoic acid (PFHxA)	307-24-4		2.35U	2.35
Perfluorononanesulfonic acid (PFNS)	68259-12-1		4.35U	4.35
Perfluorononanoic acid (PFNA)	375-95-1		2.45U	2.45
Perfluorooctane Sulfonamide (FOSA)	754-91-6		1.85U	1.85
Perfluorooctanesulfonic acid (PFOS)	1763-23-1		1.90U	1.90
Perfluorooctanoic acid (PFOA)	335-67-1		2.10U	2.10
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4		2.55U	2.55
Perfluoropentanoic acid (PFPeA)	2706-90-3		2.20U	2.20
Perfluorotetradecanoic acid (PFTA)	376-06-7		2.85U	2.85
Perfluorotridecanoic acid (PFTrDA)	72629-94-8		3.08U	3.08
Perfluoroundecanoic acid (PFUnA)	2058-94-8		3.10U	3.10
PFDoS	79780-39-5		3.28U	3.28
Extracted Internal Standard(EIS)	CAS#		Area	%R
d3-NMeFOSAA	2355-31-9-EIS		214	86
d5-NEtFOSAA	2991-50-6-EIS		234	93
d7-NMeFOSE	24448-09-7-EIS		127	51
d9-NEtFOSE	1691-99-2-EIS		159	63
d-NEtFOSA	4151-50-2-EIS		158	63
d-NMeFOSA	31506-32-8-EIS		144	57
M2 4:2 FTS	757124-72-4-EIS		249	100
M2 6:2 FTS	27619-97-2-EIS		264	106
M2 8:2 FTS	39108-34-4-EIS		246	98
M2PFHxDA	67905-19-5-EIS		228	91
M2PFTA	376-06-7-EIS		215	86
M3HFPODA	13252-13-6-EIS		228	91
M3PFBS	375-73-5-EIS		227	91
M3PFHxS	355-46-4-EIS		223	89
M4PFHpA	375-85-9-EIS		230	92
M5PFHxA	307-24-4-EIS		229	92
M5PFPeA	2706-90-3-EIS		225	90
M6PFDA	335-76-2-EIS		218	87
M7PFUnA	2058-94-8-EIS		226	91
M8FOSA	754-91-6-EIS		193	77
M8PFOA	335-67-1-EIS		227	91
M8PFOS	1763-23-1-EIS		224	90
M9PFNA	375-95-1-EIS		225	90
MPFBA	375-22-4-EIS		231	93



LC-MS/MS QC Summary

Analytical Batch 744597	Client ID	MB744481	
Prep Batch 744481	Lab ID	2365794	
Prep Method PFAS Top Assay QSM B15 (Pre)	Sample Type	MB	
	Prep Date	06/30/22 18:19	
	Analysis Date	07/03/22 11:55	
	Matrix	Water	
PFAS Top Assay QSM B15 (Pre)		Units	
		Result	
MPFDoA	307-55-1-EIS	222	ng/L
MPFOA	335-67-1-SUR	432	DL
			89
			86

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744481				LCSD744481			
744597		Lab ID	2365795				2365796			
Prep Batch		Sample Type	LCS				LCSD			
744481		Prep Date	06/30/22 18:19				06/30/22 18:19			
Prep Method		Analysis Date	07/03/22 12:10				07/03/22 12:25			
PFAS Top Assay QSM B15 (Pre)		Matrix	Water				Water			
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
11CI-PF3OUdS	763051-92-9	189	207	110	70 - 130	189	211	112	2	20
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	187	196	104	70 - 130	187	210	112	7	20
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	190	218	115	70 - 130	190	219	115	0	20
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	192	221	115	70 - 130	192	223	116	1	20
9CI-PF3ONS	756426-58-1	187	211	113	70 - 130	187	216	116	3	20
ADONA	919005-14-4	189	214	113	70 - 130	189	218	115	2	20
NEtFOSA	4151-50-2	200	284	142*	70 - 130	200	267	134*	6	20
NEtFOSAA	2991-50-6	200	232	116	70 - 130	200	240	120	3	20
NEtFOSE	1691-99-2	200	263	132*	70 - 130	200	273	136*	4	20
NMeFOSA	31506-32-8	200	306	153*	70 - 130	200	276	138*	10	20
NMeFOSAA	2355-31-9	200	239	120	70 - 130	200	243	122	2	20
NMeFOSE	24448-09-7	200	249	124	70 - 130	200	271	135*	8	20
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	400	496	124	70 - 130	400	467	117	6	20
Perfluorobutanesulfonic acid (PFBS)	375-73-5	177	204	115	70 - 130	177	206	116	1	20
Perfluorobutanoic acid (PFBA)	375-22-4	200	226	113	70 - 130	200	230	115	2	20
Perfluorodecane sulfonic acid (PFDS)	335-77-3	193	218	113	70 - 130	193	228	118	4	20
Perfluorodecanoic acid (PFDA)	335-76-2	200	233	117	70 - 130	200	234	117	0	20
Perfluorododecanoic acid (PFDoA)	307-55-1	200	214	107	70 - 130	200	215	107	1	20
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	191	222	117	70 - 130	191	223	117	1	20
Perfluoroheptanoic acid (PFHpA)	375-85-9	200	225	113	70 - 130	200	227	113	1	20
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	183	213	117	70 - 130	183	211	115	1	20
Perfluorohexanoic acid (PFHxA)	307-24-4	200	227	114	70 - 130	200	228	114	0	20
Perfluorononanesulfonic acid (PFNS)	68259-12-1	192	223	116	70 - 130	192	233	121	4	20
Perfluorononanoic acid (PFNA)	375-95-1	200	225	112	70 - 130	200	227	114	1	20
Perfluorooctane Sulfonamide (FOSA)	754-91-6	200	226	113	70 - 130	200	235	117	4	20
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	186	215	116	70 - 130	186	214	115	0	20
Perfluorooctanoic acid (PFOA)	335-67-1	200	225	112	70 - 130	200	229	115	2	20
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	188	216	115	70 - 130	188	215	114	0	20
Perfluoropentanoic acid (PFPeA)	2706-90-3	200	226	113	70 - 130	200	230	115	2	20
Perfluorotetradecanoic acid (PFTA)	376-06-7	200	227	113	70 - 130	200	226	113	0	20
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	200	213	107	70 - 130	200	223	111	4	20
Perfluoroundecanoic acid (PFUnA)	2058-94-8	200	229	114	70 - 130	200	226	113	1	20
PFDoS	79780-39-5	194	217	112	70 - 130	194	224	115	3	20
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%	RPD	Limit		
d3-NMeFOSAA	2355-31-9-EIS	250	225	90	50 - 150	250	224	90	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	250	231	92	50 - 150	250	228	91	NA	NA
d7-NMeFOSE	24448-09-7-EIS	250	170	68	50 - 150	250	149	60	NA	NA
d9-NEtFOSE	1691-99-2-EIS	250	179	72	50 - 150	250	168	67	NA	NA
d-NEtFOSA	4151-50-2-EIS	250	127	51	50 - 150	250	139	56	NA	NA
d-NMeFOSA	31506-32-8-EIS	250	122	49*	50 - 150	250	134	53	NA	NA
M2 4:2 FTS	757124-72-4-EIS	250	238	95	50 - 150	250	231	92	NA	NA
M2 6:2 FTS	27619-97-2-EIS	250	250	100	50 - 150	250	257	103	NA	NA
M2 8:2 FTS	39108-34-4-EIS	250	227	91	50 - 150	250	232	93	NA	NA
M2PFHxDA	67905-19-5-EIS	250	223	89	50 - 150	250	231	92	NA	NA
M2PFTA	376-06-7-EIS	250	209	84	50 - 150	250	213	85	NA	NA
M3HFPODA	13252-13-6-EIS	250	226	90	50 - 150	250	240	96	NA	NA
M3PFBS	375-73-5-EIS	250	222	89	50 - 150	250	230	92	NA	NA
M3PFHxS	355-46-4-EIS	250	223	89	50 - 150	250	227	91	NA	NA
M4PFHpA	375-85-9-EIS	250	229	91	50 - 150	250	235	94	NA	NA
M5PFHxA	307-24-4-EIS	250	227	91	50 - 150	250	232	93	NA	NA
M5PFPeA	2706-90-3-EIS	250	226	90	50 - 150	250	230	92	NA	NA
M6PFDA	335-76-2-EIS	250	218	87	50 - 150	250	219	88	NA	NA
M7PFUnA	2058-94-8-EIS	250	224	89	50 - 150	250	229	92	NA	NA
M8FOSA	754-91-6-EIS	250	203	81	50 - 150	250	207	83	NA	NA
M8PFOA	335-67-1-EIS	250	225	90	50 - 150	250	229	91	NA	NA
M8PFOS	1763-23-1-EIS	250	221	88	50 - 150	250	220	88	NA	NA
M9PFNA	375-95-1-EIS	250	224	89	50 - 150	250	227	91	NA	NA
MPFBA	375-22-4-EIS	250	229	92	50 - 150	250	233	93	NA	NA



Report#: 222062951
Project ID: 10614143 MMSD PFAS

Report Date: 10/13/2022

LC-MS/MS QC Summary

Analytical Batch 744597	Client ID Lab ID	LCS744481 2365795				LCSD744481 2365796				
Prep Batch 744481	Sample Type	LCS				LCSD				
Prep Method PFAS Top Assay QSM B15 (Pre)	Prep Date Analysis Date	06/30/22 18:19 07/03/22 12:10				06/30/22 18:19 07/03/22 12:25				
	Matrix	Water				Water				
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS	250	229	92	50 - 150	250	229	92	NA	NA
MPFOA	335-67-1-SUR	500	431	86	50 - 150	500	421	84	NA	NA

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS744481		
744597		Lab ID	2365798		
Prep Batch		Sample Type	LCS		
744481		Prep Date	06/30/22 18:19		
Prep Method		Analysis Date	07/03/22 12:40		
PFAS Top Assay QSM B15 (Pre)		Matrix	Water		
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits %R
11CI-PF3OUdS	763051-92-9	18.9	21.0	111	70 - 130
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	18.7	21.1	113	70 - 130
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	19.0	22.7	119	70 - 130
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	19.2	23.4	122	70 - 130
9CI-PF3ONS	756426-58-1	18.7	22.3	120	70 - 130
ADONA	919005-14-4	18.9	21.5	114	70 - 130
NEtFOSA	4151-50-2	20.0	21.8	109	70 - 130
NEtFOSAA	2991-50-6	20.0	22.9	114	70 - 130
NEtFOSE	1691-99-2	20.0	27.7	138*	70 - 130
NMeFOSA	31506-32-8	20.0	25.3	127	70 - 130
NMeFOSAA	2355-31-9	20.0	24.3	122	70 - 130
NMeFOSE	24448-09-7	20.0	23.2	116	70 - 130
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	40.0	50.0	125	70 - 130
Perfluorobutanesulfonic acid (PFBS)	375-73-5	17.7	20.8	117	70 - 130
Perfluorobutanoic acid (PFBA)	375-22-4	20.0	23.6	118	70 - 130
Perfluorodecane sulfonic acid (PFDS)	335-77-3	19.3	23.7	123	70 - 130
Perfluorodecanoic acid (PFDA)	335-76-2	20.0	23.6	118	70 - 130
Perfluorododecanoic acid (PFDoA)	307-55-1	20.0	21.7	109	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	19.1	23.4	123	70 - 130
Perfluoroheptanoic acid (PFHpA)	375-85-9	20.0	23.2	116	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	18.3	22.1	121	70 - 130
Perfluorohexanoic acid (PFHxA)	307-24-4	20.0	23.0	115	70 - 130
Perfluorononanesulfonic acid (PFNS)	68259-12-1	19.2	22.4	117	70 - 130
Perfluorononanoic acid (PFNA)	375-95-1	20.0	23.4	117	70 - 130
Perfluorooctane Sulfonamide (FOSA)	754-91-6	20.0	22.3	111	70 - 130
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	18.6	22.1	119	70 - 130
Perfluorooctanoic acid (PFOA)	335-67-1	20.0	23.5	118	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	18.8	21.4	114	70 - 130
Perfluoropentanoic acid (PFPeA)	2706-90-3	20.0	23.5	117	70 - 130
Perfluorotetradecanoic acid (PFTA)	376-06-7	20.0	23.3	116	70 - 130
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	20.0	21.8	109	70 - 130
Perfluoroundecanoic acid (PFUnA)	2058-94-8	20.0	23.4	117	70 - 130
PFDoS	79780-39-5	19.4	23.7	122	70 - 130
Extracted Internal Standard(EIS)	CAS#	Area	%R		
d3-NMeFOSAA	2355-31-9-EIS	250	214	86	50 - 150
d5-NEtFOSAA	2991-50-6-EIS	250	217	87	50 - 150
d7-NMeFOSE	24448-09-7-EIS	250	174	70	50 - 150
d9-NEtFOSE	1691-99-2-EIS	250	178	71	50 - 150
d-NEtFOSA	4151-50-2-EIS	250	150	60	50 - 150
d-NMeFOSA	31506-32-8-EIS	250	135	54	50 - 150
M2 4:2 FTS	757124-72-4-EIS	250	227	91	50 - 150
M2 6:2 FTS	27619-97-2-EIS	250	238	95	50 - 150
M2 8:2 FTS	39108-34-4-EIS	250	215	86	50 - 150
M2PFHxDA	67905-19-5-EIS	250	226	90	50 - 150
M2PFTA	376-06-7-EIS	250	199	80	50 - 150
M3HFPODA	13252-13-6-EIS	250	220	88	50 - 150
M3PFBS	375-73-5-EIS	250	215	86	50 - 150
M3PFHxS	355-46-4-EIS	250	212	85	50 - 150
M4PFHpA	375-85-9-EIS	250	219	88	50 - 150
M5PFHxA	307-24-4-EIS	250	219	88	50 - 150
M5PFPeA	2706-90-3-EIS	250	214	86	50 - 150
M6PFDA	335-76-2-EIS	250	209	83	50 - 150
M7PFUnA	2058-94-8-EIS	250	212	85	50 - 150
M8FOSA	754-91-6-EIS	250	199	79	50 - 150
M8PFOA	335-67-1-EIS	250	215	86	50 - 150
M8PFOS	1763-23-1-EIS	250	207	83	50 - 150
M9PFNA	375-95-1-EIS	250	212	85	50 - 150
MPFBA	375-22-4-EIS	250	217	87	50 - 150



LC-MS/MS QC Summary

Analytical Batch 744597	Client ID	LCS744481			
Prep Batch 744481	Lab ID	2365798			
Prep Method PFAS Top Assay QSM B15 (Pre)	Sample Type	LCS			
	Prep Date	06/30/22 18:19			
	Analysis Date	07/03/22 12:40			
	Matrix	Water			
PFAS Top Assay QSM B15 (Pre)		Spike Added	Result	%R	Control Limits%R
MPFDoA	307-55-1-EIS	250	213	85	50 - 150
MPFOA	335-67-1-SUR	500	429	86	50 - 150

Top Assay Pre/Post Summary

Client ID LAB ID Collected Matrix Units	INFLUENT-02-20220620 22206295101 06/20/22 23:59 Water ng/L				INFLUENT-07-20220620 22206295102 06/20/22 23:59 Water ng/L			
	PFAS Top Assay QSM B15	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF
11CI-PF3OUdS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10U	0	0	3.10U	3.10U	0	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	3.75U	3.75U	0	0	3.75U	3.75U	0	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65U	0	0	2.65U	2.65U	0	0
9CI-PF3ONS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
ADONA	2.15U	2.15U	0	0	2.15U	2.15U	0	0
NEtFOSA	3.50U	3.50U	0	0	3.50U	3.50U	0	0
NEtFOSAA	3.95U	3.95U	0	0	3.95U	3.95U	0	0
NEtFOSE	2.53U	2.53U	0	0	2.53U	2.53U	0	0
NMeFOSA	4.15U	4.15U	0	0	4.15U	4.15U	0	0
NMeFOSAA	2.25U	2.25U	0	0	2.25U	2.25U	0	0
NMeFOSE	3.25U	3.25U	0	0	3.25U	3.25U	0	0
PFDoS	3.28U	3.28U	0	0	3.28U	3.28U	0	0
Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7U	0	0	16.7U	16.7U	0	0
Perfluorobutanesulfonic acid (PFBS)	1.67J	1.55U	-1.67	200	2.06J	1.99J	-0.07	3.5
Perfluorobutanoic acid (PFBA)	3.80U	20.7	20.7	200	5.58J	29.7	24.12	136.7
Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluorodecanoic acid (PFDA)	3.60U	3.60U	0	0	3.60U	3.60U	0	0
Perfluorododecanoic acid (PFDoA)	3.25U	3.25U	0	0	3.25U	3.25U	0	0
Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluoroheptanoic acid (PFHpA)	2.90U	6.59J	6.59	200	2.90U	9.69J	9.69	200
Perfluorohexanesulfonic acid (PFHxS)	4.60J	3.10U	-4.6	200	5.40J	4.76J	-0.64	12.6
Perfluorohexanoic acid (PFHxA)	4.00J	8.92J	4.92	76.2	6.10J	14.4	8.3	81
Perfluorononanesulfonic acid (PFNS)	4.35U	4.35U	0	0	4.35U	4.35U	0	0
Perfluorononanoic acid (PFNA)	2.45U	2.45U	0	0	2.45U	2.64J	2.64	200
Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85U	0	0	1.85U	1.85U	0	0
Perfluorooctanesulfonic acid (PFOS)	5.20J	3.02J	-2.18	53	5.34J	2.50J	-2.84	72.4
Perfluorooctanoic acid (PFOA)	2.23J	5.93J	3.7	90.7	2.82J	7.43J	4.61	90
Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55U	0	0	2.55U	2.55U	0	0
Perfluoropentanoic acid (PFPeA)	13.0	29.2	16.2	76.8	13.8	40.8	27	98.9
Perfluorotetradecanoic acid (PFTA)	2.85U	2.85U	0	0	2.85U	2.85U	0	0
Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08U	0	0	3.08U	3.08U	0	0
Perfluoroundecanoic acid (PFUnA)	3.10U	3.10U	0	0	3.10U	3.10U	0	0

Top Assay Pre/Post Summary (Continued)

Client ID LAB ID Collected Matrix Units	INFLUENT-08-20220620 22206295103 06/20/22 23:59 Water ng/L				INFLUENT-11-20220620 22206295104 06/20/22 23:59 Water ng/L			
	PFAS Top Assay QSM B15	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF
11CI-PF3OUdS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10U	0	0	3.10U	3.10U	0	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	3.75U	3.75U	0	0	3.75U	3.75U	0	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65U	0	0	2.65U	2.65U	0	0
9CI-PF3ONS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
ADONA	2.15U	2.15U	0	0	2.15U	2.15U	0	0
NEtFOSA	3.50U	3.50U	0	0	3.50U	3.50U	0	0
NEtFOSAA	3.95U	3.95U	0	0	3.95U	3.95U	0	0
NEtFOSE	2.53U	2.53U	0	0	2.53U	2.53U	0	0
NMeFOSA	4.15U	4.15U	0	0	4.15U	4.15U	0	0
NMeFOSAA	2.25U	2.25U	0	0	2.25U	2.25U	0	0
NMeFOSE	3.25U	3.25U	0	0	3.25U	3.25U	0	0
PFDoS	3.28U	3.28U	0	0	3.28U	3.28U	0	0
Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7U	0	0	16.7U	16.7U	0	0
Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55U	0	0	1.55U	1.55U	0	0
Perfluorobutanoic acid (PFBA)	3.80U	21.1	21.1	200	3.80U	22.6	22.6	200
Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluorodecanoic acid (PFDA)	3.60U	3.60U	0	0	3.60U	3.60U	0	0
Perfluorododecanoic acid (PFDoA)	3.25U	3.25U	0	0	3.25U	3.25U	0	0
Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluoroheptanoic acid (PFHpA)	2.90U	10.0	10	200	2.90U	10.4	10.4	200
Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10U	0	0	3.10U	3.10U	0	0
Perfluorohexanoic acid (PFHxA)	3.15J	10.8	7.65	109.7	3.06J	11.4	8.34	115.4
Perfluorononanesulfonic acid (PFNS)	4.35U	4.35U	0	0	4.35U	4.35U	0	0
Perfluorononanoic acid (PFNA)	2.45U	2.79J	2.79	200	2.45U	2.61J	2.61	200
Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85U	0	0	1.85U	1.85U	0	0
Perfluorooctanesulfonic acid (PFOS)	3.25J	1.90U	-3.25	200	4.12J	1.90U	-4.12	200
Perfluorooctanoic acid (PFOA)	2.10U	5.27J	5.27	200	2.10U	5.46J	5.46	200
Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55U	0	0	2.55U	2.55U	0	0
Perfluoropentanoic acid (PFPeA)	11.9	32.6	20.7	93	19.0	31.4	12.4	49.2
Perfluorotetradecanoic acid (PFTA)	2.85U	2.85U	0	0	2.85U	2.85U	0	0
Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08U	0	0	3.08U	3.08U	0	0
Perfluoroundecanoic acid (PFUnA)	3.10U	3.10U	0	0	3.10U	3.10U	0	0

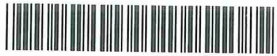
Top Assay Pre/Post Summary (Continued)

Client ID LAB ID Collected Matrix Units	INFLUENT-18-20220620 22206295105 06/20/22 23:59 Water ng/L				EFFLUENT-20220621 22206295106 06/20/22 23:59 Water ng/L			
	PFAS Top Assay QSM B15	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF
11CI-PF3OUdS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10U	0	0	3.10U	3.10U	0	0
6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75U	0	0	3.75U	3.75U	0	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65U	0	0	2.65U	2.65U	0	0
9CI-PF3ONS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
ADONA	2.15U	2.15U	0	0	2.15U	2.15U	0	0
NEtFOSA	3.50U	3.50U	0	0	3.50U	3.50U	0	0
NEtFOSAA	3.95U	3.95U	0	0	3.95U	3.95U	0	0
NEtFOSE	2.53U	2.53U	0	0	2.53U	2.53U	0	0
NMeFOSA	4.15U	4.15U	0	0	4.15U	4.15U	0	0
NMeFOSAA	2.25U	2.25U	0	0	2.25U	2.25U	0	0
NMeFOSE	3.25U	3.25U	0	0	3.25U	3.25U	0	0
PFDoS	3.28U	3.28U	0	0	3.28U	3.28U	0	0
Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7U	0	0	16.7U	16.7U	0	0
Perfluorobutanesulfonic acid (PFBS)	2.53J	2.07J	-0.46	20	1.55U	1.55U	0	0
Perfluorobutanoic acid (PFBA)	4.43J	27.1	22.67	143.8	3.80U	9.25J	9.25	200
Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluorodecanoic acid (PFDA)	3.60U	3.60U	0	0	3.60U	3.60U	0	0
Perfluorododecanoic acid (PFDoA)	3.25U	3.25U	0	0	3.25U	3.25U	0	0
Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluoroheptanoic acid (PFHpA)	2.90U	9.51J	9.51	200	2.90U	2.90U	0	0
Perfluorohexanesulfonic acid (PFHxS)	6.98J	6.23J	-0.75	11.4	3.10U	3.10U	0	0
Perfluorohexanoic acid (PFHxA)	5.37J	13.1	7.73	83.7	6.18J	6.61J	0.43	6.7
Perfluorononanesulfonic acid (PFNS)	4.35U	4.35U	0	0	4.35U	4.35U	0	0
Perfluorononanoic acid (PFNA)	2.45U	2.45J	2.45	200	2.45U	2.45U	0	0
Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85U	0	0	1.85U	1.85U	0	0
Perfluorooctanesulfonic acid (PFOS)	4.25J	3.76J	-0.49	12.2	1.98J	1.90U	-1.98	200
Perfluorooctanoic acid (PFOA)	3.03J	7.23J	4.2	81.9	2.84J	3.36J	0.52	16.8
Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55U	0	0	2.55U	2.55U	0	0
Perfluoropentanoic acid (PFPeA)	16.5	43.7	27.2	90.4	5.17J	8.37J	3.2	47.3
Perfluorotetradecanoic acid (PFTA)	2.85U	2.85U	0	0	2.85U	2.85U	0	0
Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08U	0	0	3.08U	3.08U	0	0
Perfluoroundecanoic acid (PFUnA)	3.10U	3.10U	0	0	3.10U	3.10U	0	0

Top Assay Pre/Post Summary (Continued)

Client ID LAB ID Collected Matrix Units	BIOSOLIDS A-20220622 22206295107 06/22/22 08:08 Solid ug/Kg				BIOSOLIDS B-20220622 22206295108 06/22/22 07:50 Solid ug/Kg			
	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF	RPD(%)
PFAS Top Assay QSM B15								
11CI-PF3OUdS	0.079U	0.079U	0	0	0.352U	0.343U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.197U	0.198U	0	0	0.880U	0.859U	0	0
6:2 Fluorotelomer sulfonic acid (6:2FTS)	0.511J	0.238U	-0.511	200	1.06U	1.03U	0	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.443J	0.119U	-0.443	200	0.852J	0.515U	-0.852	200
9CI-PF3ONS	0.118U	0.119U	0	0	0.528U	0.515U	0	0
ADONA	0.039U	0.040U	0	0	0.176U	0.172U	0	0
NEtFOSA	0.157U	0.159U	0	0	0.704U	0.687U	0	0
NEtFOSAA	3.14J	0.119U	-3.14	200	1.96J	0.515U	-1.96	200
NEtFOSE	1.07J	0.119U	-1.07	200	0.746J	0.515U	-0.746	200
NMeFOSA	0.157U	0.159U	0	0	0.704U	0.687U	0	0
NMeFOSAA	10.3	0.079U	-10.3	200	3.55J	0.343U	-3.55	200
NMeFOSE	3.81J	0.119U	-3.81	200	2.53J	0.515U	-2.53	200
PFDoS	2.14J	0.119U	-2.14	200	0.528U	0.515U	0	0
Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.550U	0.556U	0	0	2.47U	2.40U	0	0
Perfluorobutanesulfonic acid (PFBS)	0.234J	0.204J	-0.03	13.7	0.352U	0.343U	0	0
Perfluorobutanoic acid (PFBA)	1.74J	15.0	13.26	158.4	0.704U	5.59J	5.59	200
Perfluorodecane sulfonic acid (PFDS)	0.574J	0.212J	-0.362	92.1	0.730J	0.515U	-0.73	200
Perfluorodecanoic acid (PFDA)	3.48J	1.73J	-1.75	67.2	1.59J	0.687U	-1.59	200
Perfluorododecanoic acid (PFDoA)	1.33J	0.615J	-0.715	73.5	0.787J	0.343U	-0.787	200
Perfluoroheptanesulfonic acid (PFHpS)	0.167J	0.079U	-0.167	200	0.352U	0.343U	0	0
Perfluoroheptanoic acid (PFHpA)	0.433J	3.30J	2.867	153.6	0.352U	1.68J	1.68	200
Perfluorohexanesulfonic acid (PFHxS)	0.353J	0.322J	-0.031	9.2	2.74J	0.515U	-2.74	200
Perfluorohexanoic acid (PFHxA)	8.43	6.31	-2.12	28.8	1.01J	1.95J	0.94	63.5
Perfluorononanesulfonic acid (PFNS)	0.118U	0.119U	0	0	0.528U	0.515U	0	0
Perfluorononanoic acid (PFNA)	0.442J	1.41J	0.968	104.5	0.352U	0.699J	0.699	200
Perfluorooctane Sulfonamide (FOSA)	0.497J	0.079U	-0.497	200	0.352U	0.343U	0	0
Perfluorooctanesulfonic acid (PFOS)	3.74J	1.56J	-2.18	82.3	3.77J	1.06J	-2.71	112.2
Perfluorooctanoic acid (PFOA)	7.81	6.76	-1.05	14.4	1.41U	2.17J	2.17	200
Perfluoropentanesulfonic acid (PFPeS)	0.079U	0.079U	0	0	0.352U	0.343U	0	0
Perfluoropentanoic acid (PFPeA)	3.15J	8.91	5.76	95.5	0.352U	4.30J	4.3	200
Perfluorotetradecanoic acid (PFTA)	0.354J	0.188J	-0.166	61.3	0.352U	0.343U	0	0
Perfluorotridecanoic acid (PFTTrDA)	0.212J	0.189J	-0.023	11.5	0.528U	0.515U	0	0
Perfluoroundecanoic acid (PFUnA)	0.485J	0.602J	0.117	21.5	0.370J	0.343U	-0.37	200

Internal Transfer Chain of Custody



Samples Pre-Logged into eCOC.

State Of Origin: WI
 Cert. Needed: Yes No
 Owner Received Date: 6/23/2022 Results Requested By: 7/15/2022



Workorder: 10614143 Workorder Name: MMSD PFAS

Report To		Subcontract To				Requested Analysis													
Kirsten Hogberg Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-1700		Pace Gulf Coast 7979 Innovation Park Dr Baton Rouge, LA 70820 Phone (225)769-4900																	
						Preserved Containers						TOP Assay							
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved	Other												LAB USE ONLY
1	Influent-02-20220620	PS	6/20/2022 23:59	10614143001	Water	1													
2	Influent-07-20220620	PS	6/20/2022 23:59	10614143002	Water	1													
3	Influent-08-20220620	PS	6/20/2022 23:59	10614143003	Water	1													
4	Influent-11-20220620	PS	6/20/2022 23:59	10614143004	Water	1													
5	Influent-18-20220620	PS	6/20/2022 23:59	10614143005	Water	1													
6	Effluent-20220621	PS	6/20/2022 23:59	10614143006	Water	1													
7	Biosolids A-20220622	PS	6/22/2022 08:08	10614143008	Solid		1												
8	Biosolids B-20220622	PS	6/22/2022 07:50	10614143009	Solid		1												
Transfers														Comments					
Released By	Date/Time	Received By	Date/Time																
CSM/Pace	6/28/22 11:50			E42 2.9															
Pat Ep	6/29/22 09:28	Brunnan, Kelsie	6/29/22 09:28	3406 8885 1128															
Cooler Temperature on Receipt °C		Custody Seal Y or N		Received on Ice Y or N		Samples Intact Y or N													

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Client ID: 4367 - Pace Analytical Services

SDG: 222062951

PM: RWe

Tuesday, June 28, 2022 10:02:13 AM



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 222062951		CHECKLIST		YES	NO
Client 4367 - Pace Analytical Services	PM R/W R/W	Transport Method FEDEX	Samples received with proper thermal preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Profile Number 298928		Received By Henderson, Jacob R	COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			All containers received in good condition and within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Line Item(s) 1 - TOP Assay - Water 2 - TOP Assay - Soil		Receive Date(s) 06/29/22	All sample labels and containers received match the chain of custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Preservative added to any containers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			If received, was headspace for VOC water containers < 6mm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Samples collected in containers provided by Pace Gulf Coast?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
COOLERS		DISCREPANCIES		LAB PRESERVATIONS	
Airbill	Thermometer ID: E42	Temp °C	None	None	
3466 8885 1128		2.9			
NOTES					

July 2022

August 23, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS
Pace Project No.: 10617957

Dear Mike Ursin:

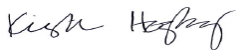
Enclosed are the analytical results for sample(s) received by the laboratory on July 21, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS

Pace Project No.: 10617957

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS

Pace Project No.: 10617957

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10617957001	Influent-02-20220718	Water	07/18/22 23:59	07/21/22 08:50
10617957002	Influent-07-20220718	Water	07/18/22 23:59	07/21/22 08:50
10617957003	Influent-08-20220718	Water	07/18/22 23:59	07/21/22 08:50
10617957004	Influent-11-20220718	Water	07/18/22 23:59	07/21/22 08:50
10617957005	Influent-18-20220718	Water	07/18/22 23:59	07/21/22 08:50
10617957006	Effluent 20220719	Water	07/19/22 23:59	07/21/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS

Pace Project No.: 10617957

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10617957001	Influent-02-20220718	SM 2540D	EPT	1
10617957002	Influent-07-20220718	SM 2540D	EPT	1
10617957003	Influent-08-20220718	SM 2540D	EPT	1
10617957004	Influent-11-20220718	SM 2540D	EPT	1
10617957005	Influent-18-20220718	SM 2540D	EPT	1
10617957006	Effluent 20220719	SM 2540D	RM3	1

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10617957

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: August 23, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H5: Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.

- Influent-02-20220718 (Lab ID: 10617957001)
- Influent-07-20220718 (Lab ID: 10617957002)
- Influent-08-20220718 (Lab ID: 10617957003)
- Influent-11-20220718 (Lab ID: 10617957004)
- Influent-18-20220718 (Lab ID: 10617957005)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10617957

Sample: Influent-02-20220718									
		Lab ID: 10617957001	Collected: 07/18/22 23:59		Received: 07/21/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	270	mg/L	20.0	10.0	1		07/28/22 08:42		H5
Sample: Influent-07-20220718									
		Lab ID: 10617957002	Collected: 07/18/22 23:59		Received: 07/21/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	250	mg/L	20.0	10.0	1		07/28/22 08:42		H5
Sample: Influent-08-20220718									
		Lab ID: 10617957003	Collected: 07/18/22 23:59		Received: 07/21/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	251	mg/L	20.0	10.0	1		07/28/22 08:42		H5
Sample: Influent-11-20220718									
		Lab ID: 10617957004	Collected: 07/18/22 23:59		Received: 07/21/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	314	mg/L	20.0	10.0	1		07/28/22 08:42		H5
Sample: Influent-18-20220718									
		Lab ID: 10617957005	Collected: 07/18/22 23:59		Received: 07/21/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	269	mg/L	20.0	10.0	1		07/28/22 08:42		H5

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10617957

Sample: Effluent 20220719 **Lab ID: 10617957006** Collected: 07/19/22 23:59 Received: 07/21/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids	Analytical Method: SM 2540D Pace Analytical Services - Minneapolis								
Total Suspended Solids	ND	mg/L	10.0	5.0	1		07/26/22 13:58		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10617957

QC Batch: 830130 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10617957001, 10617957002, 10617957003, 10617957004, 10617957005

METHOD BLANK: 4398621 Matrix: Water
Associated Lab Samples: 10617957001, 10617957002, 10617957003, 10617957004, 10617957005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	07/28/22 08:41	

LABORATORY CONTROL SAMPLE: 4398622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	104	104	80-120	

SAMPLE DUPLICATE: 4398623

Parameter	Units	10617499001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND			5 H5

SAMPLE DUPLICATE: 4398624

Parameter	Units	10617512001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	<5.0	ND			5 H5

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10617957

QC Batch: 830435	Analysis Method: SM 2540D
QC Batch Method: SM 2540D	Analysis Description: 2540D Total Suspended Solids
	Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10617957006

METHOD BLANK: 4399851 Matrix: Water
Associated Lab Samples: 10617957006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	07/26/22 13:54	

LABORATORY CONTROL SAMPLE: 4399852

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	85.8	86	80-120	

SAMPLE DUPLICATE: 4399853

Parameter	Units	10617759001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	18.2	17.6	3	5	

SAMPLE DUPLICATE: 4399854

Parameter	Units	10617835001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	<5.0	ND		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS

Pace Project No.: 10617957

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H5 Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS
Pace Project No.: 10617957

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10617957001	Influent-02-20220718	SM 2540D	830130		
10617957002	Influent-07-20220718	SM 2540D	830130		
10617957003	Influent-08-20220718	SM 2540D	830130		
10617957004	Influent-11-20220718	SM 2540D	830130		
10617957005	Influent-18-20220718	SM 2540D	830130		
10617957006	Effluent 20220719	SM 2540D	830435		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: **TRC**
 Address: **708 Heartland Tr Suite 3000 Madison WI 53717**
 Report To: **Mike Ursin**
 Copy To: **Lydia Auner, Jeff Ramey**
 Customer Project Name/Number: **MMSD PFAS**
 Site/Facility ID #: _____
 Purchased By (print): **Jenna Faust**
 Collected By (signature): *Jenna Faust*
 Sample Disposal: Same Day Next Day 2 Day 3 Day 4 Day 5 Day
 Archive: _____
 Hold: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End	Res Cl	# of Ctns
			Date	Time			
Influent-02-20220718	WW	Comp	7/18/22	0:00	7/18/22 23:59		3
Influent-07-20220718							3
Influent-08-20220718							3
Influent-11-20220718							3
Influent-19-20220718							3
Effluent 20220719	WW	Comp	7/19/22	0:00	7/19/22 23:59		3

Customer Remarks / Special Conditions / Possible Hazards: _____

Type of Ice Used: Wet Blue Dry None

Packing Material Used: _____

Radchem sample(s) screened (<500 cpm): Y N NA

Received by/Company: (Signature) *Jenna Faust* Date/Time: 7/20/22 9:45
 Received by/Company: (Signature) *J/KE* Date/Time: _____
 Received by/Company: (Signature) _____ Date/Time: _____

Workorder Number or **WO# : 10617957**

ONLY

10617957

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line: **43476**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signatures Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
C1 Strips:	Y N NA
Sample pH Acceptable	Y N NA
pH Strips:	Y N NA
Sulfide Present	Y N NA
Lead Acetate Strips:	Y N NA
LAB USE ONLY: _____	
Lab Sample # / Comments:	

Lab Sample Temperature Info:

Temp Blank Received: N NA

Therm ID#: **16**

Cooler 1 Temp Upon Receipt: **42** °C

Cooler 1 Therm Corr. Factor: **5** °C

Cooler 1 Corrected Temp: _____ °C

Comments: _____

Trip Blank Received: Y N **NA**

HCL MeOH TSP Other

Non Conformance(s): **YES / NO**

Page: **1** of **1**

Bill to: **MMSD**

Site Collection Info/Address: **Musio Companies, Com 1610 Moorland Rd**

State: **WI** County/City: **Madison** Time Zone Collected: **CT**

Compliance Monitoring? Yes No

DW PWS ID #: **2200666**

DW Location Code: _____

Immediately Packed on Ice: Yes No

Field Filtered (if applicable): Yes No

Analysis: _____

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **27977743**

Samples received via: FEDEX UPS Client Courier Pace Courier

Date/Time: **7/18/22 8:50**

Date/Time: _____

Date/Time: _____



DC#_Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name: TRC

Project #:

WO#: 10617957
PM: KNH Due Date: 07/28/22
CLIENT: TRC-WI

Courier: [X] Fed Ex [] UPS [] USPS [] Client
[] Pace [] SpeeDee [] Commercial

See Exceptions
[] ENV-FRM-MIN4-0142

Tracking Number: 9190 1603 6452

Custody Seal on Cooler/Box Present? [X] Yes [] No Seals Intact? [X] Yes [] No Biological Tissue Frozen? [] Yes [] No [X] N/A

Packing Material: [] Bubble Wrap [] Bubble Bags [] None [] Other: Temp Blank? [X] Yes [] No

Thermometer: [] T1(0461) [] T2(1336) [] T3(0459) [X] T4(0254) [] T5(0489) [] T6(0235)
[] T7 (0042) [] 01339252/1710 [] 122639816 [] 140792808 Type of Ice: [X] Wet [] Blue [] None [] Dry [] Melted

Did Samples Originate in West Virginia? [] Yes [X] No Were All Container Temps Taken? [] Yes [] No [X] N/A

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: 4.2 °C

Average Corrected Temp (no temp blank only): °C [] See Exceptions ENV-FRM-MIN4-0142 [] 1 Container

Correction Factor: True Cooler Temp Corrected w/temp blank: 4.2 °C

USDA Regulated Soil: [X] N/A, water sample/Other:

Date/Initials of Person Examining Contents: KNH 07/21/22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? [] Yes [] No
Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? [] Yes [] No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Table with 2 main columns: Location (check one) and COMMENTS. Rows include Chain of Custody Present and Filled Out?, Chain of Custody Relinquished?, Sampler Name and/or Signature on COC?, Samples Arrived within Hold Time?, Short Hold Time Analysis (<72 hr)?, Rush Turn Around Time Requested?, Sufficient Volume?, Correct Containers Used?, Containers Intact?, Field Filtered Volume Received for Dissolved Tests?, Is sufficient information available to reconcile the samples to the COC?, All containers needing acid/base preservation have been checked?, All containers needing preservation are found to be in compliance with EPA recommendation?, Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS?, Headspace in Methyl Mercury Container?, Extra labels present on soil VOA or WIDRO containers?, Headspace in VOA Vials (greater than 6mm)?, Trip Blank Present?, Trip Blank Custody Seals Present?.

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Comments/Resolution:

Field Data Required? [] Yes [] No Date/Time:

Project Manager Review: Kirsten Hoegberg

Date: 7/22/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers). Labeled by:

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Prepared Date:

August 22, 2022

Report Information:

Pace Project #: 10617957
Sample Receipt Date: 07/21/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



August 23, 2022

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance for PFAS. Reporting limits were set to MDL levels. None of the samples were centrifuged in this project.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. This spike indicates that extraction performed as expected. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

Diminished/elevated extracted internal standard (EIS) recovery ("R" flagged) were present in samples and CCV, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

With the exception of 13C4_PFOA in "Influent-11-20220718", the four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected. These failures are likely due to matrix interference.

Results that were below the calibration range were flagged "J". Values were flagged "I" where incorrect isotope ratios were obtained.

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix A

Sample Management

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Influent-02-20220718	10617957001	07/21/2022	Water
Influent-07-20220718	10617957002	07/21/2022	Water
Influent-08-20220718	10617957003	07/21/2022	Water
Influent-11-20220718	10617957004	07/21/2022	Water
Influent-18-20220718	10617957005	07/21/2022	Water
Effluent 20220719	10617957006	07/21/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

WO#: 10617957

Order Number or



ONLY

Company: **TRC**

Address: **Suite 3000
708 Heartland Tr Madison WI 53717**

Report To: **Mike Ursin**

Copy To: **Lydia Auner, Jeff Ramey**

Customer Project Name/Number: **MMSD PFAS**

Billing Information: **Bill to MMSD**

Email To: **mursin@trccompanies.com**

Site Collection Info/Address: **1610 Moorland Rd**

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Phone: _____ Site/Facility ID #: _____ Compliance Monitoring? Yes No

Collected By (print): **Jenny Faust** Purchase Order #: **2200666** DW PWS ID #: _____ DW Location Code: _____

Collected By (signature): **Jenny Faust** Turnaround Date Required: **Standard TAT** Immediately Packed on Ice: Yes No

Sample Disposal: Dispose as appropriate Return Hold: _____ Rush: Same Day Next Day 2 Day 3 Day 4 Day 5 Day (Expedite Charges Apply) Field Filtered (if applicable): Yes No Analysis: _____

Analyses		Lab Profile/Line: 43476
PFAS WI-33 List	TSS	Lab Sample Receipt Checklist:
		Custody Seals Present/Intact <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA
		Custody Signatures Present <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA
		Collector Signature Present <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA
		Bottles Intact <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA
		Correct Bottles <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA
Sufficient Volume <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA		
Samples Received on Ice <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA		
VOA - Headspace Acceptable <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA		
USDA Regulated Soils <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA		
Samples in Holding Time <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA		
Residual Chlorine Present <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA		
Cl Strips: _____	Sample pH Acceptable <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	
pH Strips: _____	Sulfide Present <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	
Lead Acetate Strips: _____	Lab USE ONLY:	
	Lab Sample # / Comments:	

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
Influent-02-20220718	WW	Comp	7/13/22	0:00	7/18/22	23:59		3
Influent-07-20220718	↓	↓	↓	↓	↓	↓		3
Influent-08-20220718	↓	↓	↓	↓	↓	↓		3
Influent-11-20220718	↓	↓	↓	↓	↓	↓		3
Influent-18-20220718	↓	↓	↓	↓	↓	↓		3
Effluent 20220719	WW	Comp	7/19/22	0:00	7/19/22	23:59		3

Customer Remarks / Special Conditions / Possible Hazards: _____

Type of Ice Used: Wet Blue Dry None

Packing Material Used: _____

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **2797743**

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: **TR**

Cooler 1 Temp Upon Receipt: **9.2** oC

Cooler 1 Therm Corr. Factor: **5** oC

Cooler 1 Corrected Temp: _____ oC

Comments: _____

Relinquished by/Company: (Signature) **Jenny Faust** Date/Time: **7/20/22 9:45** Received by/Company: (Signature) **J/RAE** Date/Time: **07/21/22 8:50**

Relinquished by/Company: (Signature) _____ Date/Time: _____ Received by/Company: (Signature) _____ Date/Time: _____

Relinquished by/Company: (Signature) _____ Date/Time: _____ Received by/Company: (Signature) _____ Date/Time: _____

Table #: _____

Acctnum: _____

Template: _____

Prelogin: _____

PM: _____

PB: _____

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES NO

Page: **1** of: **1**



DC#_Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name: TRC

Project #:

WO#: 10617957
PM: KNH Due Date: 07/28/22
CLIENT: TRC-WI

Courier: Fed Ex, UPS, USPS, Client, Pace, SpeeDee, Commercial

See Exceptions ENV-FRM-MIN4-0142

Tracking Number: 9190 1603 6452

Custody Seal on Cooler/Box Present? Seals Intact? Biological Tissue Frozen?

Packing Material: Bubble Wrap, Bubble Bags, None, Other, Temp Blank?

Thermometer: T1(0461), T2(1336), T3(0459), T4(0254), T5(0489), T6(0235), T7(0042), 01339252/1710, 122639816, 140792808. Type of Ice: Wet, Blue, None, Dry, Melted

Did Samples Originate in West Virginia? Were All Container Temps Taken?

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: 4.2 °C
Correction Factor: True Cooler Temp Corrected w/temp blank: 4.2 °C
Average Corrected Temp (no temp blank only): °C

USDA Regulated Soil: N/A, water sample/Other: Date/Initials of Person Examining Contents: KNH 07/21/22
Did samples originate in a quarantine zone within the United States? Did samples originate from a foreign source?

Table with 2 columns: Location (check one) and COMMENTS. Rows include Chain of Custody, Samples Arrived within Hold Time, Short Hold Time Analysis, Rush Turn Around Time, Field Filtered Volume, Matrix, All containers needing acid/base preservation, Exceptions, Headspace in Methyl Mercury Container, Extra labels present on soil VOA or WIDRO containers, Trip Blank Present.

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Date/Time: Field Data Required? Comments/Resolution:

Project Manager Review: Kirsten Hojberg Date: 7/22/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers). Labeled by:

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10617957001	Influent-02-20220718	SW3535	33598	PFAS-36	B220811C_01
10617957002	Influent-07-20220718	SW3535	33598	PFAS-36	B220811C_01
10617957003	Influent-08-20220718	SW3535	33598	PFAS-36	B220815A_06
10617957004	Influent-11-20220718	SW3535	33598	PFAS-36	B220815A_06
10617957005	Influent-18-20220718	SW3535	33598	PFAS-36	B220811C_01
10617957006	Effluent 20220719	SW3535	33598	PFAS-36	B220811C_02



Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Isotope ratio out of specification
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix B

Sample Analysis Summary

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220718
 Lab Sample ID 10617957001
 Lab File ID B220811C_020
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 261mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.1	1.9	0.42	0.42	1	375-22-4		08/12/2022 04:30
PFPeA	3.9	1.9	0.42	0.42	1	2706-90-3		08/12/2022 04:30
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		08/12/2022 04:30
PFBS	2.7	1.7	0.45	0.45	1	375-73-5		08/12/2022 04:30
PFHxA	4.2	1.9	0.42	0.42	1	307-24-4		08/12/2022 04:30
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		08/12/2022 04:30
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		08/12/2022 04:30
PFHpA	1.5 J	1.9	0.53	0.53	1	375-85-9		08/12/2022 04:30
DONA	ND	1.8	0.49	0.49	1	919005-14-4		08/12/2022 04:30
PFHxS	4.1 I	1.7	0.49	0.49	1	355-46-4		08/12/2022 04:30
PFOA	3.3	1.9	0.56	0.56	1	335-67-1		08/12/2022 04:30
6:2 FTS	0.85 J	1.8	0.62	0.62	1	27619-97-2		08/12/2022 04:30
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		08/12/2022 04:30
PFNA	ND	1.9	0.71	0.71	1	375-95-1		08/12/2022 04:30
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		08/12/2022 04:30
PFOS	5.4	1.8	0.53	0.53	1	1763-23-1		08/12/2022 04:30
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		08/12/2022 04:30
PFDA	ND	1.9	0.54	0.54	1	335-76-2		08/12/2022 04:30
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		08/12/2022 04:30
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		08/12/2022 04:30
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		08/12/2022 04:30
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		08/12/2022 04:30
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		08/12/2022 04:30
NMeFOSAA	0.52 J	1.9	0.42	0.42	1	2355-31-9		08/12/2022 04:30
NEtFOSAA	0.73 J	1.9	0.53	0.53	1	2991-50-6		08/12/2022 04:30
PFDS	ND	1.9	0.43	0.43	1	335-77-3		08/12/2022 04:30
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		08/12/2022 04:30
MeFOSE	29	1.9	0.32	0.32	1	24448-09-7		08/12/2022 04:30
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		08/12/2022 04:30
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		08/12/2022 04:30
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		08/12/2022 04:30
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		08/12/2022 04:30
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		08/12/2022 04:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220718
 Lab Sample ID 10617957001
 Lab File ID B220811C_020
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 261mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	14	75	50-150		08/12/2022 04:30
13C4 PFOA	19	15	77	50-150		08/12/2022 04:30
13C2 PFDA	19	10	55	50-150		08/12/2022 04:30
13C4 PFOS	18	12	64	50-150		08/12/2022 04:30

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	11	56	25-150		08/12/2022 04:30
13C5 PFPeA	19	11	59	25-150		08/12/2022 04:30
13C3 PFBS	18	16	89	25-150		08/12/2022 04:30
13C2 4:2FTS	18	27	150	25-150		08/12/2022 04:30
13C5 PFHxA	19	15	77	25-150		08/12/2022 04:30
13C4 PFHpA	19	17	89	25-150		08/12/2022 04:30
13C3 PFHxS	18	17	94	25-150		08/12/2022 04:30
13C2 6:2FTS	18	31	169	25-150	R	08/12/2022 04:30
13C8 PFOA	19	13	67	25-150		08/12/2022 04:30
13C9 PFNA	19	15	78	25-150		08/12/2022 04:30
13C8 PFOS	18	11	59	25-150		08/12/2022 04:30
13C2 8:2FTS	18	18	100	25-150		08/12/2022 04:30
13C6 PFDA	19	11	59	25-150		08/12/2022 04:30
d3-MeFOSAA	19	6.3	33	25-150		08/12/2022 04:30
13C8 PFOSA	19	10	53	25-150		08/12/2022 04:30
d5-EtFOSAA	19	8.2	43	25-150		08/12/2022 04:30
13C7 PFUdA	19	10.0	52	25-150		08/12/2022 04:30
13C2 PFDoA	19	8.5	44	25-150		08/12/2022 04:30
13C2 PFTeDA	19	10	54	25-150		08/12/2022 04:30
13C3 HFPO-DA	19	14	73	25-150		08/12/2022 04:30
d7-N-MeFOSE	19	1.7	9	10-150	R	08/12/2022 04:30
d9-N-EtFOSE	19	6.4	34	10-150		08/12/2022 04:30
d3-N-MeFOSA	19	3.9	20	10-150		08/12/2022 04:30
d5-N-EtFOSA	19	2.4	12	10-150		08/12/2022 04:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220718
 Lab Sample ID 10617957002
 Lab File ID B220811C_021
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 251mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	2.0	0.44	0.44	1	375-22-4		08/12/2022 04:50
PFPeA	5.4	2.0	0.44	0.44	1	2706-90-3		08/12/2022 04:50
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		08/12/2022 04:50
PFBS	5.3	1.8	0.47	0.47	1	375-73-5		08/12/2022 04:50
PFHxA	11	2.0	0.44	0.44	1	307-24-4		08/12/2022 04:50
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		08/12/2022 04:50
PFPeS	1.1 J	1.9	0.47	0.47	1	2706-91-4		08/12/2022 04:50
PFHpA	2.7	2.0	0.55	0.55	1	375-85-9		08/12/2022 04:50
DONA	ND	1.9	0.51	0.51	1	919005-14-4		08/12/2022 04:50
PFHxS	11	1.8	0.51	0.51	1	355-46-4		08/12/2022 04:50
PFOA	6.3	2.0	0.58	0.58	1	335-67-1		08/12/2022 04:50
6:2 FTS	1.8 J	1.9	0.64	0.64	1	27619-97-2		08/12/2022 04:50
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		08/12/2022 04:50
PFNA	ND	2.0	0.74	0.74	1	375-95-1		08/12/2022 04:50
PFOSAm	ND	2.0	0.81	0.81	1	754-91-6		08/12/2022 04:50
PFOS	5.6	1.8	0.55	0.55	1	1763-23-1		08/12/2022 04:50
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		08/12/2022 04:50
PFDA	ND	2.0	0.56	0.56	1	335-76-2		08/12/2022 04:50
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		08/12/2022 04:50
8:2 FTS	0.91 J	1.9	0.65	0.65	1	39108-34-4		08/12/2022 04:50
9-CI-PF3ON	ND	1.9	0.30	0.30	1	756426-58-1		08/12/2022 04:50
PFNS	ND	1.9	0.44	0.44	1	68259-12-1		08/12/2022 04:50
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		08/12/2022 04:50
NMeFOSAA	2.0 J	2.0	0.43	0.43	1	2355-31-9		08/12/2022 04:50
NEtFOSAA	1.5 J	2.0	0.55	0.55	1	2991-50-6		08/12/2022 04:50
PFDS	ND	1.9	0.45	0.45	1	335-77-3		08/12/2022 04:50
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		08/12/2022 04:50
MeFOSE	27	2.0	0.33	0.33	1	24448-09-7		08/12/2022 04:50
EtFOSE	0.59 J	2.0	0.49	0.49	1	1691-99-2		08/12/2022 04:50
11-CI-PF3OUdS	ND	1.9	0.43	0.43	1	763051-92-9		08/12/2022 04:50
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		08/12/2022 04:50
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		08/12/2022 04:50
PFTDA	ND	2.0	0.47	0.47	1	376-06-7		08/12/2022 04:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220718
 Lab Sample ID 10617957002
 Lab File ID B220811C_021
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 251mL
 lcal ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	17	84	50-150		08/12/2022 04:50
13C4 PFOA	20	15	77	50-150		08/12/2022 04:50
13C2 PFDA	20	10	51	50-150		08/12/2022 04:50
13C4 PFOS	19	11	58	50-150		08/12/2022 04:50

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	13	66	25-150		08/12/2022 04:50
13C5 PFPeA	20	17	83	25-150		08/12/2022 04:50
13C3 PFBS	18	17	91	25-150		08/12/2022 04:50
13C2 4:2FTS	19	32	173	25-150	R	08/12/2022 04:50
13C5 PFHxA	20	16	82	25-150		08/12/2022 04:50
13C4 PFHpA	20	18	92	25-150		08/12/2022 04:50
13C3 PFHxS	19	17	89	25-150		08/12/2022 04:50
13C2 6:2FTS	19	33	175	25-150	R	08/12/2022 04:50
13C8 PFOA	20	16	81	25-150		08/12/2022 04:50
13C9 PFNA	20	14	73	25-150		08/12/2022 04:50
13C8 PFOS	19	10	53	25-150		08/12/2022 04:50
13C2 8:2FTS	19	15	81	25-150		08/12/2022 04:50
13C6 PFDA	20	10	52	25-150		08/12/2022 04:50
d3-MeFOSAA	20	5.4	27	25-150		08/12/2022 04:50
13C8 PFOSA	20	9.4	47	25-150		08/12/2022 04:50
d5-EtFOSAA	20	7.9	40	25-150		08/12/2022 04:50
13C7 PFUdA	20	7.6	38	25-150		08/12/2022 04:50
13C2 PFDaA	20	8.3	41	25-150		08/12/2022 04:50
13C2 PFTeDA	20	8.8	44	25-150		08/12/2022 04:50
13C3 HFPO-DA	20	16	82	25-150		08/12/2022 04:50
d7-N-MeFOSE	20	2.2	11	10-150		08/12/2022 04:50
d9-N-EtFOSE	20	7.4	37	10-150		08/12/2022 04:50
d3-N-MeFOSA	20	6.8	34	10-150		08/12/2022 04:50
d5-N-EtFOSA	20	4.0	20	10-150		08/12/2022 04:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220718
 Lab Sample ID 10617957003
 Lab File ID B220815A_068
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 256mL
 Ical ID 220810B02
 CCal File B220815A_062
 Ending CCal File B220815A_075
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.0	2.0	0.43	0.43	1	375-22-4		08/16/2022 11:26
PFPeA	3.4	2.0	0.43	0.43	1	2706-90-3		08/16/2022 11:26
HFPO-DA	ND	2.0	0.52	0.52	1	13252-13-6		08/16/2022 11:26
PFBS	2.1	1.7	0.46	0.46	1	375-73-5		08/16/2022 11:26
PFHxA	4.6	2.0	0.43	0.43	1	307-24-4		08/16/2022 11:26
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		08/16/2022 11:26
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		08/16/2022 11:26
PFHpA	1.1 J	2.0	0.54	0.54	1	375-85-9		08/16/2022 11:26
DONA	ND	1.8	0.50	0.50	1	919005-14-4		08/16/2022 11:26
PFHxS	3.2	1.8	0.50	0.50	1	355-46-4		08/16/2022 11:26
PFOA	2.5	2.0	0.57	0.57	1	335-67-1		08/16/2022 11:26
6:2 FTS	2.3	1.9	0.63	0.63	1	27619-97-2		08/16/2022 11:26
PFHpS	ND	1.9	0.40	0.40	1	375-92-8		08/16/2022 11:26
PFNA	ND	2.0	0.72	0.72	1	375-95-1		08/16/2022 11:26
PFOSAm	ND	2.0	0.80	0.80	1	754-91-6		08/16/2022 11:26
PFOS	2.5 I	1.8	0.53	0.53	1	1763-23-1		08/16/2022 11:26
MeFOSA	ND	2.0	0.50	0.50	1	31506-32-8		08/16/2022 11:26
PFDA	ND	2.0	0.55	0.55	1	335-76-2		08/16/2022 11:26
EtFOSAm	ND	2.0	0.59	0.59	1	4151-50-2		08/16/2022 11:26
8:2 FTS	0.74 J	1.9	0.64	0.64	1	39108-34-4		08/16/2022 11:26
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		08/16/2022 11:26
PFNS	ND	1.9	0.44	0.44	1	68259-12-1		08/16/2022 11:26
PFUnDA	ND	2.0	0.53	0.53	1	2058-94-8		08/16/2022 11:26
NMeFOSAA	0.68 J	2.0	0.42	0.42	1	2355-31-9		08/16/2022 11:26
NEtFOSAA	3.9	2.0	0.54	0.54	1	2991-50-6		08/16/2022 11:26
PFDS	ND	1.9	0.44	0.44	1	335-77-3		08/16/2022 11:26
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		08/16/2022 11:26
MeFOSE	1.8 J	2.0	0.32	0.32	1	24448-09-7		08/16/2022 11:26
EtFOSE	0.59 J	2.0	0.49	0.49	1	1691-99-2		08/16/2022 11:26
11-CI-PF3OUdS	ND	1.8	0.43	0.43	1	763051-92-9		08/16/2022 11:26
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		08/16/2022 11:26
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		08/16/2022 11:26
PFTDA	ND	2.0	0.46	0.46	1	376-06-7		08/16/2022 11:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220718
 Lab Sample ID 10617957003
 Lab File ID B220815A_068
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 256mL
 Ical ID 220810B02
 CCal File B220815A_062
 Ending CCal File B220815A_075
 Blank File B220811C_004

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	14	74	50-150		08/16/2022 11:26
13C4 PFOA	20	14	72	50-150		08/16/2022 11:26
13C2 PFDA	20	11	56	50-150		08/16/2022 11:26
13C4 PFOS	19	9.5	51	50-150		08/16/2022 11:26

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	9.8	50	25-150		08/16/2022 11:26
13C5 PFPeA	20	12	62	25-150		08/16/2022 11:26
13C3 PFBS	18	15	81	25-150		08/16/2022 11:26
13C2 4:2FTS	18	29	157	25-150	R	08/16/2022 11:26
13C5 PFHxA	20	15	78	25-150		08/16/2022 11:26
13C4 PFHpA	20	17	87	25-150		08/16/2022 11:26
13C3 PFHxS	18	16	86	25-150		08/16/2022 11:26
13C2 6:2FTS	19	33	178	25-150	R	08/16/2022 11:26
13C8 PFOA	20	14	74	25-150		08/16/2022 11:26
13C9 PFNA	20	14	74	25-150		08/16/2022 11:26
13C8 PFOS	19	8.8	47	25-150		08/16/2022 11:26
13C2 8:2FTS	19	15	81	25-150		08/16/2022 11:26
13C6 PFDA	20	11	58	25-150		08/16/2022 11:26
d3-MeFOSAA	20	5.3	27	25-150		08/16/2022 11:26
13C8 PFOSA	20	10	52	25-150		08/16/2022 11:26
d5-EtFOSAA	20	7.1	36	25-150		08/16/2022 11:26
13C7 PFUdA	20	9.5	48	25-150		08/16/2022 11:26
13C2 PFDaA	20	7.7	39	25-150		08/16/2022 11:26
13C2 PFTeDA	20	7.6	39	25-150		08/16/2022 11:26
13C3 HFPO-DA	20	13	67	25-150		08/16/2022 11:26
d7-N-MeFOSE	20	6.4	33	10-150		08/16/2022 11:26
d9-N-EtFOSE	20	9.3	48	10-150		08/16/2022 11:26
d3-N-MeFOSA	20	4.5	23	10-150		08/16/2022 11:26
d5-N-EtFOSA	20	2.3	12	10-150		08/16/2022 11:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220718
 Lab Sample ID 10617957004
 Lab File ID B220815A_069
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 266mL
 Ical ID 220810B02
 CCal File B220815A_062
 Ending CCal File B220815A_075
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	1.0 J	1.9	0.41	0.41	1	375-22-4		08/16/2022 11:46
PFPeA	2.3	1.9	0.41	0.41	1	2706-90-3		08/16/2022 11:46
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		08/16/2022 11:46
PFBS	1.8	1.7	0.44	0.44	1	375-73-5		08/16/2022 11:46
PFHxA	4.0	1.9	0.41	0.41	1	307-24-4		08/16/2022 11:46
4:2 FTS	ND	1.8	0.52	0.52	1	757124-72-4		08/16/2022 11:46
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		08/16/2022 11:46
PFHpA	0.78 J	1.9	0.52	0.52	1	375-85-9		08/16/2022 11:46
DONA	ND	1.8	0.48	0.48	1	919005-14-4		08/16/2022 11:46
PFHxS	2.5	1.7	0.48	0.48	1	355-46-4		08/16/2022 11:46
PFOA	2.2	1.9	0.55	0.55	1	335-67-1		08/16/2022 11:46
6:2 FTS	5.1	1.8	0.61	0.61	1	27619-97-2		08/16/2022 11:46
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		08/16/2022 11:46
PFNA	ND	1.9	0.69	0.69	1	375-95-1		08/16/2022 11:46
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		08/16/2022 11:46
PFOS	1.9	1.7	0.51	0.51	1	1763-23-1		08/16/2022 11:46
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		08/16/2022 11:46
PFDA	ND	1.9	0.53	0.53	1	335-76-2		08/16/2022 11:46
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		08/16/2022 11:46
8:2 FTS	0.89 J	1.8	0.61	0.61	1	39108-34-4		08/16/2022 11:46
9-CI-PF3ON	ND	1.7	0.29	0.29	1	756426-58-1		08/16/2022 11:46
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		08/16/2022 11:46
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		08/16/2022 11:46
NMeFOSAA	0.80 J	1.9	0.41	0.41	1	2355-31-9		08/16/2022 11:46
NEtFOSAA	0.54 J	1.9	0.52	0.52	1	2991-50-6		08/16/2022 11:46
PFDS	ND	1.8	0.42	0.42	1	335-77-3		08/16/2022 11:46
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		08/16/2022 11:46
MeFOSE	2.5	1.9	0.31	0.31	1	24448-09-7		08/16/2022 11:46
EtFOSE	0.50 J	1.9	0.47	0.47	1	1691-99-2		08/16/2022 11:46
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		08/16/2022 11:46
PFTTrDA	ND	1.9	0.58	0.58	1	72629-94-8		08/16/2022 11:46
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		08/16/2022 11:46
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		08/16/2022 11:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220718
 Lab Sample ID 10617957004
 Lab File ID B220815A_069
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 266mL
 Ical ID 220810B02
 CCal File B220815A_062
 Ending CCal File B220815A_075
 Blank File B220811C_004

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	14	76	50-150		08/16/2022 11:46
13C4 PFOA	19	13	67	50-150		08/16/2022 11:46
13C2 PFDA	19	9.5	51	50-150		08/16/2022 11:46
13C4 PFOS	18	7.6	42	50-150	R	08/16/2022 11:46

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	9.0	48	25-150		08/16/2022 11:46
13C5 PFPeA	19	11	60	25-150		08/16/2022 11:46
13C3 PFBS	17	14	80	25-150		08/16/2022 11:46
13C2 4:2FTS	18	25	145	25-150		08/16/2022 11:46
13C5 PFHxA	19	15	82	25-150		08/16/2022 11:46
13C4 PFHpA	19	18	94	25-150		08/16/2022 11:46
13C3 PFHxS	18	15	85	25-150		08/16/2022 11:46
13C2 6:2FTS	18	32	177	25-150	R	08/16/2022 11:46
13C8 PFOA	19	13	71	25-150		08/16/2022 11:46
13C9 PFNA	19	12	65	25-150		08/16/2022 11:46
13C8 PFOS	18	8.0	45	25-150		08/16/2022 11:46
13C2 8:2FTS	18	11	64	25-150		08/16/2022 11:46
13C6 PFDA	19	9.6	51	25-150		08/16/2022 11:46
d3-MeFOSAA	19	4.4	23	25-150	R	08/16/2022 11:46
13C8 PFOSA	19	8.7	46	25-150		08/16/2022 11:46
d5-EtFOSAA	19	5.2	28	25-150		08/16/2022 11:46
13C7 PFUdA	19	7.3	39	25-150		08/16/2022 11:46
13C2 PFDoA	19	6.8	36	25-150		08/16/2022 11:46
13C2 PFTeDA	19	6.3	34	25-150		08/16/2022 11:46
13C3 HFPO-DA	19	12	66	25-150		08/16/2022 11:46
d7-N-MeFOSE	19	5.1	27	10-150		08/16/2022 11:46
d9-N-EtFOSE	19	8.0	43	10-150		08/16/2022 11:46
d3-N-MeFOSA	19	3.3	18	10-150		08/16/2022 11:46
d5-N-EtFOSA	19	2.5	14	10-150		08/16/2022 11:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220718
 Lab Sample ID 10617957005
 Lab File ID B220811C_024
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 263mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	1.9	0.42	0.42	1	375-22-4		08/12/2022 05:50
PFPeA	5.8	1.9	0.42	0.42	1	2706-90-3		08/12/2022 05:50
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		08/12/2022 05:50
PFBS	5.6	1.7	0.45	0.45	1	375-73-5		08/12/2022 05:50
PFHxA	8.6	1.9	0.42	0.42	1	307-24-4		08/12/2022 05:50
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		08/12/2022 05:50
PFPeS	1.5 J	1.8	0.45	0.45	1	2706-91-4		08/12/2022 05:50
PFHpA	2.4	1.9	0.52	0.52	1	375-85-9		08/12/2022 05:50
DONA	ND	1.8	0.49	0.49	1	919005-14-4		08/12/2022 05:50
PFHxS	15	1.7	0.48	0.48	1	355-46-4		08/12/2022 05:50
PFOA	7.6	1.9	0.56	0.56	1	335-67-1		08/12/2022 05:50
6:2 FTS	2.7	1.8	0.61	0.61	1	27619-97-2		08/12/2022 05:50
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		08/12/2022 05:50
PFNA	ND	1.9	0.70	0.70	1	375-95-1		08/12/2022 05:50
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		08/12/2022 05:50
PFOS	7.6	1.8	0.52	0.52	1	1763-23-1		08/12/2022 05:50
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		08/12/2022 05:50
PFDA	ND	1.9	0.54	0.54	1	335-76-2		08/12/2022 05:50
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		08/12/2022 05:50
8:2 FTS	1.0 J	1.8	0.62	0.62	1	39108-34-4		08/12/2022 05:50
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		08/12/2022 05:50
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		08/12/2022 05:50
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		08/12/2022 05:50
NMeFOSAA	1.0 J	1.9	0.41	0.41	1	2355-31-9		08/12/2022 05:50
NEtFOSAA	1.7 J	1.9	0.53	0.53	1	2991-50-6		08/12/2022 05:50
PFDS	ND	1.8	0.43	0.43	1	335-77-3		08/12/2022 05:50
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		08/12/2022 05:50
MeFOSE	24	1.9	0.31	0.31	1	24448-09-7		08/12/2022 05:50
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		08/12/2022 05:50
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		08/12/2022 05:50
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		08/12/2022 05:50
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		08/12/2022 05:50
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		08/12/2022 05:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220718
 Lab Sample ID 10617957005
 Lab File ID B220811C_024
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 263mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	18	97	50-150		08/12/2022 05:50
13C4 PFOA	19	16	83	50-150		08/12/2022 05:50
13C2 PFDA	19	9.6	50	50-150		08/12/2022 05:50
13C4 PFOS	18	9.6	53	50-150		08/12/2022 05:50

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	14	74	25-150		08/12/2022 05:50
13C5 PFPeA	19	17	89	25-150		08/12/2022 05:50
13C3 PFBS	18	16	93	25-150		08/12/2022 05:50
13C2 4:2FTS	18	33	185	25-150	R	08/12/2022 05:50
13C5 PFHxA	19	18	92	25-150		08/12/2022 05:50
13C4 PFHpA	19	20	103	25-150		08/12/2022 05:50
13C3 PFHxS	18	17	94	25-150		08/12/2022 05:50
13C2 6:2FTS	18	33	185	25-150	R	08/12/2022 05:50
13C8 PFOA	19	15	81	25-150		08/12/2022 05:50
13C9 PFNA	19	15	76	25-150		08/12/2022 05:50
13C8 PFOS	18	9.2	50	25-150		08/12/2022 05:50
13C2 8:2FTS	18	15	85	25-150		08/12/2022 05:50
13C6 PFDA	19	10.0	53	25-150		08/12/2022 05:50
d3-MeFOSAA	19	5.3	28	25-150		08/12/2022 05:50
13C8 PFOSA	19	9.6	50	25-150		08/12/2022 05:50
d5-EtFOSAA	19	8.4	44	25-150		08/12/2022 05:50
13C7 PFUdA	19	8.4	44	25-150		08/12/2022 05:50
13C2 PFDoA	19	7.8	41	25-150		08/12/2022 05:50
13C2 PFTeDA	19	8.9	47	25-150		08/12/2022 05:50
13C3 HFPO-DA	19	15	78	25-150		08/12/2022 05:50
d7-N-MeFOSE	19	2.3	12	10-150		08/12/2022 05:50
d9-N-EtFOSE	19	7.3	39	10-150		08/12/2022 05:50
d3-N-MeFOSA	19	7.3	38	10-150		08/12/2022 05:50
d5-N-EtFOSA	19	4.3	23	10-150		08/12/2022 05:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220719
 Lab Sample ID 10617957006
 Lab File ID B220811C_026
 Matrix Industrial_Water
 Collected 07/19/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 256mL
 Ical ID 220810B02
 CCal File B220811C_025
 Ending CCal File B220811C_035
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.9	2.0	0.43	0.43	1	375-22-4		08/12/2022 06:30
PFPeA	20	2.0	0.43	0.43	1	2706-90-3		08/12/2022 06:30
HFPO-DA	ND	2.0	0.52	0.52	1	13252-13-6		08/12/2022 06:30
PFBS	3.0	1.7	0.46	0.46	1	375-73-5		08/12/2022 06:30
PFHxA	17	2.0	0.43	0.43	1	307-24-4		08/12/2022 06:30
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		08/12/2022 06:30
PFPeS	0.55 J	1.8	0.46	0.46	1	2706-91-4		08/12/2022 06:30
PFHpA	1.8 J	2.0	0.54	0.54	1	375-85-9		08/12/2022 06:30
DONA	ND	1.8	0.50	0.50	1	919005-14-4		08/12/2022 06:30
PFHxS	7.0	1.8	0.50	0.50	1	355-46-4		08/12/2022 06:30
PFOA	8.2	2.0	0.57	0.57	1	335-67-1		08/12/2022 06:30
6:2 FTS	1.5 J	1.9	0.63	0.63	1	27619-97-2		08/12/2022 06:30
PFHpS	ND	1.9	0.40	0.40	1	375-92-8		08/12/2022 06:30
PFNA	ND	2.0	0.72	0.72	1	375-95-1		08/12/2022 06:30
PFOSAm	ND	2.0	0.80	0.80	1	754-91-6		08/12/2022 06:30
PFOS	4.5	1.8	0.53	0.53	1	1763-23-1		08/12/2022 06:30
MeFOSA	ND	2.0	0.50	0.50	1	31506-32-8		08/12/2022 06:30
PFDA	1.7 J	2.0	0.55	0.55	1	335-76-2		08/12/2022 06:30
EtFOSAm	ND	2.0	0.59	0.59	1	4151-50-2		08/12/2022 06:30
8:2 FTS	ND	1.9	0.64	0.64	1	39108-34-4		08/12/2022 06:30
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		08/12/2022 06:30
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		08/12/2022 06:30
PFUnDA	ND	2.0	0.53	0.53	1	2058-94-8		08/12/2022 06:30
NMeFOSAA	1.4 J	2.0	0.42	0.42	1	2355-31-9		08/12/2022 06:30
NEtFOSAA	0.72 J	2.0	0.54	0.54	1	2991-50-6		08/12/2022 06:30
PFDS	ND	1.9	0.44	0.44	1	335-77-3		08/12/2022 06:30
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		08/12/2022 06:30
MeFOSE	ND	2.0	0.32	0.32	1	24448-09-7		08/12/2022 06:30
EtFOSE	ND	2.0	0.48	0.48	1	1691-99-2		08/12/2022 06:30
11-CI-PF3OUdS	ND	1.8	0.43	0.43	1	763051-92-9		08/12/2022 06:30
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		08/12/2022 06:30
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		08/12/2022 06:30
PFTDA	ND	2.0	0.46	0.46	1	376-06-7		08/12/2022 06:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220719
 Lab Sample ID 10617957006
 Lab File ID B220811C_026
 Matrix Industrial_Water
 Collected 07/19/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 256mL
 Ical ID 220810B02
 CCal File B220811C_025
 Ending CCal File B220811C_035
 Blank File B220811C_004

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	20	105	50-150		08/12/2022 06:30
13C4 PFOA	20	18	94	50-150		08/12/2022 06:30
13C2 PFDA	20	20	102	50-150		08/12/2022 06:30
13C4 PFOS	19	18	98	50-150		08/12/2022 06:30

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	15	77	25-150		08/12/2022 06:30
13C5 PFPeA	20	17	89	25-150		08/12/2022 06:30
13C3 PFBS	18	18	98	25-150		08/12/2022 06:30
13C2 4:2FTS	18	20	112	25-150		08/12/2022 06:30
13C5 PFHxA	20	19	99	25-150		08/12/2022 06:30
13C4 PFHpA	20	19	98	25-150		08/12/2022 06:30
13C3 PFHxS	18	18	98	25-150		08/12/2022 06:30
13C2 6:2FTS	19	20	110	25-150		08/12/2022 06:30
13C8 PFOA	20	18	92	25-150		08/12/2022 06:30
13C9 PFNA	20	18	94	25-150		08/12/2022 06:30
13C8 PFOS	19	16	86	25-150		08/12/2022 06:30
13C2 8:2FTS	19	18	96	25-150		08/12/2022 06:30
13C6 PFDA	20	21	109	25-150		08/12/2022 06:30
d3-MeFOSAA	20	16	80	25-150		08/12/2022 06:30
13C8 PFOSA	20	11	55	25-150		08/12/2022 06:30
d5-EtFOSAA	20	15	77	25-150		08/12/2022 06:30
13C7 PFUdA	20	17	86	25-150		08/12/2022 06:30
13C2 PFDaA	20	14	73	25-150		08/12/2022 06:30
13C2 PFTeDA	20	10	53	25-150		08/12/2022 06:30
13C3 HFPO-DA	20	15	79	25-150		08/12/2022 06:30
d7-N-MeFOSE	20	6.0	31	10-150		08/12/2022 06:30
d9-N-EtFOSE	20	6.0	31	10-150		08/12/2022 06:30
d3-N-MeFOSA	20	1.7	9	10-150	R	08/12/2022 06:30
d5-N-EtFOSA	20	1.5	8	10-150	R	08/12/2022 06:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKTM
 Lab Sample ID BLANK-100315
 Lab File ID B220811C_004
 Matrix Water
 Collected 07/28/2022 09:25
 Received 07/28/2022 09:25
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 250mL
 Ical ID 220810B02
 CCal File B220811C_002
 Ending CCal File B220811C_014
 Blank File

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.44	0.44	1	375-22-4		08/11/2022 23:10
PFPeA	ND	2.0	0.44	0.44	1	2706-90-3		08/11/2022 23:10
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		08/11/2022 23:10
PFBS	ND	1.8	0.47	0.47	1	375-73-5		08/11/2022 23:10
PFHxA	ND	2.0	0.44	0.44	1	307-24-4		08/11/2022 23:10
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		08/11/2022 23:10
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		08/11/2022 23:10
PFHpA	ND	2.0	0.55	0.55	1	375-85-9		08/11/2022 23:10
DONA	ND	1.9	0.51	0.51	1	919005-14-4		08/11/2022 23:10
PFHxS	ND	1.8	0.51	0.51	1	355-46-4		08/11/2022 23:10
PFOA	ND	2.0	0.58	0.58	1	335-67-1		08/11/2022 23:10
6:2 FTS	ND	1.9	0.64	0.64	1	27619-97-2		08/11/2022 23:10
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		08/11/2022 23:10
PFNA	ND	2.0	0.74	0.74	1	375-95-1		08/11/2022 23:10
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		08/11/2022 23:10
PFOS	ND	1.8	0.55	0.55	1	1763-23-1		08/11/2022 23:10
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		08/11/2022 23:10
PFDA	ND	2.0	0.56	0.56	1	335-76-2		08/11/2022 23:10
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		08/11/2022 23:10
8:2 FTS	ND	1.9	0.65	0.65	1	39108-34-4		08/11/2022 23:10
9-CI-PF3ON	ND	1.9	0.30	0.30	1	756426-58-1		08/11/2022 23:10
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		08/11/2022 23:10
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		08/11/2022 23:10
NMeFOSAA	ND	2.0	0.43	0.43	1	2355-31-9		08/11/2022 23:10
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		08/11/2022 23:10
PFDS	ND	1.9	0.45	0.45	1	335-77-3		08/11/2022 23:10
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		08/11/2022 23:10
MeFOSE	ND	2.0	0.33	0.33	1	24448-09-7		08/11/2022 23:10
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		08/11/2022 23:10
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		08/11/2022 23:10
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		08/11/2022 23:10
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		08/11/2022 23:10
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		08/11/2022 23:10

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKTM
 Lab Sample ID BLANK-100315
 Lab File ID B220811C_004
 Matrix Water
 Collected 07/28/2022 09:25
 Received 07/28/2022 09:25
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 250mL
 Ical ID 220810B02
 CCal File B220811C_002
 Ending CCal File B220811C_014
 Blank File

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	17	87	50-150		08/11/2022 23:10
13C4 PFOA	20	20	99	50-150		08/11/2022 23:10
13C2 PFDA	20	17	85	50-150		08/11/2022 23:10
13C4 PFOS	19	19	98	50-150		08/11/2022 23:10

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	18	92	50-150		08/11/2022 23:10
13C5 PFPeA	20	19	95	50-150		08/11/2022 23:10
13C3 PFBS	19	17	93	50-150		08/11/2022 23:10
13C2 4:2FTS	19	18	96	50-150		08/11/2022 23:10
13C5 PFHxA	20	19	96	50-150		08/11/2022 23:10
13C4 PFHpA	20	19	94	50-150		08/11/2022 23:10
13C3 PFHxS	19	18	93	50-150		08/11/2022 23:10
13C2 6:2FTS	19	17	89	50-150		08/11/2022 23:10
13C8 PFOA	20	17	85	50-150		08/11/2022 23:10
13C9 PFNA	20	19	94	50-150		08/11/2022 23:10
13C8 PFOS	19	17	88	50-150		08/11/2022 23:10
13C2 8:2FTS	19	17	91	50-150		08/11/2022 23:10
13C6 PFDA	20	18	88	50-150		08/11/2022 23:10
d3-MeFOSAA	20	14	72	50-150		08/11/2022 23:10
13C8 PFOSA	20	15	76	50-150		08/11/2022 23:10
d5-EtFOSAA	20	13	65	50-150		08/11/2022 23:10
13C7 PFUdA	20	15	75	50-150		08/11/2022 23:10
13C2 PFDoA	20	17	87	50-150		08/11/2022 23:10
13C2 PFTeDA	20	14	68	50-150		08/11/2022 23:10
13C3 HFPO-DA	20	19	96	50-150		08/11/2022 23:10
d7-N-MeFOSE	20	15	76	20-150		08/11/2022 23:10
d9-N-EtFOSE	20	14	68	20-150		08/11/2022 23:10
d3-N-MeFOSA	20	11	54	20-150		08/11/2022 23:10
d5-N-EtFOSA	20	11	54	20-150		08/11/2022 23:10

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-100316	Instrument ID	10LCMS02
Run File Name	B220811C_005	Column ID	118AB10133
Analyzed	08/11/2022 23:30	Ical ID	220810B02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	21	107	50-150	
13C4_PFOA	20	21	105	50-150	
13C2_PFDA	20	22	112	50-150	
13C4_PFOS	19	22	112	50-150	

Extracted Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	20	20	100	50-150	
13C5_PFPeA	20	20	101	50-150	
13C3_PFBFS	19	18	95	50-150	
13C2_4:2FTS	19	19	104	50-150	
13C5_PFHxA	20	19	95	50-150	
13C4_PFHpA	20	19	96	50-150	
13C3_PFHxS	19	18	93	50-150	
13C2_6:2FTS	19	19	102	50-150	
13C8_PFOA	20	19	96	50-150	
13C9_PFNA	20	19	93	50-150	
13C8_PFOS	19	19	97	50-150	
13C2_8:2FTS	19	20	102	50-150	
13C6_PFDA	20	18	88	50-150	
d3-MeFOSAA	20	16	79	50-150	
13C8_PFOA	20	17	84	50-150	
d5-EtFOSAA	20	17	83	50-150	
13C7_PFUdA	20	18	89	50-150	
13C2_PFDaA	20	18	90	50-150	
13C2_PFTeDA	20	16	81	50-150	
13C3_HFPO-DA	20	20	98	50-150	
d7-N-MeFOSE	20	17	84	20-150	
d9-N-EtFOSE	20	14	70	20-150	
d3-N-MeFOSA	20	11	54	20-150	
d5-N-EtFOSA	20	12	58	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-100316
 Run File Name B220811C_005
 Analyzed 08/11/2022 23:30
 Injected By NH

Instrument ID 10LCMS02
 Column ID 118AB10133
 Ical ID 220810B02
 Level L

Native Analytes

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.0	4.6	115	50-150		375-22-4
PFPeA	4.0	4.7	117	50-150		2706-90-3
HFPO-DA	4.0	4.1	103	50-150		13252-13-6
PFBS	3.5	4.2	117	50-150		375-73-5
PFHxA	4.0	4.7	117	50-150		307-24-4
4:2 FTS	3.7	4.1	108	50-150		757124-72-4
PFPeS	3.8	4.5	119	50-150		2706-91-4
PFHpA	4.0	4.6	116	50-150		375-85-9
DONA	3.8	4.4	117	50-150		919005-14-4
PFHxS	3.6	4.2	116	50-150		355-46-4
PFOA	4.0	4.4	110	50-150		335-67-1
6:2 FTS	3.8	4.0	105	50-150		27619-97-2
PFHpS	3.8	4.0	107	50-150		375-92-8
PFNA	4.0	5.1	127	50-150		375-95-1
PFOSAm	4.0	4.3	108	50-150		754-91-6
PFOS	3.7	3.8	103	50-150		1763-23-1
MeFOSA	4.0	4.6	114	50-150		31506-32-8
PFDA	4.0	4.2	104	50-150		335-76-2
EtFOSAm	4.0	3.9	98	50-150		4151-50-2
8:2 FTS	3.8	3.7	95	50-150		39108-34-4
9-CI-PF3ON	3.7	4.0	108	50-150		756426-58-1
PFNS	3.8	4.3	113	50-150		68259-12-1
PFUnDA	4.0	4.3	108	50-150		2058-94-8
NMeFOSAA	4.0	4.4	110	50-150		2355-31-9
NEtFOSAA	4.0	4.7	117	50-150		2991-50-6
PFDS	3.9	4.4	113	50-150		335-77-3
PFDOA	4.0	4.6	116	50-150		307-55-1
MeFOSE	4.0	4.0	99	50-150		24448-09-7
EtFOSE	4.0	4.1	101	50-150		1691-99-2
11-CI-PF3OUdS	3.8	4.3	113	50-150		763051-92-9
PFTrDA	4.0	4.7	117	50-150		72629-94-8
PFDoS	3.9	4.2	109	50-150		79780-39-5
PFTDA	4.0	3.7	93	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-100316
 Run File Name B220811C_005
 Analyzed 08/11/2022 23:30
 Injected By NH

Instrument ID 10LCMS02
 Column ID 118AB10133
 Ical ID 220810B02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.82	5.77	2439	
13C4 PFOA	N/A	N/A	7.08	7.07	2260	
13C2 PFDA	N/A	N/A	8.40	8.39	2172	
13C4 PFOS	N/A	N/A	8.86	8.88	2481	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.20	4.23	2178	
13C5 PFPeA	N/A	N/A	5.14	5.10	2698	
13C3 PFBS	N/A	N/A	6.05	6.02	2334	
13C2 4:2FTS	N/A	N/A	5.55	5.51	1134	
13C5 PFHxA	N/A	N/A	5.82	5.78	2326	
13C4 PFHpA	N/A	N/A	6.45	6.42	1993	
13C3 PFHxS	N/A	N/A	7.50	7.47	2313	
13C2 6:2FTS	N/A	N/A	6.75	6.73	1691	
13C8 PFOA	N/A	N/A	7.08	7.06	5288	
13C9 PFNA	N/A	N/A	7.74	7.71	2169	
13C8 PFOS	N/A	N/A	8.87	8.86	1751	
13C2 8:2FTS	N/A	N/A	8.02	8.00	1825	
13C6 PFDA	N/A	N/A	8.40	8.38	1928	
d3-MeFOSAA	N/A	N/A	8.26	8.25	1284	
13C8 PFOSA	N/A	N/A	10.44	10.42	1243	
d5-EtFOSAA	N/A	N/A	8.54	8.54	1255	
13C7 PFUdA	N/A	N/A	9.06	9.07	2277	
13C2 PFDoA	N/A	N/A	9.72	9.71	1734	
13C2 PFTeDA	N/A	N/A	11.04	11.02	1096	
13C3 HFPO-DA	N/A	N/A	6.07	6.04	1292	
d7-N-MeFOSE	N/A	N/A	12.42	12.44	45	
d9-N-EtFOSE	N/A	N/A	12.88	12.88	532	
d3-N-MeFOSA	N/A	N/A	12.62	12.65	933	
d5-N-EtFOSA	N/A	N/A	13.04	13.07	748	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-100316
 Run File Name B220811C_005
 Analyzed 08/11/2022 23:30
 Injected By NH

Instrument ID 10LCMS02
 Column ID 118AB10133
 Ical ID 220810B02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.21	4.23	159	
PFPeA	N/A	N/A	5.14	5.15	308	
HFPO-DA	0.30	0.27	6.08	6.07	597	
PFBS	0.48	0.42	6.05	6.02	777	
PFHxA	0.07	0.08	5.83	5.81	299	
4:2 FTS	0.82	0.85	5.56	5.54	12748	
PFPeS	0.42	0.42	6.79	6.79	1502	
PFHpA	0.27	0.32	6.46	6.44	21	
DONA	0.57	0.61	6.69	6.67	1057	
PFHxS	0.39	0.37	7.51	7.49	1217	
PFOA	0.39	0.36	7.09	7.08	254	
6:2 FTS	0.91	0.99	6.76	6.74	894	
PFHpS	0.39	0.43	8.20	8.20	1059	
PFNA	0.14	0.14	7.75	7.73	773	
PFOSAm	N/A	N/A	10.45	10.44	764	
PFOS	0.42	0.41	8.88	8.90	529	
MeFOSA	0.45	0.58	12.65	12.69	1050	
PFDA	0.15	0.17	8.40	8.40	506	
EtFOSAm	0.52	0.55	13.06	13.10	649	
8:2 FTS	0.89	0.84	8.03	8.02	5576	
9-CI-PF3ON	0.06	0.06	9.37	9.39	1186	
PFNS	0.47	0.52	9.55	9.58	1916	
PFUnDA	0.11	0.14	9.07	9.05	446	
NMeFOSAA	0.85	0.81	8.27	8.26	206	
NEtFOSAA	0.60	0.65	8.55	8.55	381	
PFDS	0.35	0.32	10.21	10.19	1559	
PFDOA	0.18	0.19	9.73	9.72	332	
MeFOSE	N/A	N/A	12.46	12.45	312	
EtFOSE	0.00	0.00	12.92	12.92	281	
11-CI-PF3OUdS	0.02	0.02	10.68	10.66	703	
PFTDA	0.16	0.15	10.39	10.37	386	
PFDoS	0.49	0.45	11.44	11.43	2189	
PFTDA	0.27	0.27	11.04	11.02	239	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

August 2022

September 29, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS
Pace Project No.: 10622043

Dear Mike Ursin:

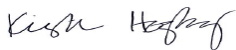
Enclosed are the analytical results for sample(s) received by the laboratory on August 18, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS

Pace Project No.: 10622043

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

A2LA Certification #: 2926.01*

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS
Pace Project No.: 10622043

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10622043001	Influent-02-20220815	Water	08/15/22 23:59	08/18/22 13:00
10622043002	Influent-07-20220815	Water	08/15/22 23:59	08/18/22 13:00
10622043003	Influent-08-20220815	Water	08/15/22 23:59	08/18/22 13:00
10622043004	Influent-11-20220815	Water	08/15/22 23:59	08/18/22 13:00
10622043005	Influent-18-20220815	Water	08/15/22 23:59	08/18/22 13:00
10622043006	Effluent 20220816	Water	08/16/22 23:59	08/18/22 13:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS
Pace Project No.: 10622043

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10622043001	Influent-02-20220815	SM 2540D	RM3	1
10622043002	Influent-07-20220815	SM 2540D	RM3	1
10622043003	Influent-08-20220815	SM 2540D	RM3	1
10622043004	Influent-11-20220815	SM 2540D	RM3	1
10622043005	Influent-18-20220815	SM 2540D	RM3	1
10622043006	Effluent 20220816	SM 2540D	RM3	1

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10622043

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: September 29, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10622043

Sample: Influent-02-20220815									
		Lab ID: 10622043001	Collected: 08/15/22 23:59		Received: 08/18/22 13:00		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	260	mg/L	10.0	5.0	1		08/22/22 11:55		

Sample: Influent-07-20220815									
		Lab ID: 10622043002	Collected: 08/15/22 23:59		Received: 08/18/22 13:00		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	208	mg/L	16.7	8.3	1		08/22/22 11:55		

Sample: Influent-08-20220815									
		Lab ID: 10622043003	Collected: 08/15/22 23:59		Received: 08/18/22 13:00		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	206	mg/L	16.7	8.3	1		08/22/22 11:55		

Sample: Influent-11-20220815									
		Lab ID: 10622043004	Collected: 08/15/22 23:59		Received: 08/18/22 13:00		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	251	mg/L	16.7	8.3	1		08/22/22 11:55		

Sample: Influent-18-20220815									
		Lab ID: 10622043005	Collected: 08/15/22 23:59		Received: 08/18/22 13:00		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	238	mg/L	16.7	8.3	1		08/22/22 11:55		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10622043

Sample: Effluent 20220816 **Lab ID: 10622043006** Collected: 08/16/22 23:59 Received: 08/18/22 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Pace Analytical Services - Minneapolis									
Total Suspended Solids	<5.0	mg/L	10.0	5.0	1		08/23/22 18:21		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10622043

QC Batch:	836046	Analysis Method:	SM 2540D
QC Batch Method:	SM 2540D	Analysis Description:	2540D Total Suspended Solids
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10622043001, 10622043002, 10622043003, 10622043004, 10622043005

METHOD BLANK: 4426947 Matrix: Water
Associated Lab Samples: 10622043001, 10622043002, 10622043003, 10622043004, 10622043005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	08/22/22 11:54	

LABORATORY CONTROL SAMPLE: 4426948

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	91.2	91	80-120	

SAMPLE DUPLICATE: 4426949

Parameter	Units	10621823006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

SAMPLE DUPLICATE: 4426950

Parameter	Units	10621823007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	6.3J		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10622043

QC Batch: 836296

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10622043006

METHOD BLANK: 4427998

Matrix: Water

Associated Lab Samples: 10622043006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	08/23/22 18:20	

LABORATORY CONTROL SAMPLE: 4427999

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	97.6	98	80-120	

SAMPLE DUPLICATE: 4428000

Parameter	Units	10621821006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

SAMPLE DUPLICATE: 4428001

Parameter	Units	10621821007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS

Pace Project No.: 10622043

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS
Pace Project No.: 10622043

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10622043001	Influent-02-20220815	SM 2540D	836046		
10622043002	Influent-07-20220815	SM 2540D	836046		
10622043003	Influent-08-20220815	SM 2540D	836046		
10622043004	Influent-11-20220815	SM 2540D	836046		
10622043005	Influent-18-20220815	SM 2540D	836046		
10622043006	Effluent 20220816	SM 2540D	836296		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number

WO#: 10622043



Company: **TRC**
Address: **708 Heartland Trail Suite 3000 Madison, WI 53717**

Billing Information:
Bill to MMSD
See P.O. no x

ALL SH
Container Preservat

Report To: **Mike Ursin**
Copy To: **Lydia Anzer, Jeff Ramey**

Email To: **mursin@trccompanies.com**
Site Collection Info/Address: **1610 Moorland Rd**

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Project Name/Number:
MMSD PFAS

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Analyses

Lab Profile/Line: **43476**

Phone:
Email:

Site/Facility ID #:
Purchase Order #: **2200666**

Compliance Monitoring?
 Yes No

Collected By (print):
Jennifer Faust

Turnaround Date Required:
Standard TAT

DW PWS ID #:
DW Location Code:

Collected By (signature):
Jennifer Faust

Rush:
 Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
(Expedite Charges Apply)

Immediately Packed on Ice:
 Yes No

Sample Disposal:
 Dispose as appropriate Return
 Archive:
 Hold:

Field Filtered (if applicable):
 Yes No
Analysis:

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
Influent-02-20220815	WW	Comp	8/15/22	0:00	8/15/22	23:59	3	X X
Influent-07-20220815	WW	↓	↓	↓	↓	↓	3	X X
Influent-08-20220815	WW	↓	↓	↓	↓	↓	3	X X
Influent-11-20220815	WW	↓	↓	↓	↓	↓	3	X X
Influent-18-20220815	WW	↓	↓	↓	↓	↓	3	X X
Effluent 20220816	WW	Comp	8/16/22	0:00	8/16/22	23:59	3	X X

PFAS WI-33 List

TSS

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signature Present Y N NA

Bottles Intact Y N NA

Correct Bottles Y N NA

Sufficient Volume Y N NA

Samples Received on Ice Y N NA

VOA - Headspace Acceptable Y N NA

USDA Regulated Soils Y N NA

Samples in Holding Time Y N NA

Residual Chlorine Present Y N NA

Cl Strips: _____

Sample pH Acceptable Y N NA

pH Strips: _____

Sulfide Present Y N NA

Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

001
002
003
004
005
006

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None
Packing Material Used:
Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
Lab Tracking #: **2802043**
Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: **14**
Cooler 1 Temp Upon Receipt: _____ oC
Cooler 1 Therm Corr. Factor: _____ oC
Cooler 1 Corrected Temp: **5.7** oC
Comments:

Relinquished by/Company: (Signature)
Jennifer Faust
Date/Time: **8/17/22**

Received by/Company: (Signature)
Paul
Date/Time: **8/18/22 13:00**

Relinquished by/Company: (Signature)
Date/Time:
Received by/Company: (Signature)
Date/Time:
Relinquished by/Company: (Signature)
Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:
Trip Blank Received: Y N NA
HCL MeOH TSP Other
Non Conformance(s): YES / NO
Page: _____ of: _____



DC#_ Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name:

TRL

Project #:

WO#: 10622043
PM: KNH Due Date: 08/25/22
CLIENT: TRC-WI

Courier:

Fed Ex, UPS, USPS, Client, Pace, SpeeDee, Commercial

Tracking Number:

S150 1604 3605

See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No

Seals Intact? Yes No

Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap, Bubble Bags, None, Other

Temp Blank? Yes No

Thermometer: T1(0461), T2(1336), T3(0459), T4(0254), T5(0489), T6(0235), T7(0042), 01339252/1710, 122639816, 140792808

Type of Ice: Wet, Blue, None, Dry, Melted

Did Samples Originate in West Virginia? Yes No Were All Container Temps Taken? Yes No N/A

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 5.8 °C

Average Corrected Temp (no temp blank only): °C See Exceptions ENV-FRM-MIN4-0142 1 Container

Correction Factor: Sub 0.1 Cooler Temp Corrected w/temp blank: 5.7 °C

USDA Regulated Soil: N/A, water sample/Other

Date/Initials of Person Examining Contents: 8/18/22 APC2

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Table with 2 columns: Location (check one) and COMMENTS. Rows include Chain of Custody Present and Filled Out?, Chain of Custody Relinquished?, Sampler Name and/or Signature on COC?, Samples Arrived within Hold Time?, Short Hold Time Analysis (<72 hr)?, Rush Turn Around Time Requested?, Sufficient Volume?, Correct Containers Used?, -Pace Containers Used?, Containers Intact?, Field Filtered Volume Received for Dissolved Tests?, Is sufficient information available to reconcile the samples to the COC?, All containers needing acid/base preservation have been checked?, Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS, Headspace in Methyl Mercury Container?, Extra labels present on soil VOA or WIDRO containers?, Trip Blank Present?, Trip Blank Custody Seals Present?

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Comments/Resolution:

Field Data Required? Yes No

Date/Time:

Project Manager Review: Kirsten Hogberg

Date: 8/19/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: ADCC

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Information:

Pace Project #: 10622043
Sample Receipt Date: 08/18/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



September 29, 2022

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

September 28, 2022

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance for PFAS. Reporting limits were set to MDL levels.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. This spike indicates that extraction performed as expected. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

Diminished/elevated extracted internal standard (EIS) recovery ("R" flagged) were present in samples and CCV, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Results that were below the calibration range were flagged "J". Values were flagged "I" where incorrect isotope ratios were obtained.

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix A

Sample Management

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Influent-02-20220815	10622043001	08/18/2022	Water
Influent-07-20220815	10622043002	08/18/2022	Water
Influent-08-20220815	10622043003	08/18/2022	Water
Influent-11-20220815	10622043004	08/18/2022	Water
Influent-18-20220815	10622043005	08/18/2022	Water
Effluent 20220816	10622043006	08/18/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number

WO#: 10622043



10622043

ALL SH

Container Preservation

Company: TRC
Address: 708 Heartland Trail Suite 3000
Madison, WI 53717

Billing Information:
Bill to MMSD
See P.O. no x

Report To: Mike Ursin
Copy To: Lydia Anzer, Jeff Ramey

Email To: mursin@trccompanies.com
Site Collection Info/Address: 1610 Moorland Rd

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Project Name/Number: MMSD PFAS

State: WI / madison County/City: [] PT [] MT [X] CT [] ET Time Zone Collected:

Analyses

Lab Profile/Line: 43476

Phone:
Email:

Site/Facility ID #:
Compliance Monitoring?
[] Yes [X] No

DW PWS ID #:
DW Location Code:

Collected By (print): Jennifer Faust

Purchase Order #: 2200666
Quote #: 2200666

Immediately Packed on Ice:
[X] Yes [] No

Collected By (signature): Jennifer Faust

Turnaround Date Required: Standard TAT

Field Filtered (if applicable):
[] Yes [X] No

Sample Disposal:
[X] Dispose as appropriate [] Return
[] Archive:
[] Hold:

Rush:
[] Same Day [] Next Day
[] 2 Day [] 3 Day [] 4 Day [] 5 Day
(Expedite Charges Apply)

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
Influent-02-20220815	WW	Comp	8/15/22	0:00	8/15/22	23:59	3	X X
Influent-07-20220815	WW						3	X X
Influent-08-20220815	WW						3	X X
Influent-11-20220815	WW						3	X X
Influent-18-20220815	WW						3	X X
Effluent 20220816	WW	Comp	8/16/22	0:00	8/16/22	23:59	3	X X

PFAS WI-33 List

TSS

Lab Sample Receipt Checklist:

- Custody Seals Present/Intact Y N NA
- Custody Signatures Present Y N NA
- Collector Signature Present Y N NA
- Bottles Intact Y N NA
- Correct Bottles Y N NA
- Sufficient Volume Y N NA
- Samples Received on Ice Y N NA
- VOA - Headspace Acceptable Y N NA
- USDA Regulated Soils Y N NA
- Samples in Holding Time Y N NA
- Residual Chlorine Present Y N NA
- Cl Strips: _____
- Sample pH Acceptable Y N NA
- pH Strips: _____
- Sulfide Present Y N NA
- Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

001
002
003
004
005
006

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None
Packing Material Used:
Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
Lab Tracking #: 2802043
Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: 14
Cooler 1 Temp Upon Receipt: _____ oC
Cooler 1 Therm Corr. Factor: _____ oC
Cooler 1 Corrected Temp: 5.7 oC
Comments:

Relinquished by/Company: (Signature)
Date/Time:
Relinquished by/Company: (Signature)
Date/Time:
Relinquished by/Company: (Signature)
Date/Time:

Received by/Company: (Signature)
Date/Time:
Received by/Company: (Signature)
Date/Time:
Received by/Company: (Signature)
Date/Time:

Date/Time:
Date/Time:
Date/Time:
Date/Time:
Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:
Trip Blank Received: Y N NA
HCL MeOH TSP Other
Non Conformance(s): YES / NO
Page: _____ of: _____

Report No: 10622043_ID36-DHR

Page 6 of 28



DC#_ Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name: TRL

Project #:

WO#: 10622043
PM: KNH Due Date: 08/25/22
CLIENT: TRC-WI

Courier: [X] Fed Ex [] UPS [] USPS [] Client
[] Pace [] SpeeDee [] Commercial

Tracking Number: S150 1604 3605

See Exceptions [] ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? [X] Yes [] No Seals Intact? [X] Yes [] No Biological Tissue Frozen? [] Yes [] No [X] N/A

Packing Material: [X] Bubble Wrap [] Bubble Bags [] None [] Other: Temp Blank? [X] Yes [] No

Thermometer: [] T1(0461) [] T2(1336) [] T3(0459) [X] T4(0254) [] T5(0489) [] T6(0235) Type of Ice: [X] Wet [] Blue [] None [] Dry [] Melted

Did Samples Originate in West Virginia? [] Yes [X] No Were All Container Temps Taken? [] Yes [] No [X] N/A

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: 5.8 °C Average Corrected Temp (no temp blank only): °C [] See Exceptions ENV-FRM-MIN4-0142 [] 1 Container
Correction Factor: Sub 0.1 Cooler Temp Corrected w/temp blank: 5.7 °C

USDA Regulated Soil: [X] N/A, water sample/Other: Date/Initials of Person Examining Contents: 8/18/22 APC2
Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. Did samples originate from a foreign source (internationally, including MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? [] Yes [] No Hawaii and Puerto Rico)? [] Yes [] No
If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Table with 2 columns: Location (check one): [] Duluth [X] Minneapolis [] Virginia and COMMENTS: 1. Chain of Custody Present and Filled Out? [X] Yes [] No 2. Chain of Custody Relinquished? [X] Yes [] No 3. Sampler Name and/or Signature on COC? [X] Yes [] No [] N/A 4. Samples Arrived within Hold Time? [X] Yes [] No 5. Short Hold Time Analysis (<72 hr)? [] Yes [X] No 6. Rush Turn Around Time Requested? [] Yes [X] No 7. Sufficient Volume? [X] Yes [] No 8. Correct Containers Used? [X] Yes [] No -Pace Containers Used? [X] Yes [] No 9. Containers Intact? [X] Yes [] No 10. Field Filtered Volume Received for Dissolved Tests? [] Yes [] No [X] N/A 11. Is sediment visible in the dissolved container? [] Yes [] No 12. Sample # [] NaOH [] HNO3 [] H2SO4 [] Zinc Acetate 13. Extra labels present on soil VOA or WIDRO containers? [] Yes [] No [X] N/A 14. Trip Blank Present? [] Yes [] No [X] N/A

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Date/Time: Field Data Required? [] Yes [] No
Comments/Resolution:

Project Manager Review: Kirsten Hogberg Date: 8/19/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers). Labeled by: ADCC

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10622043001-R	Influent-02-20220815	SW3535	33848	PFAS-36	B220922A_00
10622043002-R	Influent-07-20220815	SW3535	33848	PFAS-36	B220922A_00
10622043003-R	Influent-08-20220815	SW3535	33848	PFAS-36	B220922A_00
10622043004-R	Influent-11-20220815	SW3535	33848	PFAS-36	B220922A_00
10622043005-R	Influent-18-20220815	SW3535	33848	PFAS-36	B220922A_00
10622043006-R	Effluent 20220816	SW3535	33848	PFAS-36	B220922A_00



Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Isotope ratio out of specification
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix B

Sample Analysis Summary

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220815
 Lab Sample ID 10622043001-R
 Lab File ID B220922A_005
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 234mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.6	2.1	0.53	0.53	1	375-22-4		09/22/2022 12:51
PFPeA	4.1	2.1	0.88	0.88	1	2706-90-3		09/22/2022 12:51
HFPO-DA	ND	2.1	0.53	0.53	1	13252-13-6		09/22/2022 12:51
PFBS	2.5	1.9	0.52	0.52	1	375-73-5		09/22/2022 12:51
PFHxA	4.3	2.1	0.97	0.97	1	307-24-4		09/22/2022 12:51
4:2 FTS	ND	2.0	0.50	0.50	1	757124-72-4		09/22/2022 12:51
PFPeS	0.77 IJ	2.0	0.64	0.64	1	2706-91-4		09/22/2022 12:51
PFHpA	1.5 J	2.1	0.74	0.74	1	375-85-9		09/22/2022 12:51
DONA	ND	2.0	0.98	0.98	1	919005-14-4		09/22/2022 12:51
PFHxS	5.2 I	1.9	0.57	0.57	1	355-46-4		09/22/2022 12:51
PFOA	3.3	2.1	0.92	0.92	1	335-67-1		09/22/2022 12:51
6:2 FTS	1.1 J	2.0	0.72	0.72	1	27619-97-2		09/22/2022 12:51
PFHpS	ND	2.0	0.71	0.71	1	375-92-8		09/22/2022 12:51
PFNA	ND	2.1	0.85	0.85	1	375-95-1		09/22/2022 12:51
PFOSAm	ND	2.1	0.77	0.77	1	754-91-6		09/22/2022 12:51
PFOS	5.8	2.0	0.71	0.71	1	1763-23-1		09/22/2022 12:51
MeFOSA	ND	2.1	0.59	0.59	1	31506-32-8		09/22/2022 12:51
PFDA	ND	2.1	0.65	0.65	1	335-76-2		09/22/2022 12:51
EtFOSAm	ND	2.1	0.61	0.61	1	4151-50-2		09/22/2022 12:51
8:2 FTS	ND	2.1	0.54	0.54	1	39108-34-4		09/22/2022 12:51
9-CI-PF3ON	ND	2.0	0.50	0.50	1	756426-58-1		09/22/2022 12:51
PFNS	ND	2.1	0.63	0.63	1	68259-12-1		09/22/2022 12:51
PFUnDA	ND	2.1	0.52	0.52	1	2058-94-8		09/22/2022 12:51
NMeFOSAA	ND	2.1	0.74	0.74	1	2355-31-9		09/22/2022 12:51
NEtFOSAA	ND	2.1	0.87	0.87	1	2991-50-6		09/22/2022 12:51
PFDS	ND	2.1	0.69	0.69	1	335-77-3		09/22/2022 12:51
PFDOA	ND	2.1	0.51	0.51	1	307-55-1		09/22/2022 12:51
MeFOSE	1.3 J	2.1	0.56	0.56	1	24448-09-7		09/22/2022 12:51
EtFOSE	1.4 J	2.1	0.95	0.95	1	1691-99-2		09/22/2022 12:51
11-CI-PF3OUdS	ND	2.0	0.59	0.59	1	763051-92-9		09/22/2022 12:51
PFTTrDA	ND	2.1	0.67	0.67	1	72629-94-8		09/22/2022 12:51
PFDoS	2.5 I	2.1	0.63	0.63	1	79780-39-5		09/22/2022 12:51
PFTDA	ND	2.1	0.64	0.64	1	376-06-7		09/22/2022 12:51

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220815
 Lab Sample ID 10622043001-R
 Lab File ID B220922A_005
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 234mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	21	16	74	50-150		09/22/2022 12:51
13C4 PFOA	21	21	97	50-150		09/22/2022 12:51
13C2 PFDA	21	16	77	50-150		09/22/2022 12:51
13C4 PFOS	20	16	76	50-150		09/22/2022 12:51

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	21	13	61	25-150		09/22/2022 12:51
13C5 PFPeA	21	14	67	25-150		09/22/2022 12:51
13C3 PFBS	20	16	81	25-150		09/22/2022 12:51
13C2 4:2FTS	20	69	344	25-150	R	09/22/2022 12:51
13C5 PFHxA	21	16	76	25-150		09/22/2022 12:51
13C4 PFHpA	21	17	78	25-150		09/22/2022 12:51
13C3 PFHxS	20	19	93	25-150		09/22/2022 12:51
13C2 6:2FTS	20	69	338	25-150	R	09/22/2022 12:51
13C8 PFOA	21	20	94	25-150		09/22/2022 12:51
13C9 PFNA	21	19	91	25-150		09/22/2022 12:51
13C8 PFOS	20	12	61	25-150		09/22/2022 12:51
13C2 8:2FTS	20	42	206	25-150	R	09/22/2022 12:51
13C6 PFDA	21	17	77	25-150		09/22/2022 12:51
d3-MeFOSAA	21	11	52	25-150		09/22/2022 12:51
13C8 PFOSA	21	14	63	25-150		09/22/2022 12:51
d5-EtFOSAA	21	14	65	25-150		09/22/2022 12:51
13C7 PFUdA	21	13	60	25-150		09/22/2022 12:51
13C2 PFDoA	21	15	68	25-150		09/22/2022 12:51
13C2 PFTeDA	21	15	68	25-150		09/22/2022 12:51
13C3 HFPO-DA	21	12	54	25-150		09/22/2022 12:51
d7-N-MeFOSE	21	7.6	35	10-150		09/22/2022 12:51
d9-N-EtFOSE	21	8.2	38	10-150		09/22/2022 12:51
d3-N-MeFOSA	21	3.0	14	10-150		09/22/2022 12:51
d5-N-EtFOSA	21	5.5	26	10-150		09/22/2022 12:51

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220815
 Lab Sample ID 10622043002-R
 Lab File ID B220922A_007
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 223mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	2.2	0.56	0.56	1	375-22-4		09/22/2022 13:31
PFPeA	5.9	2.2	0.92	0.92	1	2706-90-3		09/22/2022 13:31
HFPO-DA	ND	2.2	0.55	0.55	1	13252-13-6		09/22/2022 13:31
PFBS	7.7	2.0	0.54	0.54	1	375-73-5		09/22/2022 13:31
PFHxA	10	2.2	1.0	1.0	1	307-24-4		09/22/2022 13:31
4:2 FTS	ND	2.1	0.52	0.52	1	757124-72-4		09/22/2022 13:31
PFPeS	1.5 IJ	2.1	0.68	0.68	1	2706-91-4		09/22/2022 13:31
PFHpA	2.8	2.2	0.77	0.77	1	375-85-9		09/22/2022 13:31
DONA	ND	2.1	1.0	1.0	1	919005-14-4		09/22/2022 13:31
PFHxS	11	2.0	0.60	0.60	1	355-46-4		09/22/2022 13:31
PFOA	6.9	2.2	0.97	0.97	1	335-67-1		09/22/2022 13:31
6:2 FTS	2.1 J	2.1	0.76	0.76	1	27619-97-2		09/22/2022 13:31
PFHpS	ND	2.1	0.75	0.75	1	375-92-8		09/22/2022 13:31
PFNA	ND	2.2	0.89	0.89	1	375-95-1		09/22/2022 13:31
PFOSAm	ND	2.2	0.81	0.81	1	754-91-6		09/22/2022 13:31
PFOS	6.7	2.1	0.75	0.75	1	1763-23-1		09/22/2022 13:31
MeFOSA	ND	2.2	0.62	0.62	1	31506-32-8		09/22/2022 13:31
PFDA	ND	2.2	0.68	0.68	1	335-76-2		09/22/2022 13:31
EtFOSAm	ND	2.2	0.64	0.64	1	4151-50-2		09/22/2022 13:31
8:2 FTS	0.57 J	2.2	0.57	0.57	1	39108-34-4		09/22/2022 13:31
9-CI-PF3ON	ND	2.1	0.53	0.53	1	756426-58-1		09/22/2022 13:31
PFNS	ND	2.2	0.66	0.66	1	68259-12-1		09/22/2022 13:31
PFUnDA	ND	2.2	0.54	0.54	1	2058-94-8		09/22/2022 13:31
NMeFOSAA	1.5 J	2.2	0.78	0.78	1	2355-31-9		09/22/2022 13:31
NEtFOSAA	1.5 J	2.2	0.91	0.91	1	2991-50-6		09/22/2022 13:31
PFDS	1.1 IJ	2.2	0.72	0.72	1	335-77-3		09/22/2022 13:31
PFDOA	ND	2.2	0.54	0.54	1	307-55-1		09/22/2022 13:31
MeFOSE	2.1 J	2.2	0.59	0.59	1	24448-09-7		09/22/2022 13:31
EtFOSE	ND	2.2	1.00	1.00	1	1691-99-2		09/22/2022 13:31
11-CI-PF3OUdS	ND	2.1	0.62	0.62	1	763051-92-9		09/22/2022 13:31
PFTTrDA	ND	2.2	0.70	0.70	1	72629-94-8		09/22/2022 13:31
PFDoS	3.0 I	2.2	0.66	0.66	1	79780-39-5		09/22/2022 13:31
PFTDA	ND	2.2	0.67	0.67	1	376-06-7		09/22/2022 13:31

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220815
 Lab Sample ID 10622043002-R
 Lab File ID B220922A_007
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 223mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	22	17	74	50-150		09/22/2022 13:31
13C4 PFOA	22	21	95	50-150		09/22/2022 13:31
13C2 PFDA	22	19	86	50-150		09/22/2022 13:31
13C4 PFOS	22	16	72	50-150		09/22/2022 13:31

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	22	13	59	25-150		09/22/2022 13:31
13C5 PFPeA	22	14	63	25-150		09/22/2022 13:31
13C3 PFBS	21	16	77	25-150		09/22/2022 13:31
13C2 4:2FTS	21	72	343	25-150	R	09/22/2022 13:31
13C5 PFHxA	22	16	71	25-150		09/22/2022 13:31
13C4 PFHpA	22	15	67	25-150		09/22/2022 13:31
13C3 PFHxS	21	19	88	25-150		09/22/2022 13:31
13C2 6:2FTS	21	71	334	25-150	R	09/22/2022 13:31
13C8 PFOA	22	18	81	25-150		09/22/2022 13:31
13C9 PFNA	22	19	86	25-150		09/22/2022 13:31
13C8 PFOS	22	12	55	25-150		09/22/2022 13:31
13C2 8:2FTS	22	37	172	25-150	R	09/22/2022 13:31
13C6 PFDA	22	16	70	25-150		09/22/2022 13:31
d3-MeFOSAA	22	10	46	25-150		09/22/2022 13:31
13C8 PFOSA	22	13	58	25-150		09/22/2022 13:31
d5-EtFOSAA	22	13	57	25-150		09/22/2022 13:31
13C7 PFUdA	22	13	57	25-150		09/22/2022 13:31
13C2 PFDoA	22	12	53	25-150		09/22/2022 13:31
13C2 PFTeDA	22	12	54	25-150		09/22/2022 13:31
13C3 HFPO-DA	22	12	53	25-150		09/22/2022 13:31
d7-N-MeFOSE	22	8.2	36	10-150		09/22/2022 13:31
d9-N-EtFOSE	22	7.9	35	10-150		09/22/2022 13:31
d3-N-MeFOSA	22	2.0	9	10-150	R	09/22/2022 13:31
d5-N-EtFOSA	22	3.2	14	10-150		09/22/2022 13:31

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220815
 Lab Sample ID 10622043003-R
 Lab File ID B220922A_009
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 244mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	10.0	2.1	0.51	0.51	1	375-22-4		09/22/2022 14:11
PFPeA	3.8	2.1	0.84	0.84	1	2706-90-3		09/22/2022 14:11
HFPO-DA	ND	2.1	0.51	0.51	1	13252-13-6		09/22/2022 14:11
PFBS	3.1	1.8	0.50	0.50	1	375-73-5		09/22/2022 14:11
PFHxA	4.7 I	2.1	0.93	0.93	1	307-24-4		09/22/2022 14:11
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		09/22/2022 14:11
PFPeS	ND	1.9	0.62	0.62	1	2706-91-4		09/22/2022 14:11
PFHpA	1.00 J	2.1	0.71	0.71	1	375-85-9		09/22/2022 14:11
DONA	ND	1.9	0.94	0.94	1	919005-14-4		09/22/2022 14:11
PFHxS	4.7 I	1.9	0.54	0.54	1	355-46-4		09/22/2022 14:11
PFOA	2.4	2.1	0.88	0.88	1	335-67-1		09/22/2022 14:11
6:2 FTS	ND	1.9	0.69	0.69	1	27619-97-2		09/22/2022 14:11
PFHpS	ND	1.9	0.69	0.69	1	375-92-8		09/22/2022 14:11
PFNA	ND	2.1	0.81	0.81	1	375-95-1		09/22/2022 14:11
PFOSAm	ND	2.1	0.74	0.74	1	754-91-6		09/22/2022 14:11
PFOS	3.4 I	1.9	0.68	0.68	1	1763-23-1		09/22/2022 14:11
MeFOSA	ND	2.1	0.57	0.57	1	31506-32-8		09/22/2022 14:11
PFDA	ND	2.1	0.62	0.62	1	335-76-2		09/22/2022 14:11
EtFOSAm	ND	2.1	0.59	0.59	1	4151-50-2		09/22/2022 14:11
8:2 FTS	0.65 IJ	2.0	0.52	0.52	1	39108-34-4		09/22/2022 14:11
9-CI-PF3ON	ND	1.9	0.48	0.48	1	756426-58-1		09/22/2022 14:11
PFNS	ND	2.0	0.60	0.60	1	68259-12-1		09/22/2022 14:11
PFUnDA	ND	2.1	0.50	0.50	1	2058-94-8		09/22/2022 14:11
NMeFOSAA	0.75 J	2.1	0.71	0.71	1	2355-31-9		09/22/2022 14:11
NEtFOSAA	0.86 J	2.1	0.84	0.84	1	2991-50-6		09/22/2022 14:11
PFDS	ND	2.0	0.66	0.66	1	335-77-3		09/22/2022 14:11
PFDOA	ND	2.1	0.49	0.49	1	307-55-1		09/22/2022 14:11
MeFOSE	1.5 J	2.1	0.53	0.53	1	24448-09-7		09/22/2022 14:11
EtFOSE	ND	2.1	0.91	0.91	1	1691-99-2		09/22/2022 14:11
11-CI-PF3OUdS	ND	1.9	0.57	0.57	1	763051-92-9		09/22/2022 14:11
PFTTrDA	ND	2.1	0.64	0.64	1	72629-94-8		09/22/2022 14:11
PFDoS	2.4 I	2.0	0.61	0.61	1	79780-39-5		09/22/2022 14:11
PFTDA	ND	2.1	0.62	0.62	1	376-06-7		09/22/2022 14:11

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220815
 Lab Sample ID 10622043003-R
 Lab File ID B220922A_009
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 244mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	21	16	78	50-150		09/22/2022 14:11
13C4 PFOA	21	17	81	50-150		09/22/2022 14:11
13C2 PFDA	21	16	80	50-150		09/22/2022 14:11
13C4 PFOS	20	15	74	50-150		09/22/2022 14:11

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	21	12	60	25-150		09/22/2022 14:11
13C5 PFPeA	21	14	67	25-150		09/22/2022 14:11
13C3 PFBS	19	15	81	25-150		09/22/2022 14:11
13C2 4:2FTS	19	68	354	25-150	R	09/22/2022 14:11
13C5 PFHxA	21	16	79	25-150		09/22/2022 14:11
13C4 PFHpA	21	15	74	25-150		09/22/2022 14:11
13C3 PFHxS	19	18	93	25-150		09/22/2022 14:11
13C2 6:2FTS	19	62	320	25-150	R	09/22/2022 14:11
13C8 PFOA	21	18	86	25-150		09/22/2022 14:11
13C9 PFNA	21	18	89	25-150		09/22/2022 14:11
13C8 PFOS	20	12	61	25-150		09/22/2022 14:11
13C2 8:2FTS	20	40	203	25-150	R	09/22/2022 14:11
13C6 PFDA	21	15	74	25-150		09/22/2022 14:11
d3-MeFOSAA	21	10	50	25-150		09/22/2022 14:11
13C8 PFOSA	21	14	66	25-150		09/22/2022 14:11
d5-EtFOSAA	21	13	64	25-150		09/22/2022 14:11
13C7 PFUdA	21	13	61	25-150		09/22/2022 14:11
13C2 PFDoA	21	12	56	25-150		09/22/2022 14:11
13C2 PFTeDA	21	11	54	25-150		09/22/2022 14:11
13C3 HFPO-DA	21	12	56	25-150		09/22/2022 14:11
d7-N-MeFOSE	21	8.4	41	10-150		09/22/2022 14:11
d9-N-EtFOSE	21	6.2	30	10-150		09/22/2022 14:11
d3-N-MeFOSA	21	2.9	14	10-150		09/22/2022 14:11
d5-N-EtFOSA	21	2.8	13	10-150		09/22/2022 14:11

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220815
 Lab Sample ID 10622043004-R
 Lab File ID B220922A_011
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 248mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.0	2.0	0.50	0.50	1	375-22-4		09/22/2022 14:51
PFPeA	2.4	2.0	0.83	0.83	1	2706-90-3		09/22/2022 14:51
HFPO-DA	ND	2.0	0.50	0.50	1	13252-13-6		09/22/2022 14:51
PFBS	2.4	1.8	0.49	0.49	1	375-73-5		09/22/2022 14:51
PFHxA	3.9 I	2.0	0.92	0.92	1	307-24-4		09/22/2022 14:51
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		09/22/2022 14:51
PFPeS	ND	1.9	0.61	0.61	1	2706-91-4		09/22/2022 14:51
PFHpA	0.99 J	2.0	0.69	0.69	1	375-85-9		09/22/2022 14:51
DONA	ND	1.9	0.93	0.93	1	919005-14-4		09/22/2022 14:51
PFHxS	3.0 I	1.8	0.54	0.54	1	355-46-4		09/22/2022 14:51
PFOA	2.4	2.0	0.87	0.87	1	335-67-1		09/22/2022 14:51
6:2 FTS	0.71 J	1.9	0.68	0.68	1	27619-97-2		09/22/2022 14:51
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		09/22/2022 14:51
PFNA	ND	2.0	0.80	0.80	1	375-95-1		09/22/2022 14:51
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		09/22/2022 14:51
PFOS	3.2 I	1.9	0.67	0.67	1	1763-23-1		09/22/2022 14:51
MeFOSA	ND	2.0	0.56	0.56	1	31506-32-8		09/22/2022 14:51
PFDA	0.64 J	2.0	0.61	0.61	1	335-76-2		09/22/2022 14:51
EtFOSAm	ND	2.0	0.58	0.58	1	4151-50-2		09/22/2022 14:51
8:2 FTS	1.7 J	1.9	0.51	0.51	1	39108-34-4		09/22/2022 14:51
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		09/22/2022 14:51
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		09/22/2022 14:51
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		09/22/2022 14:51
NMeFOSAA	ND	2.0	0.70	0.70	1	2355-31-9		09/22/2022 14:51
NEtFOSAA	ND	2.0	0.82	0.82	1	2991-50-6		09/22/2022 14:51
PFDS	ND	1.9	0.65	0.65	1	335-77-3		09/22/2022 14:51
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		09/22/2022 14:51
MeFOSE	1.3 J	2.0	0.53	0.53	1	24448-09-7		09/22/2022 14:51
EtFOSE	ND	2.0	0.90	0.90	1	1691-99-2		09/22/2022 14:51
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		09/22/2022 14:51
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		09/22/2022 14:51
PFDoS	1.8 IJ	2.0	0.60	0.60	1	79780-39-5		09/22/2022 14:51
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		09/22/2022 14:51

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220815
 Lab Sample ID 10622043004-R
 Lab File ID B220922A_011
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 248mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	15	77	50-150		09/22/2022 14:51
13C4 PFOA	20	17	82	50-150		09/22/2022 14:51
13C2 PFDA	20	13	66	50-150		09/22/2022 14:51
13C4 PFOS	19	14	72	50-150		09/22/2022 14:51

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	12	58	25-150		09/22/2022 14:51
13C5 PFPeA	20	12	60	25-150		09/22/2022 14:51
13C3 PFBS	19	15	80	25-150		09/22/2022 14:51
13C2 4:2FTS	19	56	298	25-150	R	09/22/2022 14:51
13C5 PFHxA	20	16	77	25-150		09/22/2022 14:51
13C4 PFHpA	20	14	69	25-150		09/22/2022 14:51
13C3 PFHxS	19	18	94	25-150		09/22/2022 14:51
13C2 6:2FTS	19	60	316	25-150	R	09/22/2022 14:51
13C8 PFOA	20	18	88	25-150		09/22/2022 14:51
13C9 PFNA	20	18	90	25-150		09/22/2022 14:51
13C8 PFOS	19	11	59	25-150		09/22/2022 14:51
13C2 8:2FTS	19	33	169	25-150	R	09/22/2022 14:51
13C6 PFDA	20	12	57	25-150		09/22/2022 14:51
d3-MeFOSAA	20	7.6	38	25-150		09/22/2022 14:51
13C8 PFOSA	20	13	66	25-150		09/22/2022 14:51
d5-EtFOSAA	20	10	51	25-150		09/22/2022 14:51
13C7 PFUdA	20	10	51	25-150		09/22/2022 14:51
13C2 PFDaA	20	9.3	46	25-150		09/22/2022 14:51
13C2 PFTeDA	20	11	55	25-150		09/22/2022 14:51
13C3 HFPO-DA	20	11	55	25-150		09/22/2022 14:51
d7-N-MeFOSE	20	8.9	44	10-150		09/22/2022 14:51
d9-N-EtFOSE	20	7.8	39	10-150		09/22/2022 14:51
d3-N-MeFOSA	20	3.2	16	10-150		09/22/2022 14:51
d5-N-EtFOSA	20	4.0	20	10-150		09/22/2022 14:51

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220815
 Lab Sample ID 10622043005-R
 Lab File ID B220922A_013
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 249mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	2.0	0.50	0.50	1	375-22-4		09/22/2022 15:31
PFPeA	5.8	2.0	0.82	0.82	1	2706-90-3		09/22/2022 15:31
HFPO-DA	ND	2.0	0.50	0.50	1	13252-13-6		09/22/2022 15:31
PFBS	7.3	1.8	0.49	0.49	1	375-73-5		09/22/2022 15:31
PFHxA	8.4	2.0	0.91	0.91	1	307-24-4		09/22/2022 15:31
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		09/22/2022 15:31
PFPeS	2.0	1.9	0.60	0.60	1	2706-91-4		09/22/2022 15:31
PFHpA	2.4	2.0	0.69	0.69	1	375-85-9		09/22/2022 15:31
DONA	ND	1.9	0.92	0.92	1	919005-14-4		09/22/2022 15:31
PFHxS	17	1.8	0.53	0.53	1	355-46-4		09/22/2022 15:31
PFOA	7.7	2.0	0.86	0.86	1	335-67-1		09/22/2022 15:31
6:2 FTS	2.5	1.9	0.68	0.68	1	27619-97-2		09/22/2022 15:31
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		09/22/2022 15:31
PFNA	ND	2.0	0.80	0.80	1	375-95-1		09/22/2022 15:31
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		09/22/2022 15:31
PFOS	9.9	1.9	0.67	0.67	1	1763-23-1		09/22/2022 15:31
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		09/22/2022 15:31
PFDA	ND	2.0	0.61	0.61	1	335-76-2		09/22/2022 15:31
EtFOSAm	ND	2.0	0.58	0.58	1	4151-50-2		09/22/2022 15:31
8:2 FTS	0.56 J	1.9	0.51	0.51	1	39108-34-4		09/22/2022 15:31
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		09/22/2022 15:31
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		09/22/2022 15:31
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		09/22/2022 15:31
NMeFOSAA	1.2 J	2.0	0.70	0.70	1	2355-31-9		09/22/2022 15:31
NEtFOSAA	1.6 J	2.0	0.82	0.82	1	2991-50-6		09/22/2022 15:31
PFDS	ND	1.9	0.64	0.64	1	335-77-3		09/22/2022 15:31
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		09/22/2022 15:31
MeFOSE	1.4 J	2.0	0.52	0.52	1	24448-09-7		09/22/2022 15:31
EtFOSE	ND	2.0	0.89	0.89	1	1691-99-2		09/22/2022 15:31
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		09/22/2022 15:31
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		09/22/2022 15:31
PFDoS	3.4 I	1.9	0.59	0.59	1	79780-39-5		09/22/2022 15:31
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		09/22/2022 15:31

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220815
 Lab Sample ID 10622043005-R
 Lab File ID B220922A_013
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 249mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	15	74	50-150		09/22/2022 15:31
13C4 PFOA	20	17	85	50-150		09/22/2022 15:31
13C2 PFDA	20	17	87	50-150		09/22/2022 15:31
13C4 PFOS	19	13	70	50-150		09/22/2022 15:31

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	12	59	25-150		09/22/2022 15:31
13C5 PFPeA	20	12	60	25-150		09/22/2022 15:31
13C3 PFBS	19	14	76	25-150		09/22/2022 15:31
13C2 4:2FTS	19	64	341	25-150	R	09/22/2022 15:31
13C5 PFHxA	20	14	70	25-150		09/22/2022 15:31
13C4 PFHpA	20	14	67	25-150		09/22/2022 15:31
13C3 PFHxS	19	16	83	25-150		09/22/2022 15:31
13C2 6:2FTS	19	58	303	25-150	R	09/22/2022 15:31
13C8 PFOA	20	16	81	25-150		09/22/2022 15:31
13C9 PFNA	20	16	77	25-150		09/22/2022 15:31
13C8 PFOS	19	11	57	25-150		09/22/2022 15:31
13C2 8:2FTS	19	35	181	25-150	R	09/22/2022 15:31
13C6 PFDA	20	13	65	25-150		09/22/2022 15:31
d3-MeFOSAA	20	8.4	42	25-150		09/22/2022 15:31
13C8 PFOSA	20	13	63	25-150		09/22/2022 15:31
d5-EtFOSAA	20	12	58	25-150		09/22/2022 15:31
13C7 PFUdA	20	11	56	25-150		09/22/2022 15:31
13C2 PFDoA	20	8.9	44	25-150		09/22/2022 15:31
13C2 PFTeDA	20	12	59	25-150		09/22/2022 15:31
13C3 HFPO-DA	20	10	52	25-150		09/22/2022 15:31
d7-N-MeFOSE	20	7.5	37	10-150		09/22/2022 15:31
d9-N-EtFOSE	20	7.2	36	10-150		09/22/2022 15:31
d3-N-MeFOSA	20	1.6	8	10-150	R	09/22/2022 15:31
d5-N-EtFOSA	20	2.5	12	10-150		09/22/2022 15:31

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220816
 Lab Sample ID 10622043006-R
 Lab File ID B220922A_015
 Matrix Industrial_Water
 Collected 08/16/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 224mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.8	2.2	0.56	0.56	1	375-22-4		09/22/2022 16:11
PFPeA	18	2.2	0.92	0.92	1	2706-90-3		09/22/2022 16:11
HFPO-DA	ND	2.2	0.55	0.55	1	13252-13-6		09/22/2022 16:11
PFBS	2.4	2.0	0.54	0.54	1	375-73-5		09/22/2022 16:11
PFHxA	16	2.2	1.0	1.0	1	307-24-4		09/22/2022 16:11
4:2 FTS	ND	2.1	0.52	0.52	1	757124-72-4		09/22/2022 16:11
PFPeS	ND	2.1	0.67	0.67	1	2706-91-4		09/22/2022 16:11
PFHpA	1.8 J	2.2	0.77	0.77	1	375-85-9		09/22/2022 16:11
DONA	ND	2.1	1.0	1.0	1	919005-14-4		09/22/2022 16:11
PFHxS	5.8	2.0	0.59	0.59	1	355-46-4		09/22/2022 16:11
PFOA	7.8	2.2	0.96	0.96	1	335-67-1		09/22/2022 16:11
6:2 FTS	0.83 J	2.1	0.75	0.75	1	27619-97-2		09/22/2022 16:11
PFHpS	ND	2.1	0.74	0.74	1	375-92-8		09/22/2022 16:11
PFNA	ND	2.2	0.89	0.89	1	375-95-1		09/22/2022 16:11
PFOSAm	ND	2.2	0.80	0.80	1	754-91-6		09/22/2022 16:11
PFOS	3.3	2.1	0.74	0.74	1	1763-23-1		09/22/2022 16:11
MeFOSA	ND	2.2	0.62	0.62	1	31506-32-8		09/22/2022 16:11
PFDA	1.3 J	2.2	0.68	0.68	1	335-76-2		09/22/2022 16:11
EtFOSAm	ND	2.2	0.64	0.64	1	4151-50-2		09/22/2022 16:11
8:2 FTS	ND	2.1	0.56	0.56	1	39108-34-4		09/22/2022 16:11
9-CI-PF3ON	ND	2.1	0.52	0.52	1	756426-58-1		09/22/2022 16:11
PFNS	ND	2.1	0.65	0.65	1	68259-12-1		09/22/2022 16:11
PFUnDA	ND	2.2	0.54	0.54	1	2058-94-8		09/22/2022 16:11
NMeFOSAA	1.2 J	2.2	0.77	0.77	1	2355-31-9		09/22/2022 16:11
NEtFOSAA	ND	2.2	0.91	0.91	1	2991-50-6		09/22/2022 16:11
PFDS	ND	2.2	0.71	0.71	1	335-77-3		09/22/2022 16:11
PFDOA	ND	2.2	0.54	0.54	1	307-55-1		09/22/2022 16:11
MeFOSE	ND	2.2	0.58	0.58	1	24448-09-7		09/22/2022 16:11
EtFOSE	ND	2.2	0.99	0.99	1	1691-99-2		09/22/2022 16:11
11-CI-PF3OUdS	ND	2.1	0.62	0.62	1	763051-92-9		09/22/2022 16:11
PFTTrDA	ND	2.2	0.69	0.69	1	72629-94-8		09/22/2022 16:11
PFDoS	ND	2.2	0.66	0.66	1	79780-39-5		09/22/2022 16:11
PFTDA	ND	2.2	0.67	0.67	1	376-06-7		09/22/2022 16:11

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220816
 Lab Sample ID 10622043006-R
 Lab File ID B220922A_015
 Matrix Industrial_Water
 Collected 08/16/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 224mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	22	23	102	50-150		09/22/2022 16:11
13C4 PFOA	22	23	104	50-150		09/22/2022 16:11
13C2 PFDA	22	30	134	50-150		09/22/2022 16:11
13C4 PFOS	21	23	108	50-150		09/22/2022 16:11

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	22	19	83	25-150		09/22/2022 16:11
13C5 PFPeA	22	23	103	25-150		09/22/2022 16:11
13C3 PFBS	21	23	112	25-150		09/22/2022 16:11
13C2 4:2FTS	21	61	292	25-150	R	09/22/2022 16:11
13C5 PFHxA	22	25	113	25-150		09/22/2022 16:11
13C4 PFHpA	22	26	118	25-150		09/22/2022 16:11
13C3 PFHxS	21	23	108	25-150		09/22/2022 16:11
13C2 6:2FTS	21	47	224	25-150	R	09/22/2022 16:11
13C8 PFOA	22	26	115	25-150		09/22/2022 16:11
13C9 PFNA	22	25	114	25-150		09/22/2022 16:11
13C8 PFOS	21	24	112	25-150		09/22/2022 16:11
13C2 8:2FTS	21	35	163	25-150	R	09/22/2022 16:11
13C6 PFDA	22	28	124	25-150		09/22/2022 16:11
d3-MeFOSAA	22	25	111	25-150		09/22/2022 16:11
13C8 PFOSA	22	18	80	25-150		09/22/2022 16:11
d5-EtFOSAA	22	27	121	25-150		09/22/2022 16:11
13C7 PFUdA	22	32	143	25-150		09/22/2022 16:11
13C2 PFDoA	22	25	112	25-150		09/22/2022 16:11
13C2 PFTeDA	22	18	82	25-150		09/22/2022 16:11
13C3 HFPO-DA	22	19	85	25-150		09/22/2022 16:11
d7-N-MeFOSE	22	13	58	10-150		09/22/2022 16:11
d9-N-EtFOSE	22	12	55	10-150		09/22/2022 16:11
d3-N-MeFOSA	22	9.8	44	10-150		09/22/2022 16:11
d5-N-EtFOSA	22	7.8	35	10-150		09/22/2022 16:11

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKFK
 Lab Sample ID BLANK-101116
 Lab File ID B220916B_012
 Matrix Water
 Collected 09/08/2022 15:33
 Received 09/08/2022 15:33
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 250mL
 Ical ID 220916A02
 CCal File B220916B_002
 Ending CCal File B220916B_014
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.50	0.50	1	375-22-4		09/16/2022 17:12
PFPeA	ND	2.0	0.82	0.82	1	2706-90-3		09/16/2022 17:12
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		09/16/2022 17:12
PFBS	ND	1.8	0.48	0.48	1	375-73-5		09/16/2022 17:12
PFHxA	ND	2.0	0.91	0.91	1	307-24-4		09/16/2022 17:12
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		09/16/2022 17:12
PFPeS	ND	1.9	0.60	0.60	1	2706-91-4		09/16/2022 17:12
PFHpA	ND	2.0	0.69	0.69	1	375-85-9		09/16/2022 17:12
DONA	ND	1.9	0.92	0.92	1	919005-14-4		09/16/2022 17:12
PFHxS	ND	1.8	0.53	0.53	1	355-46-4		09/16/2022 17:12
PFOA	ND	2.0	0.86	0.86	1	335-67-1		09/16/2022 17:12
6:2 FTS	ND	1.9	0.68	0.68	1	27619-97-2		09/16/2022 17:12
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		09/16/2022 17:12
PFNA	ND	2.0	0.79	0.79	1	375-95-1		09/16/2022 17:12
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		09/16/2022 17:12
PFOS	ND	1.8	0.67	0.67	1	1763-23-1		09/16/2022 17:12
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		09/16/2022 17:12
PFDA	ND	2.0	0.61	0.61	1	335-76-2		09/16/2022 17:12
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		09/16/2022 17:12
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		09/16/2022 17:12
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		09/16/2022 17:12
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		09/16/2022 17:12
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		09/16/2022 17:12
NMeFOSAA	ND	2.0	0.69	0.69	1	2355-31-9		09/16/2022 17:12
NEtFOSAA	ND	2.0	0.81	0.81	1	2991-50-6		09/16/2022 17:12
PFDS	ND	1.9	0.64	0.64	1	335-77-3		09/16/2022 17:12
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		09/16/2022 17:12
MeFOSE	ND	2.0	0.52	0.52	1	24448-09-7		09/16/2022 17:12
EtFOSE	ND	2.0	0.89	0.89	1	1691-99-2		09/16/2022 17:12
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		09/16/2022 17:12
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		09/16/2022 17:12
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		09/16/2022 17:12
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		09/16/2022 17:12

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKFK	Total Amount Extracted	250mL
Lab Sample ID	BLANK-101116	Ical ID	220916A02
Lab File ID	B220916B_012	CCal File	B220916B_002
Matrix	Water	Ending CCal File	B220916B_014
Collected	09/08/2022 15:33	Blank File	B220916B_012
Received	09/08/2022 15:33		
Extraction Date	09/09/2022 16:07		

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	22	109	50-150		09/16/2022 17:12
13C4 PFOA	20	23	115	50-150		09/16/2022 17:12
13C2 PFDA	20	24	120	50-150		09/16/2022 17:12
13C4 PFOS	19	22	116	50-150		09/16/2022 17:12

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	22	112	50-150		09/16/2022 17:12
13C5 PFPeA	20	22	112	50-150		09/16/2022 17:12
13C3 PFBS	19	19	102	50-150		09/16/2022 17:12
13C2 4:2FTS	19	20	109	50-150		09/16/2022 17:12
13C5 PFHxA	20	21	103	50-150		09/16/2022 17:12
13C4 PFHpA	20	19	97	50-150		09/16/2022 17:12
13C3 PFHxS	19	19	100	50-150		09/16/2022 17:12
13C2 6:2FTS	19	21	111	50-150		09/16/2022 17:12
13C8 PFOA	20	21	106	50-150		09/16/2022 17:12
13C9 PFNA	20	20	98	50-150		09/16/2022 17:12
13C8 PFOS	19	18	92	50-150		09/16/2022 17:12
13C2 8:2FTS	19	16	81	50-150		09/16/2022 17:12
13C6 PFDA	20	19	95	50-150		09/16/2022 17:12
d3-MeFOSAA	20	14	72	50-150		09/16/2022 17:12
13C8 PFOSA	20	12	61	50-150		09/16/2022 17:12
d5-EtFOSAA	20	15	73	50-150		09/16/2022 17:12
13C7 PFUdA	20	16	80	50-150		09/16/2022 17:12
13C2 PFDoA	20	26	132	50-150		09/16/2022 17:12
13C2 PFTeDA	20	16	80	50-150		09/16/2022 17:12
13C3 HFPO-DA	20	21	106	50-150		09/16/2022 17:12
d7-N-MeFOSE	20	7.7	39	20-150		09/16/2022 17:12
d9-N-EtFOSE	20	8.7	44	20-150		09/16/2022 17:12
d3-N-MeFOSA	20	7.0	35	20-150		09/16/2022 17:12
d5-N-EtFOSA	20	6.4	32	20-150		09/16/2022 17:12

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101117
 Run File Name B220916B_013
 Analyzed 09/16/2022 17:32
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220916A02
 Level L

Injection Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	22	111	50-150	
13C4_PFOA	20	22	112	50-150	
13C2_PFDA	20	22	110	50-150	
13C4_PFOS	19	22	115	50-150	

Extracted Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	20	21	105	50-150	
13C5_PFPeA	20	22	109	50-150	
13C3_PFBFS	19	18	98	50-150	
13C2_4:2FTS	19	19	101	50-150	
13C5_PFHxA	20	22	108	50-150	
13C4_PFHpA	20	21	105	50-150	
13C3_PFHxS	19	18	95	50-150	
13C2_6:2FTS	19	18	94	50-150	
13C8_PFOA	20	20	98	50-150	
13C9_PFNA	20	19	95	50-150	
13C8_PFOS	19	17	90	50-150	
13C2_8:2FTS	19	15	79	50-150	
13C6_PFDA	20	20	98	50-150	
d3-MeFOSAA	20	14	68	50-150	
13C8_PFOA	20	13	65	50-150	
d5-EtFOSAA	20	14	68	50-150	
13C7_PFUdA	20	17	83	50-150	
13C2_PFDaA	20	22	108	50-150	
13C2_PFTeDA	20	13	66	50-150	
13C3_HFPO-DA	20	18	91	50-150	
d7-N-MeFOSE	20	8.7	44	20-150	
d9-N-EtFOSE	20	8.5	42	20-150	
d3-N-MeFOSA	20	4.5	23	20-150	
d5-N-EtFOSA	20	4.1	21	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101117
 Run File Name B220916B_013
 Analyzed 09/16/2022 17:32
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220916A02
 Level L

Native Analytes

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.0	4.4	109	50-150		375-22-4
PFPeA	4.0	4.4	110	50-150		2706-90-3
HFPO-DA	4.0	4.6	116	50-150		13252-13-6
PFBS	3.5	3.6	102	50-150		375-73-5
PFHxA	4.0	4.2	104	50-150		307-24-4
4:2 FTS	3.7	3.7	99	50-150		757124-72-4
PFPeS	3.8	4.1	110	50-150		2706-91-4
PFHpA	4.0	4.0	101	50-150		375-85-9
DONA	3.8	3.9	103	50-150		919005-14-4
PFHxS	3.6	3.9	107	50-150		355-46-4
PFOA	4.0	4.6	115	50-150		335-67-1
6:2 FTS	3.8	4.1	109	50-150		27619-97-2
PFHpS	3.8	4.2	111	50-150		375-92-8
PFNA	4.0	4.0	99	50-150		375-95-1
PFOSAm	4.0	3.9	98	50-150		754-91-6
PFOS	3.7	3.5	95	50-150		1763-23-1
MeFOSA	4.0	3.3	82	50-150		31506-32-8
PFDA	4.0	3.6	89	50-150		335-76-2
EtFOSAm	4.0	3.3	83	50-150		4151-50-2
8:2 FTS	3.8	3.9	102	50-150		39108-34-4
9-CI-PF3ON	3.7	3.6	98	50-150		756426-58-1
PFNS	3.8	3.5	92	50-150		68259-12-1
PFUnDA	4.0	3.9	97	50-150		2058-94-8
NMeFOSAA	4.0	4.1	101	50-150		2355-31-9
NEtFOSAA	4.0	3.7	93	50-150		2991-50-6
PFDS	3.9	3.3	85	50-150		335-77-3
PFDOA	4.0	4.0	99	50-150		307-55-1
MeFOSE	4.0	3.6	91	50-150		24448-09-7
EtFOSE	4.0	3.6	91	50-150		1691-99-2
11-CI-PF3OUdS	3.8	3.2	86	50-150		763051-92-9
PFTrDA	4.0	3.4	84	50-150		72629-94-8
PFDoS	3.9	3.1	81	50-150		79780-39-5
PFTDA	4.0	4.1	104	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101117
 Run File Name B220916B_013
 Analyzed 09/16/2022 17:32
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220916A02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.72	5.72	2139	
13C4 PFOA	N/A	N/A	6.87	6.87	2444	
13C2 PFDA	N/A	N/A	8.08	8.08	1583	
13C4 PFOS	N/A	N/A	8.50	8.49	3064	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.26	4.26	2831	
13C5 PFPeA	N/A	N/A	5.10	5.10	2483	
13C3 PFBS	N/A	N/A	5.91	5.90	1904	
13C2 4:2FTS	N/A	N/A	5.48	5.47	673	
13C5 PFHxA	N/A	N/A	5.72	5.70	2076	
13C4 PFHpA	N/A	N/A	6.29	6.27	1805	
13C3 PFHxS	N/A	N/A	7.21	7.17	3539	
13C2 6:2FTS	N/A	N/A	6.58	6.56	1583	
13C8 PFOA	N/A	N/A	6.87	6.84	3364	
13C9 PFNA	N/A	N/A	7.46	7.43	2027	
13C8 PFOS	N/A	N/A	8.51	8.47	2644	
13C2 8:2FTS	N/A	N/A	7.74	7.71	21733	
13C6 PFDA	N/A	N/A	8.08	8.05	2054	
d3-MeFOSAA	N/A	N/A	7.99	8.33	8003	
13C8 PFOSA	N/A	N/A	10.65	10.64	1051	
d5-EtFOSAA	N/A	N/A	8.28	8.27	1253	
13C7 PFUdA	N/A	N/A	8.73	8.73	2597	
13C2 PFDoA	N/A	N/A	9.36	9.36	1631	
13C2 PFTeDA	N/A	N/A	10.56	10.57	1182	
13C3 HFPO-DA	N/A	N/A	5.95	5.94	1340	
d7-N-MeFOSE	N/A	N/A	12.49	12.45	29	
d9-N-EtFOSE	N/A	N/A	12.96	12.93	294	
d3-N-MeFOSA	N/A	N/A	12.69	12.75	669	
d5-N-EtFOSA	N/A	N/A	13.11	13.10	510	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101117
 Run File Name B220916B_013
 Analyzed 09/16/2022 17:32
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 220916A02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.26	4.26	143	
PFPeA	N/A	N/A	5.10	5.11	304	
HFPO-DA	0.26	0.28	5.96	5.97	596	
PFBS	0.48	0.44	5.92	5.92	1124	
PFHxA	0.08	0.08	5.73	5.73	231	
4:2 FTS	0.88	1.00	5.49	5.49	1809	
PFPeS	0.42	0.42	6.57	6.58	1185	
PFHpA	0.32	0.30	6.30	6.31	21	
DONA	0.57	0.52	6.51	6.52	1873	
PFHxS	0.38	0.36	7.21	7.21	3135	
PFOA	0.38	0.40	6.87	6.88	210	
6:2 FTS	0.79	0.93	6.58	6.58	574	
PFHpS	0.39	0.41	7.86	7.87	580549	
PFNA	0.12	0.11	7.47	7.47	528	
PFOSAm	N/A	N/A	10.66	10.67	209	
PFOS	0.39	0.36	8.51	8.51	499	
MeFOSA	0.57	0.51	12.71	12.69	248	
PFDA	0.18	0.21	8.09	8.09	316	
EtFOSAm	0.45	0.53	13.14	13.12	526	
8:2 FTS	0.97	0.90	7.75	7.75	337	
9-CI-PF3ON	0.06	0.06	8.98	9.00	896	
PFNS	0.48	0.44	9.16	9.18	1497	
PFUnDA	0.14	0.13	8.73	8.74	259	
NMeFOSAA	0.75	0.91	8.01	8.01	1613	
NEtFOSAA	0.79	0.63	8.29	8.29	185	
PFDS	0.36	0.36	9.78	9.80	2632	
PFDOA	0.17	0.14	9.36	9.39	289	
MeFOSE	N/A	N/A	12.52	12.52	233	
EtFOSE	0.00	0.00	12.99	12.98	281	
11-CI-PF3OUdS	0.02	0.02	10.21	10.23	494	
PFTrDA	0.13	0.14	9.97	10.00	233	
PFDoS	0.44	0.43	10.93	10.95	1714	
PFTDA	0.24	0.27	10.57	10.59	122	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

September 2022

November 10, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS-Revised Report
Pace Project No.: 10625564

Dear Mike Ursin:

Enclosed are the analytical results for sample(s) received by the laboratory on September 15, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

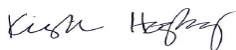
The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

This report was revised November 10, 2022, to report the biosolid results based on dry weight.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10625564001	Influent-02 20220912	Water	09/12/22 11:59	09/15/22 08:50
10625564002	Influent-07 20220912	Water	09/12/22 11:59	09/15/22 08:50
10625564003	Influent-08 20220912	Water	09/12/22 11:59	09/15/22 08:50
10625564004	Influent-11 20220912	Water	09/12/22 11:59	09/15/22 08:50
10625564005	Influent-18 20220912	Water	09/12/22 11:59	09/15/22 08:50
10625564006	Biosolids A 20220914	Solid	09/14/22 08:28	09/15/22 08:50
10625564007	Biosolids B 20220914	Solid	09/14/22 08:35	09/15/22 08:50
10625564008	EB-01 20220914	Water	09/14/22 08:20	09/15/22 08:50
10625564009	Effluent 20220913	Water	09/13/22 11:59	09/15/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10625564001	Influent-02 20220912	SM 2540D	RM3	1
10625564002	Influent-07 20220912	SM 2540D	RM3	1
10625564003	Influent-08 20220912	SM 2540D	RM3	1
10625564004	Influent-11 20220912	SM 2540D	RM3	1
10625564005	Influent-18 20220912	SM 2540D	RM3	1
10625564006	Biosolids A 20220914	ASTM D2974	JDL	1
10625564007	Biosolids B 20220914	ASTM D2974	JDL	1
10625564009	Effluent 20220913	SM 2540D	RM3	1

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: November 10, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 841027

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 4451017)
- Total Suspended Solids

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

Sample: Influent-02 20220912									
		Lab ID: 10625564001	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	152	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-07 20220912									
		Lab ID: 10625564002	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	178	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-08 20220912									
		Lab ID: 10625564003	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	185	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-11 20220912									
		Lab ID: 10625564004	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	212	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-18 20220912									
		Lab ID: 10625564005	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	175	mg/L	20.0	10.0	1		09/16/22 12:08		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report
Pace Project No.: 10625564

Sample: Biosolids A 20220914 **Lab ID: 10625564006** Collected: 09/14/22 08:28 Received: 09/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	69.0	%	0.10	0.10	1		09/28/22 15:27		N2

Sample: Biosolids B 20220914 **Lab ID: 10625564007** Collected: 09/14/22 08:35 Received: 09/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	94.7	%	0.10	0.10	1		09/28/22 15:27		N2

Sample: Effluent 20220913 **Lab ID: 10625564009** Collected: 09/13/22 11:59 Received: 09/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids	Analytical Method: SM 2540D Pace Analytical Services - Minneapolis								
Total Suspended Solids	<5.0	mg/L	10.0	5.0	1		09/19/22 12:07		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

QC Batch:	843211	Analysis Method:	ASTM D2974
QC Batch Method:	ASTM D2974	Analysis Description:	Dry Weight / %M by ASTM D2974
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10625564006, 10625564007

SAMPLE DUPLICATE: 4462479

Parameter	Units	10626528001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	35.1	33.0	6	30	N2

SAMPLE DUPLICATE: 4462480

Parameter	Units	40251508009 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.3	20.8	3	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report
Pace Project No.: 10625564

QC Batch: 841027 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10625564001, 10625564002, 10625564003, 10625564004, 10625564005

METHOD BLANK: 4451015 Matrix: Water
Associated Lab Samples: 10625564001, 10625564002, 10625564003, 10625564004, 10625564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	09/16/22 12:08	

LABORATORY CONTROL SAMPLE: 4451016

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	97.8	98	80-120	

SAMPLE DUPLICATE: 4451017

Parameter	Units	10625144001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	46.1	54.7	17	5	D6

SAMPLE DUPLICATE: 4451018

Parameter	Units	10625146001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	<10.0	<5.0		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

QC Batch: 841332

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10625564009

METHOD BLANK: 4452889

Matrix: Water

Associated Lab Samples: 10625564009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	09/19/22 12:07	

LABORATORY CONTROL SAMPLE: 4452890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	104	104	80-120	

SAMPLE DUPLICATE: 4452891

Parameter	Units	10625499001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	<10.0	<5.0		5	

SAMPLE DUPLICATE: 4452892

Parameter	Units	10625499003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	<10.0	<5.0		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS-Revised Report

Pace Project No.: 10625564

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10625564006	Biosolids A 20220914	ASTM D2974	843211		
10625564007	Biosolids B 20220914	ASTM D2974	843211		
10625564001	Influent-02 20220912	SM 2540D	841027		
10625564002	Influent-07 20220912	SM 2540D	841027		
10625564003	Influent-08 20220912	SM 2540D	841027		
10625564004	Influent-11 20220912	SM 2540D	841027		
10625564005	Influent-18 20220912	SM 2540D	841027		
10625564009	Effluent 20220913	SM 2540D	841332		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC**
 Address: **708 Heartland Trail Suite 3000 Madison, WI 53717**
 Report To: **Mike Vasin**
 Copy To: **Lydia Anwar, Jeff Ramsey**
 Customer Project Name/Number: **MMSD PFAS**
 Billing Information: **Bill to MMSD See P.O.**
 Email To: **marvin@trccompanies.com**
 Site Collection Info/Address: **1610 Maerland Rd WI Madison**
 State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**
 Compliance Monitoring? **[] Yes [X] No**
 Collected By (print): **Jennifer Faust**
 Collected By (signature): **Jennifer Faust**
 Sample Disposal: **[X] Dispose as appropriate [] Return [] Archive [] Hold**
 Purchase Order #: **2200666**
 Turnaround Date Required: **Standard TAT**
 Rush: **[] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day**
 Field Filtered (if applicable): **[] Yes [X] No**
 Analysis: _____

Container Preservative Type **
 Lab Project Manager:
 ** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other
 Analyses
 Lab Profile/Line: **43476**
 Lab Sample Receipt Checklist:
 Custody Seals Present/Intact Y N NA
 Custody Signatures Present Y N NA
 Collector Signature Present Y N NA
 Bottles Intact Y N NA
 Correct Bottles Y N NA
WO#: 10625564

 Sulfide Present Y N NA
 Lead Acetate Strips:
 LAB USE ONLY:
 Lab Sample # / Comments:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TSS
			Date	Time	Date	Time				
Influent-02 20220912	WW	Comp	9/12/22	0:00	9/12/22	11:59		3	X	X
Influent-07 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Influent-08 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Influent-11 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Influent-18 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Biosolids A 20220914	SL	Grab	9/14/22	8:28				1	X	
Biosolids B 20220914	SL	↓	↓	8:35				1	X	
EB-01 20220914	WW	↓	↓	8:20				1	X	

Customer Remarks / Special Conditions / Possible Hazards: **Flow higher than normal with large rain event. Samples may be diluted with rain water.**
 Type of Ice Used: **Wet Blue Dry None**
 Packing Material Used:
 Radchem sample(s) screened (<500 cpm): **Y N NA**
 SHORT HOLDS PRESENT (<72 hours): **Y N N/A**
 Lab Tracking #: **2802890**
 Samples received via: **FEDEX UPS Client Courier Pace Courier**
 Lab Sample Temperature Info:
 Temp Blank Received: **Y N NA**
 Therm ID#: **16**
 Cooler 1 Temp Upon Receipt: _____ oC
 Cooler 1 Therm Corr. Factor: _____ oC
 Cooler 1 Corrected Temp: **3.5** oC
 Comments:

Relinquished by/Company: (Signature) Jennifer Faust	Date/Time: 8:55 9/14/2022	Received by/Company: (Signature) Mike Vasin	Date/Time: 9/15/22 8:50	MTJL LAB USE ONLY
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Table #:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Acctnum:
				Template:
				Prelogin:
				PM:
				PB:
				Trip Blank Received: Y N NA
				HCL MeOH TSP Other
				Non Conformance(s): YES / NO
				Page: _____ of: _____

Effective Date:

Sample Condition Upon Receipt
 Client Name: TRC

Project #: **WO#: 10625564**
 PM: KNH Due Date: 10/06/22
 CLIENT: TRC-WI

Courier: FedEx UPS USPS Client
 Pace Speedee Commercial

Tracking Number: 54051822 9724 See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Biological Tissue Frozen? Yes No N/A
 Packing Material: Bubble Wrap Bubble Bags None Other Temp Blank? Yes No
 Thermometer: T1 (0461) T2 (1336) T3 (0459) T4 (0254) T5 (0178)
 T6 (0235) T7 (0042) T8 (0775) 01339252/1710 Type of Ice: Wet Blue Dry None
 Melted

Did Samples Originate in West Virginia? Yes No Were All Container Temps Taken? Yes No N/A
 Temp should be above freezing to 6 °C Cooler temp Read w/Temp Blank: 3.1 °C Average Corrected Temp (no temp blank only): _____ °C
 Correction Factor: True Cooler Temp Corrected w/temp blank: 3.5 °C See Exceptions ENV-FRM-MIN4-0142 1 Container

USDA Regulated Soil: N/A, water sample/other: _____ Date/Initials of Person Examining Contents: 9/15/22 APCZ

Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 <input type="checkbox"/> No
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E.coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrom <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8. <u>Extra Sample not on COC</u>
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. If no, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Is sufficient information available to reconcile the samples to the COC? Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> Zinc Acetate Positive for Residual Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142 pH Paper Lot # Residual Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15. Pace Trip Blank Lot # (if purchased): _____
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No
 Person Contacted: Jenny Faust (Email) Date/Time: 9/16/2022
 Comments/Resolution: Do not analyze unlabeled container received. Revised COC file provided including Effluent 20220913.
 Project Manager Review: Kirsten Hojberg Date: 9/16/2022

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).
 Labeled By: APCZ Line: (2)



DC# Title: ENV-FRM-MIN4-0142 v01_Sample Condition Upon Receipt (SCUR) Exception Form

Effective Date: 02/25/2022

SCUR Exceptions:

Workorder #: 10625564

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No												
			If yes, indicate who was contacted/date/time. If no, indicate reason why.												
			Multiple Cooler Project? <input type="checkbox"/> Yes <input type="checkbox"/> No If you answered yes, fill out information to the left.												
			<table border="1"> <thead> <tr> <th colspan="3">No Temp Blank</th> </tr> <tr> <th>Read Temp</th> <th>Corrected Temp</th> <th>Average Temp</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No Temp Blank			Read Temp	Corrected Temp	Average Temp						
No Temp Blank															
Read Temp	Corrected Temp	Average Temp													

Tracking Number/Temperature

Issue Type: <i>Sample not on LOD</i>	Container Type	# of Containers
<i>Sample ID</i>		
<i>Effluent 20220913</i>	<i>BP2u</i>	<i>1 0/13/22 11:59</i>
<i>Effluent 20220913</i>	<i>BP3u</i>	<i>2 0/13/21 11:59</i>

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserve	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition? <input type="checkbox"/> Yes <input type="checkbox"/> No	Initials
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

Pace Container Order #989147

Addresses		Ship To :	Return To:
Order By :		Company <u>Madison Metropolitan Sewerage District</u>	Company <u>Pace Analytical Minnesota</u>
Contact <u>Jennifer Faust</u>		Contact <u>Jennifer Faust</u>	Contact <u>Hogberg, Kirsten</u>
Email <u>jennyf@madsewer.org</u>		Email <u>jennyf@madsewer.org</u>	Email <u>kirsten.hogberg@pacelabs.com</u>
Address <u>1610 Moorland Road</u>		Address <u>1610 Moorland Road</u>	Address <u>1700 Elm Street</u>
Address 2 _____		Address 2 _____	Address 2 <u>Suite 200</u>
City <u>Madison</u>		City <u>Madison</u>	City <u>Minneapolis</u>
State <u>WI</u> Zip <u>53713</u>		State <u>WI</u> Zip <u>53713</u>	State <u>MN</u> Zip <u>55414</u>
Phone <u>(608) 222-1201</u>		Phone <u>(608) 222-1201</u>	Phone <u>(612)607-1700</u>

Project Name <u>September PFAS and TSS</u>	Due Date <u>09/06/2022</u>	Profile <u>43476</u>	Quote _____
Project Manager <u>Hogberg, Kirsten</u>	Return Date _____	Carrier <u>FedEx Ground</u>	Location <u>WI</u>

Trip Blanks <input type="checkbox"/> Include Trip Blanks	Bottle Labels <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Pre-Printed No Sample IDs <input type="checkbox"/> Pre-Printed With Sample IDs	Bottles <input type="checkbox"/> Boxed Cases <input type="checkbox"/> Individually Wrapped <input checked="" type="checkbox"/> Grouped By Sample ID/Matrix
Return Shipping Labels <input type="checkbox"/> No Shipper <input checked="" type="checkbox"/> With Shipper	Misc <input type="checkbox"/> Sampling Instructions <input checked="" type="checkbox"/> Custody Seal <input checked="" type="checkbox"/> Temp. Blanks <input checked="" type="checkbox"/> Coolers _____ <input type="checkbox"/> Syringes _____	
COC Options <input checked="" type="checkbox"/> Number of Blanks <u>1</u> <input type="checkbox"/> Pre-Printed _____	<input type="checkbox"/> Extra Bubble Wrap <input type="checkbox"/> Short Hold/Rush Stickers <input checked="" type="checkbox"/> DI Water <u>4L (1 jug) Liter(s)</u> <input type="checkbox"/> USDA Regulated Soils	

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
6	WT	TSS	1 - 500 ml unpres	6	0	072522-2ADT	
6	WT	PFAS ID36W	2-250mL HDPE unpreserved	12	0	120621-2EOM	C&G round containers
6	WT	TOP Assay	1-250mL HDPE unpreserved	6	0	070422-2EJC	
1	WT	PFAS ID36W Equipment Blank	1-250mL HDPE unpreserved w/ DI water, 1-250mL HDPE unpreserved	2	0	070422-2EJC; 223842	
2	SL	PFAS ID36W	1-250mL HDPE unpreserved	2	0	070422-2EJC	Biosolids
2	SL	TOP Assay	1-250mL HDPE unpreserved	2	0	070422-2EJC	Biosolids
1	SU	PFAS DI Water	1 - 4L jug	1	0	223842	

Hazard Shipping Placard In Place : NO

*Sample receiving hours are Mon-Fri 7:30am-7:00pm and Sat 9:00am-1:00pm unless special arrangements are made with your project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.

*Payment term are net 30 days.

*Please include the proposal number on the chain of custody to insure proper billing.

LAB USE:

Ship Date :	<u>09/06/2022</u>
Prepared By:	<u>HWF</u>
Verified By:	_____

Sample

CLIENT USE (Optional):

Date Rec'd:	_____
Received By:	_____
Verified By:	_____



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC** Billing Information: **Bill to MMSD**

Address: **708 Heartland Trail Suite 3000** See P.O.
Madison WI 53717

Report To: **Mike Vrain** Email To: **mursin@trccorporation.com**

Copy To: **Lydia Arunz, Jeff Ramsey** Site Collection Info/Address: **1610 Macleod Rd**

Customer Project Name/Number: **MMSD PFAS** State: **WI** County/City: **Madison** Time Zone Collected: PT MT CT ET

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line: **75476**

Phone: _____ Site/Facility ID #: _____ Compliance Monitoring? Yes No

Collected By (print): **Jennifer Faust** Purchase Order #: _____ DW PWS ID #: _____
Quote #: **2202666** DW Location Code: _____

Collected By (signature): **Jennifer Faust** Turnaround Date Required: **Standard TAT** Immediately Packed on Ice: Yes No

Sample Disposal: Dispose as appropriate Return Archive: _____ Hold: _____
 Same Day Next Day 2 Day 3 Day 14 Day 15 Day
(Expedite Charges Apply) Field Filtered (if applicable): Yes No
Analysis: _____

Matrix *	Comp / Grab	Collected (or Composite Start)	Composite End	Res Cl	# of Ctns	PFAS	WI	33	LIST	755
Date	Time	Date	Time							
Influent-02 20220912	WW	Comp	9/12/22 0:00	9/12/22 11:59		3	X	X		
Influent-07 20220912	WW					3	X	X		
Influent-08 20220912	WW					3	X	X		
Influent-11 20220912	WW					3	X	X		
Influent-18 20220912	WW					3	X	X		
Biosolids A 20220914	SL	Grab	9/14/22 8:28			1	X			
Biosolids B 20220914	SL		8:35			1	X			
EB-01 20220914	WW		8:20			1	X			
Effluent 20220917	WW	Comp	9/13/22 0:00	9/12/22 11:59		3	X	X		

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signatures Present Y N NA

Bottles Intact Y N NA

Correct Bottles Y N NA

Sufficient Volume Y N NA

Samples Received on Ice Y N NA

VOA - Headspace Acceptable Y N NA

USDA Regulated Soils Y N NA

Samples in Holding Time Y N NA

Residual Chlorine Present Y N NA

Cl Strips: _____

Sample pH Acceptable Y N NA

pH Strips: _____

Sulfide Present Y N NA

Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards: **Flow higher than normal with large rain event. Samples may be diluted with rain water.**

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **2802890**

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: _____oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments:

Relinquished by/Company: (Signature) **Jennifer Faust** Date/Time: **9:55 9/17/2022**

Relinquished by/Company: (Signature) _____ Date/Time: _____

Relinquished by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

MTJL LAB USE ONLY

Table #: _____

Acctnum: _____

Template: _____

Prelogin: _____

PM: _____

PB: _____

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page 17 of 60
Page: _____
of: _____

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Prepared Date:

November 10, 2022

Report Information:

Pace Project #: 10625564
Sample Receipt Date: 09/15/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



November 10, 2022

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on nine samples, one matrix spike, and one matrix spike duplicate submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance for PFAS. Reporting limits were set to MDL levels. The report was revised to update the biosolid results based on dry weight. This report was revised November 10, 2022 to update the narrative.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

A laboratory spike sample and matrix spike samples were also prepared with the sample batch using clean reference matrix or sample material that had been fortified with native standards. The recovery results were within the method limits. These spikes indicate that extraction performed as expected.

Diminished/elevated extracted internal standard (EIS) recovery ("R" flagged) were present in samples and CCV, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Results for selected analytes were taken from secondary dilutions of the sample extracts in order to bring the results within the calibration range. The affected values were flagged "D" on the results tables.

Values were flagged "I" where incorrect isotope ratios were obtained. Results that were below the calibration range were flagged "J". No sample was centrifuged before the

DISCUSSION

extraction.



Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, Inc.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix A

Sample Management

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Influent-02 20220912	10625564001	09/15/2022	Water
Influent-07 20220912	10625564002	09/15/2022	Water
Influent-08 20220912	10625564003	09/15/2022	Water
Influent-11 20220912	10625564004	09/15/2022	Water
Influent-18 20220912	10625564005	09/15/2022	Water
Biosolids A 20220914	10625564006	09/15/2022	Solid
Biosolids B 20220914	10625564007	09/15/2022	Solid
EB-01 20220914	10625564008	09/15/2022	Water
Effluent 20220913	10625564009	09/15/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC**
 Address: **708 Heartland Trail Suite 3000 Madison, WI 53717**
 Report To: **Mike Vasin**
 Copy To: **Lydia Anwar, Jeff Ramsey**
 Customer Project Name/Number: **MMSD PFAS**

Billing Information:
Bill to MMSD
See P.O.
 Email To: **mvasin@trccompanies.com**
 Site Collection Info/Address: **1610 Maerland Rd WI Madison**
 State: County/City: Time Zone Collected:
 [] PT [] MT [X] CT [] ET

Container Preservative Type **
 Lab Project Manager:
 ** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Phone: Site/Facility ID #: Compliance Monitoring?
 Email: [] Yes [X] No
 Collected By (print): **Jennifer Faust** Purchase Order #: **2200666** DW PWS ID #:
 Collected By (signature): **Jennifer Faust** Quote #: **2200666** DW Location Code:
 Sample Disposal: Turnaround Date Required: **Standard TAT** Immediately Packed on Ice:
 [X] Dispose as appropriate [] Return Rush: [] Same Day [] Next Day [X] Yes [] No
 [] Archive: [] 2 Day [] 3 Day [] 4 Day [] 5 Day Field Filtered (if applicable):
 [] Hold: (Expedite Charges Apply) Analysis: [] Yes [X] No

Analyses
 Lab Profile/Line: **43476**
 Lab Sample Receipt Checklist:
 Custody Seals Present/Intact Y N NA
 Custody Signatures Present Y N NA
 Collector Signature Present Y N NA
 Bottles Intact Y N NA
 Correct Bottles Y N NA
 Y NA
 I NA
 J NA
 J NA
 J NA
 J NA
 Sulfide Present Y N NA
 Lead Acetate Strips:
 LAB USE ONLY:
 Lab Sample # / Comments:

WO# : 10625564

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
Influent-02 20220912	WW	Comp	9/12/22	0:00	9/12/22	11:59	3	X X
Influent-07 20220912	WW	↓	↓	↓	↓	↓	3	X X
Influent-08 20220912	WW	↓	↓	↓	↓	↓	3	X X
Influent-11 20220912	WW	↓	↓	↓	↓	↓	3	X X
Influent-18 20220912	WW	↓	↓	↓	↓	↓	3	X X
Biosolids A 20220914	SL	Grab	9/14/22	8:28			1	X
Biosolids B 20220914	SL	↓	↓	8:35			1	X
EB-01 20220914	WW	↓	↓	8:20			1	X

PFAS WI 33-List

TSS

Customer Remarks / Special Conditions / Possible Hazards:
Flow higher than normal with large rain event. Samples may be diluted with rain water.

Type of Ice Used: Wet Blue Dry None
 Packing Material Used:
 Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
 Lab Tracking #: **2802890**
 Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: **16**
 Cooler 1 Temp Upon Receipt: ___ oC
 Cooler 1 Therm Corr. Factor: ___ oC
 Cooler 1 Corrected Temp: **3.5** oC
 Comments:

Relinquished by/Company: (Signature)
Jennifer Faust
 Date/Time: **9/14/2022 8:55**

Received by/Company: (Signature)
[Signature]
 Date/Time: **9/15/22 8:50**

MTJL LAB USE ONLY
 Table #:
 Acctnum:
 Template:
 Prelogin:
 PM:
 PB:

Trip Blank Received: Y N NA
 HCL MeOH TSP Other
 Non Conformance(s):
 YES / NO
 Page: ___ of: ___

Report No: 10625564-1D36-LZ-NZ-011
 REVISION 2
 Page 7 of 32

Effective Date:

Sample Condition Upon Receipt
 Client Name: TRC

Project #: **WO#: 10625564**
 PM: KNH Due Date: 10/06/22
 CLIENT: TRC-WI

Courier: FedEx UPS USPS Client
 Pace Speedee Commercial

Tracking Number: 54051822 9724 See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Biological Tissue Frozen? Yes No N/A
 Packing Material: Bubble Wrap Bubble Bags None Other Temp Blank? Yes No
 Thermometer: T1 (0461) T2 (1336) T3 (0459) T4 (0254) T5 (0178)
 T6 (0235) T7 (0042) T8 (0775) 01339252/1710 Type of Ice: Wet Blue Dry None
 Melted

Did Samples Originate in West Virginia? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Were All Container Temps Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Temp should be above freezing to 6 °C Cooler temp Read w/Temp Blank: <u>3.1</u> °C	Average Corrected Temp (no temp blank only): _____ °C
Correction Factor: <u>true</u> Cooler Temp Corrected w/temp blank: <u>3.5</u> °C	<input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142 <input type="checkbox"/> 1 Container

USDA Regulated Soil: N/A, water sample/other: _____ Date/Initials of Person Examining Contents: 9/15/22 APCZ

Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 <input type="checkbox"/> No
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E.coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrom <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8. <u>Extra Sample not on COC</u>
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. If no, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Is sufficient information available to reconcile the samples to the COC? Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> Zinc Acetate
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Residual Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
All containers needing preservation are found to be in compliance with EPA recommendation? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide)	pH Paper Lot # Residual Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.)	13.
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION
 Person Contacted: Jenny Faust (Email) Date/Time: 9/16/2022
 Comments/Resolution: Do not analyze unlabeled container received. Revised COC file provided including Effluent 20220913.
 Project Manager Review: Kirsten Hojberg Date: 9/16/2022

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).
 Labeled By: APCZ Line: (2)



DC# Title: ENV-FRM-MIN4-0142 v01_Sample Condition Upon Receipt (SCUR) Exception Form

Effective Date: 02/25/2022

SCUR Exceptions:

Workorder #: 10625564

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No																														
			If yes, indicate who was contacted/date/time. If no, indicate reason why.																														
			Multiple Cooler Project? <input type="checkbox"/> Yes <input type="checkbox"/> No If you answered yes, fill out information to the left.																														
			<table border="1"> <thead> <tr> <th colspan="3">No Temp Blank</th> </tr> <tr> <th>Read Temp</th> <th>Corrected Temp</th> <th>Average Temp</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	No Temp Blank			Read Temp	Corrected Temp	Average Temp																								
No Temp Blank																																	
Read Temp	Corrected Temp	Average Temp																															

Tracking Number/Temperature

Issue Type: <i>Sample not on LOD</i>	Container Type	# of Containers
Sample ID	Type	
<i>Effluent 20220913</i>	<i>BP2u</i>	<i>1 9/13/22 11:59</i>
<i>Effluent 20220913</i>	<i>BP3u</i>	<i>2 9/13/21 11:59</i>

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserve	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition? <input type="checkbox"/> Yes <input type="checkbox"/> No	Initials
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	
								<input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

Pace Container Order #989147

Addresses		Ship To :	Return To:
Order By :		Company <u>Madison Metropolitan Sewerage District</u>	Company <u>Pace Analytical Minnesota</u>
Contact <u>Jennifer Faust</u>		Contact <u>Jennifer Faust</u>	Contact <u>Hogberg, Kirsten</u>
Email <u>jennyf@madsewer.org</u>		Email <u>jennyf@madsewer.org</u>	Email <u>kirsten.hogberg@pacelabs.com</u>
Address <u>1610 Moorland Road</u>		Address <u>1610 Moorland Road</u>	Address <u>1700 Elm Street</u>
Address 2 _____		Address 2 _____	Address 2 <u>Suite 200</u>
City <u>Madison</u>		City <u>Madison</u>	City <u>Minneapolis</u>
State <u>WI</u> Zip <u>53713</u>		State <u>WI</u> Zip <u>53713</u>	State <u>MN</u> Zip <u>55414</u>
Phone <u>(608) 222-1201</u>		Phone <u>(608) 222-1201</u>	Phone <u>(612)607-1700</u>

Project Name <u>September PFAS and TSS</u>	Due Date <u>09/06/2022</u>	Profile <u>43476</u>	Quote _____
Project Manager <u>Hogberg, Kirsten</u>	Return Date _____	Carrier <u>FedEx Ground</u>	Location <u>WI</u>

Trip Blanks <input type="checkbox"/> Include Trip Blanks	Bottle Labels <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Pre-Printed No Sample IDs <input type="checkbox"/> Pre-Printed With Sample IDs	Bottles <input type="checkbox"/> Boxed Cases <input type="checkbox"/> Individually Wrapped <input checked="" type="checkbox"/> Grouped By Sample ID/Matrix
Return Shipping Labels <input type="checkbox"/> No Shipper <input checked="" type="checkbox"/> With Shipper	Misc <input type="checkbox"/> Sampling Instructions <input checked="" type="checkbox"/> Custody Seal <input checked="" type="checkbox"/> Temp. Blanks <input checked="" type="checkbox"/> Coolers _____ <input type="checkbox"/> Syringes _____	
COC Options <input checked="" type="checkbox"/> Number of Blanks <u>1</u> <input type="checkbox"/> Pre-Printed _____	<input type="checkbox"/> Extra Bubble Wrap <input type="checkbox"/> Short Hold/Rush Stickers <input checked="" type="checkbox"/> DI Water <u>4L (1 jug) Liter(s)</u> <input type="checkbox"/> USDA Regulated Soils	

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
6	WT	TSS	1 - 500 ml unpres	6	0	072522-2ADT	
6	WT	PFAS ID36W	2-250mL HDPE unpreserved	12	0	120621-2EOM	C&G round containers
6	WT	TOP Assay	1-250mL HDPE unpreserved	6	0	070422-2EJC	
1	WT	PFAS ID36W Equipment Blank	1-250mL HDPE unpreserved w/ DI water, 1-250mL HDPE unpreserved	2	0	070422-2EJC; 223842	
2	SL	PFAS ID36W	1-250mL HDPE unpreserved	2	0	070422-2EJC	Biosolids
2	SL	TOP Assay	1-250mL HDPE unpreserved	2	0	070422-2EJC	Biosolids
1	SU	PFAS DI Water	1 - 4L jug	1	0	223842	

Hazard Shipping Placard In Place : NO

*Sample receiving hours are Mon-Fri 7:30am-7:00pm and Sat 9:00am-1:00pm unless special arrangements are made with your project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.

*Payment term are net 30 days.

*Please include the proposal number on the chain of custody to insure proper billing.

LAB USE:

Ship Date :	<u>09/06/2022</u>
Prepared By:	<u>HWF</u>
Verified By:	_____

Sample

CLIENT USE (Optional):

Date Rec'd:	_____
Received By:	_____
Verified By:	_____



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC** Billing Information: **Bill to MMSD**

Address: **708 Heartland Trail Suite 3000** See P.O.
Madison WI 53717

Report To: **Mike Vrain** Email To: **mursin@trccorporation.com**

Copy To: **Lydia Arunz, Jeff Ramsey** Site Collection Info/Address: **1610 Macleod Rd**

Customer Project Name/Number: **MMSD PFAS** State: **WI** County/City: **Madison** Time Zone Collected: PT MT CT ET

Phone: _____ Site/Facility ID #: _____ Compliance Monitoring? Yes No

Collected By (print): **Jennifer Faust** Purchase Order #: _____ DW PWS ID #: _____
Quote #: **2202666** DW Location Code: _____

Collected By (signature): **Jennifer Faust** Turnaround Date Required: **Standard TAT** Immediately Packed on Ice: Yes No

Sample Disposal: Dispose as appropriate Return Archive: _____ Hold: _____
 Same Day Next Day 2 Day 3 Day 14 Day 15 Day
(Expedite Charges Apply) Field Filtered (if applicable): Yes No
Analysis: _____

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line: **75476**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signatures Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: _____			
Sample pH Acceptable	Y	N	NA
pH Strips: _____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: _____			

LAB USE ONLY:
Lab Sample # / Comments:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TSS
			Date	Time	Date	Time				
Influent-02 20220912	WW	Comp	9/12/22	0:00	9/12/22	11:59		3	X	X
Influent-07 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Influent-08 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Influent-11 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Influent-18 20220912	WW	↓	↓	↓	↓	↓		3	X	X
Biosolids A 20220914	SL	Grab	9/14/22	8:38				1	X	
Biosolids B 20220914	SL	↓	↓	8:35				1	X	
EB-01 20220914	WW	↓	↓	8:20				1	X	
Effluent 20220917	WW	Comp	9/13/22	0:00	9/12/22	11:59		3	X	X

Customer Remarks / Special Conditions / Possible Hazards: **Flow higher than normal with large rain event. Samples may be diluted with rain water.**

Type of Ice Used: Wet Blue Dry None

Packing Material Used: _____

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **2802890**

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: _____ °C
Cooler 1 Therm Corr. Factor: _____ °C
Cooler 1 Corrected Temp: _____ °C
Comments:

Relinquished by/Company: (Signature) **Jennifer Faust** Date/Time: **9:55 9/17/2022**

Relinquished by/Company: (Signature) _____ Date/Time: _____

Relinquished by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

MTJL LAB USE ONLY

Table #: _____
Acctnum: _____
Template: _____
Prelogin: _____
PM: _____
PB: _____

Trip Blank Received: Y N NA
HCL MeOH TSP Other: _____

Non Conformance(s): _____ Page: _____
YES / NO of: _____

Page 1 of 52
Revision 2
Report No. 10625564_ID36_L2_P2.dfr

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10625564001	Influent-02 20220912	SW3535	33993	PFAS-36	B221012C_02
10625564002	Influent-07 20220912	SW3535	33993	PFAS-36	B221012C_02
10625564003	Influent-08 20220912	SW3535	33993	PFAS-36	B221012C_02
10625564004	Influent-11 20220912	SW3535	33993	PFAS-36	B221012C_02
10625564005	Influent-18 20220912	SW3535	33993	PFAS-36	B221012C_02
10625564006	Biosolids A 20220914	SW3535	33880	PFAS-36	B221004B_02
10625564006	Biosolids A 20220914	SW3535	33880	PFAS-36	B221018A_00
10625564007	Biosolids B 20220914	SW3535	33880	PFAS-36	B221004B_02
10625564008	EB-01 20220914	SW3535	33993	PFAS-36	B221012C_02
10625564009	Effluent 20220913	SW3535	33993	PFAS-36	B221012C_02



Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Isotope ratio out of specification
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix B

Sample Analysis Summary

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02 20220912
 Lab Sample ID 10625564001
 Lab File ID B221012C_027
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 249mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	7.1	2.0	0.50	0.50	1	375-22-4		10/13/2022 02:26
PFPeA	7.3	2.0	0.82	0.82	1	2706-90-3		10/13/2022 02:26
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		10/13/2022 02:26
PFBS	4.6	1.8	0.49	0.49	1	375-73-5		10/13/2022 02:26
PFHxA	6.6	2.0	0.91	0.91	1	307-24-4		10/13/2022 02:26
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		10/13/2022 02:26
PFPeS	0.68 IJ	1.9	0.60	0.60	1	2706-91-4		10/13/2022 02:26
PFHpA	2.4	2.0	0.69	0.69	1	375-85-9		10/13/2022 02:26
DONA	ND	1.9	0.92	0.92	1	919005-14-4		10/13/2022 02:26
PFHxS	5.4	1.8	0.53	0.53	1	355-46-4		10/13/2022 02:26
PFOA	5.1	2.0	0.86	0.86	1	335-67-1		10/13/2022 02:26
6:2 FTS	2.2	1.9	0.68	0.68	1	27619-97-2		10/13/2022 02:26
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		10/13/2022 02:26
PFNA	ND	2.0	0.80	0.80	1	375-95-1		10/13/2022 02:26
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		10/13/2022 02:26
PFOS	12	1.9	0.67	0.67	1	1763-23-1		10/13/2022 02:26
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		10/13/2022 02:26
PFDA	0.67 J	2.0	0.61	0.61	1	335-76-2		10/13/2022 02:26
EtFOSAm	ND	2.0	0.58	0.58	1	4151-50-2		10/13/2022 02:26
8:2 FTS	ND	1.9	0.51	0.51	1	39108-34-4		10/13/2022 02:26
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		10/13/2022 02:26
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		10/13/2022 02:26
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		10/13/2022 02:26
NMeFOSAA	ND	2.0	0.70	0.70	1	2355-31-9		10/13/2022 02:26
NEtFOSAA	ND	2.0	0.82	0.82	1	2991-50-6		10/13/2022 02:26
PFDS	ND	1.9	0.64	0.64	1	335-77-3		10/13/2022 02:26
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		10/13/2022 02:26
MeFOSE	ND	2.0	0.52	0.52	1	24448-09-7		10/13/2022 02:26
EtFOSE	ND	2.0	0.89	0.89	1	1691-99-2		10/13/2022 02:26
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		10/13/2022 02:26
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		10/13/2022 02:26
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		10/13/2022 02:26
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		10/13/2022 02:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02 20220912
 Lab Sample ID 10625564001
 Lab File ID B221012C_027
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 249mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	20	99	50-150		10/13/2022 02:26
13C4 PFOA	20	20	101	50-150		10/13/2022 02:26
13C2 PFDA	20	17	87	50-150		10/13/2022 02:26
13C4 PFOS	19	13	70	50-150		10/13/2022 02:26

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	11	56	25-150		10/13/2022 02:26
13C5 PFPeA	20	15	73	25-150		10/13/2022 02:26
13C3 PFBS	19	16	86	25-150		10/13/2022 02:26
13C2 4:2FTS	19	49	263	25-150	R	10/13/2022 02:26
13C5 PFHxA	20	16	81	25-150		10/13/2022 02:26
13C4 PFHpA	20	17	85	25-150		10/13/2022 02:26
13C3 PFHxS	19	16	83	25-150		10/13/2022 02:26
13C2 6:2FTS	19	63	332	25-150	R	10/13/2022 02:26
13C8 PFOA	20	18	88	25-150		10/13/2022 02:26
13C9 PFNA	20	17	85	25-150		10/13/2022 02:26
13C8 PFOS	19	9.9	51	25-150		10/13/2022 02:26
13C2 8:2FTS	19	36	187	25-150	R	10/13/2022 02:26
13C6 PFDA	20	13	64	25-150		10/13/2022 02:26
d3-MeFOSAA	20	9.9	49	25-150		10/13/2022 02:26
13C8 PFOSA	20	12	58	25-150		10/13/2022 02:26
d5-EtFOSAA	20	12	60	25-150		10/13/2022 02:26
13C7 PFUdA	20	12	59	25-150		10/13/2022 02:26
13C2 PFDaA	20	11	57	25-150		10/13/2022 02:26
13C2 PFTeDA	20	13	65	25-150		10/13/2022 02:26
13C3 HFPO-DA	20	12	61	25-150		10/13/2022 02:26
d7-N-MeFOSE	20	8.1	40	10-150		10/13/2022 02:26
d9-N-EtFOSE	20	8.2	41	10-150		10/13/2022 02:26
d3-N-MeFOSA	20	3.8	19	10-150		10/13/2022 02:26
d5-N-EtFOSA	20	4.0	20	10-150		10/13/2022 02:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07 20220912
 Lab Sample ID 10625564002
 Lab File ID B221012C_028
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 244mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	20	2.0	0.51	0.51	1	375-22-4		10/13/2022 02:46
PFPeA	17	2.0	0.84	0.84	1	2706-90-3		10/13/2022 02:46
HFPO-DA	ND	2.0	0.51	0.51	1	13252-13-6		10/13/2022 02:46
PFBS	9.0	1.8	0.50	0.50	1	375-73-5		10/13/2022 02:46
PFHxA	28	2.0	0.93	0.93	1	307-24-4		10/13/2022 02:46
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		10/13/2022 02:46
PFPeS	1.3 IJ	1.9	0.62	0.62	1	2706-91-4		10/13/2022 02:46
PFHpA	6.7	2.0	0.71	0.71	1	375-85-9		10/13/2022 02:46
DONA	ND	1.9	0.94	0.94	1	919005-14-4		10/13/2022 02:46
PFHxS	14	1.9	0.54	0.54	1	355-46-4		10/13/2022 02:46
PFOA	16	2.0	0.88	0.88	1	335-67-1		10/13/2022 02:46
6:2 FTS	3.8	1.9	0.69	0.69	1	27619-97-2		10/13/2022 02:46
PFHpS	ND	1.9	0.68	0.68	1	375-92-8		10/13/2022 02:46
PFNA	1.8 J	2.0	0.81	0.81	1	375-95-1		10/13/2022 02:46
PFOSAm	ND	2.0	0.73	0.73	1	754-91-6		10/13/2022 02:46
PFOS	16	1.9	0.68	0.68	1	1763-23-1		10/13/2022 02:46
MeFOSA	ND	2.0	0.57	0.57	1	31506-32-8		10/13/2022 02:46
PFDA	2.2	2.0	0.62	0.62	1	335-76-2		10/13/2022 02:46
EtFOSAm	1.2 J	2.0	0.59	0.59	1	4151-50-2		10/13/2022 02:46
8:2 FTS	0.65 J	2.0	0.52	0.52	1	39108-34-4		10/13/2022 02:46
9-CI-PF3ON	ND	1.9	0.48	0.48	1	756426-58-1		10/13/2022 02:46
PFNS	ND	2.0	0.60	0.60	1	68259-12-1		10/13/2022 02:46
PFUnDA	ND	2.0	0.50	0.50	1	2058-94-8		10/13/2022 02:46
NMeFOSAA	4.4	2.0	0.71	0.71	1	2355-31-9		10/13/2022 02:46
NEtFOSAA	3.4	2.0	0.83	0.83	1	2991-50-6		10/13/2022 02:46
PFDS	ND	2.0	0.66	0.66	1	335-77-3		10/13/2022 02:46
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		10/13/2022 02:46
MeFOSE	2.1	2.0	0.53	0.53	1	24448-09-7		10/13/2022 02:46
EtFOSE	ND	2.0	0.91	0.91	1	1691-99-2		10/13/2022 02:46
11-CI-PF3OUdS	ND	1.9	0.57	0.57	1	763051-92-9		10/13/2022 02:46
PFTTrDA	ND	2.0	0.64	0.64	1	72629-94-8		10/13/2022 02:46
PFDoS	ND	2.0	0.61	0.61	1	79780-39-5		10/13/2022 02:46
PFTDA	ND	2.0	0.61	0.61	1	376-06-7		10/13/2022 02:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07 20220912
 Lab Sample ID 10625564002
 Lab File ID B221012C_028
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 244mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	21	102	50-150		10/13/2022 02:46
13C4 PFOA	20	22	107	50-150		10/13/2022 02:46
13C2 PFDA	20	19	94	50-150		10/13/2022 02:46
13C4 PFOS	20	13	69	50-150		10/13/2022 02:46

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	13	63	25-150		10/13/2022 02:46
13C5 PFPeA	20	18	86	25-150		10/13/2022 02:46
13C3 PFBS	19	18	93	25-150		10/13/2022 02:46
13C2 4:2FTS	19	54	283	25-150	R	10/13/2022 02:46
13C5 PFHxA	20	18	87	25-150		10/13/2022 02:46
13C4 PFHpA	20	19	90	25-150		10/13/2022 02:46
13C3 PFHxS	19	18	94	25-150		10/13/2022 02:46
13C2 6:2FTS	19	64	330	25-150	R	10/13/2022 02:46
13C8 PFOA	20	19	91	25-150		10/13/2022 02:46
13C9 PFNA	20	19	91	25-150		10/13/2022 02:46
13C8 PFOS	20	11	54	25-150		10/13/2022 02:46
13C2 8:2FTS	20	41	209	25-150	R	10/13/2022 02:46
13C6 PFDA	20	14	70	25-150		10/13/2022 02:46
d3-MeFOSAA	20	11	53	25-150		10/13/2022 02:46
13C8 PFOSA	20	13	65	25-150		10/13/2022 02:46
d5-EtFOSAA	20	12	56	25-150		10/13/2022 02:46
13C7 PFUdA	20	12	61	25-150		10/13/2022 02:46
13C2 PFDoA	20	10	51	25-150		10/13/2022 02:46
13C2 PFTeDA	20	13	62	25-150		10/13/2022 02:46
13C3 HFPO-DA	20	13	65	25-150		10/13/2022 02:46
d7-N-MeFOSE	20	8.5	41	10-150		10/13/2022 02:46
d9-N-EtFOSE	20	8.5	41	10-150		10/13/2022 02:46
d3-N-MeFOSA	20	5.1	25	10-150		10/13/2022 02:46
d5-N-EtFOSA	20	4.7	23	10-150		10/13/2022 02:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08 20220912
 Lab Sample ID 10625564003
 Lab File ID B221012C_029
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 264mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.6	1.9	0.47	0.47	1	375-22-4		10/13/2022 03:06
PFPeA	18	1.9	0.78	0.78	1	2706-90-3		10/13/2022 03:06
HFPO-DA	ND	1.9	0.47	0.47	1	13252-13-6		10/13/2022 03:06
PFBS	3.3	1.7	0.46	0.46	1	375-73-5		10/13/2022 03:06
PFHxA	7.0	1.9	0.86	0.86	1	307-24-4		10/13/2022 03:06
4:2 FTS	ND	1.8	0.44	0.44	1	757124-72-4		10/13/2022 03:06
PFPeS	ND	1.8	0.57	0.57	1	2706-91-4		10/13/2022 03:06
PFHpA	1.8 J	1.9	0.65	0.65	1	375-85-9		10/13/2022 03:06
DONA	ND	1.8	0.87	0.87	1	919005-14-4		10/13/2022 03:06
PFHxS	3.7	1.7	0.50	0.50	1	355-46-4		10/13/2022 03:06
PFOA	3.4	1.9	0.81	0.81	1	335-67-1		10/13/2022 03:06
6:2 FTS	0.73 J	1.8	0.64	0.64	1	27619-97-2		10/13/2022 03:06
PFHpS	ND	1.8	0.63	0.63	1	375-92-8		10/13/2022 03:06
PFNA	ND	1.9	0.75	0.75	1	375-95-1		10/13/2022 03:06
PFOSAm	ND	1.9	0.68	0.68	1	754-91-6		10/13/2022 03:06
PFOS	8.6 I	1.8	0.63	0.63	1	1763-23-1		10/13/2022 03:06
MeFOSA	ND	1.9	0.52	0.52	1	31506-32-8		10/13/2022 03:06
PFDA	0.58 J	1.9	0.58	0.58	1	335-76-2		10/13/2022 03:06
EtFOSAm	ND	1.9	0.54	0.54	1	4151-50-2		10/13/2022 03:06
8:2 FTS	ND	1.8	0.48	0.48	1	39108-34-4		10/13/2022 03:06
9-CI-PF3ON	ND	1.8	0.44	0.44	1	756426-58-1		10/13/2022 03:06
PFNS	ND	1.8	0.55	0.55	1	68259-12-1		10/13/2022 03:06
PFUnDA	ND	1.9	0.46	0.46	1	2058-94-8		10/13/2022 03:06
NMeFOSAA	ND	1.9	0.66	0.66	1	2355-31-9		10/13/2022 03:06
NEtFOSAA	1.3 J	1.9	0.77	0.77	1	2991-50-6		10/13/2022 03:06
PFDS	ND	1.8	0.61	0.61	1	335-77-3		10/13/2022 03:06
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		10/13/2022 03:06
MeFOSE	1.0 J	1.9	0.49	0.49	1	24448-09-7		10/13/2022 03:06
EtFOSE	ND	1.9	0.84	0.84	1	1691-99-2		10/13/2022 03:06
11-CI-PF3OUdS	ND	1.8	0.53	0.53	1	763051-92-9		10/13/2022 03:06
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		10/13/2022 03:06
PFDoS	ND	1.8	0.56	0.56	1	79780-39-5		10/13/2022 03:06
PFTDA	ND	1.9	0.57	0.57	1	376-06-7		10/13/2022 03:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08 20220912
 Lab Sample ID 10625564003
 Lab File ID B221012C_029
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 264mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	20	105	50-150		10/13/2022 03:06
13C4 PFOA	19	20	103	50-150		10/13/2022 03:06
13C2 PFDA	19	18	95	50-150		10/13/2022 03:06
13C4 PFOS	18	13	73	50-150		10/13/2022 03:06

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	11	60	25-150		10/13/2022 03:06
13C5 PFPeA	19	15	79	25-150		10/13/2022 03:06
13C3 PFBS	18	16	93	25-150		10/13/2022 03:06
13C2 4:2FTS	18	46	261	25-150	R	10/13/2022 03:06
13C5 PFHxA	19	16	85	25-150		10/13/2022 03:06
13C4 PFHpA	19	16	85	25-150		10/13/2022 03:06
13C3 PFHxS	18	15	86	25-150		10/13/2022 03:06
13C2 6:2FTS	18	56	313	25-150	R	10/13/2022 03:06
13C8 PFOA	19	16	86	25-150		10/13/2022 03:06
13C9 PFNA	19	17	89	25-150		10/13/2022 03:06
13C8 PFOS	18	10	57	25-150		10/13/2022 03:06
13C2 8:2FTS	18	37	205	25-150	R	10/13/2022 03:06
13C6 PFDA	19	13	68	25-150		10/13/2022 03:06
d3-MeFOSAA	19	9.6	51	25-150		10/13/2022 03:06
13C8 PFOSA	19	12	65	25-150		10/13/2022 03:06
d5-EtFOSAA	19	11	59	25-150		10/13/2022 03:06
13C7 PFUdA	19	12	63	25-150		10/13/2022 03:06
13C2 PFDoA	19	8.9	47	25-150		10/13/2022 03:06
13C2 PFTeDA	19	13	66	25-150		10/13/2022 03:06
13C3 HFPO-DA	19	13	68	25-150		10/13/2022 03:06
d7-N-MeFOSE	19	7.8	41	10-150		10/13/2022 03:06
d9-N-EtFOSE	19	6.8	36	10-150		10/13/2022 03:06
d3-N-MeFOSA	19	4.4	23	10-150		10/13/2022 03:06
d5-N-EtFOSA	19	4.0	21	10-150		10/13/2022 03:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11 20220912
 Lab Sample ID 10625564004
 Lab File ID B221012C_030
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 245mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.3	2.0	0.51	0.51	1	375-22-4		10/13/2022 03:26
PFPeA	6.7	2.0	0.84	0.84	1	2706-90-3		10/13/2022 03:26
HFPO-DA	ND	2.0	0.50	0.50	1	13252-13-6		10/13/2022 03:26
PFBS	2.9	1.8	0.49	0.49	1	375-73-5		10/13/2022 03:26
PFHxA	6.4	2.0	0.93	0.93	1	307-24-4		10/13/2022 03:26
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		10/13/2022 03:26
PFPeS	ND	1.9	0.61	0.61	1	2706-91-4		10/13/2022 03:26
PFHpA	1.4 J	2.0	0.70	0.70	1	375-85-9		10/13/2022 03:26
DONA	ND	1.9	0.94	0.94	1	919005-14-4		10/13/2022 03:26
PFHxS	2.5 I	1.9	0.54	0.54	1	355-46-4		10/13/2022 03:26
PFOA	3.4	2.0	0.88	0.88	1	335-67-1		10/13/2022 03:26
6:2 FTS	0.84 J	1.9	0.69	0.69	1	27619-97-2		10/13/2022 03:26
PFHpS	ND	1.9	0.68	0.68	1	375-92-8		10/13/2022 03:26
PFNA	ND	2.0	0.81	0.81	1	375-95-1		10/13/2022 03:26
PFOSAm	ND	2.0	0.73	0.73	1	754-91-6		10/13/2022 03:26
PFOS	7.3 I	1.9	0.68	0.68	1	1763-23-1		10/13/2022 03:26
MeFOSA	ND	2.0	0.56	0.56	1	31506-32-8		10/13/2022 03:26
PFDA	0.68 J	2.0	0.62	0.62	1	335-76-2		10/13/2022 03:26
EtFOSAm	ND	2.0	0.59	0.59	1	4151-50-2		10/13/2022 03:26
8:2 FTS	ND	2.0	0.51	0.51	1	39108-34-4		10/13/2022 03:26
9-CI-PF3ON	ND	1.9	0.48	0.48	1	756426-58-1		10/13/2022 03:26
PFNS	ND	2.0	0.60	0.60	1	68259-12-1		10/13/2022 03:26
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		10/13/2022 03:26
NMeFOSAA	0.81 J	2.0	0.71	0.71	1	2355-31-9		10/13/2022 03:26
NEtFOSAA	ND	2.0	0.83	0.83	1	2991-50-6		10/13/2022 03:26
PFDS	ND	2.0	0.65	0.65	1	335-77-3		10/13/2022 03:26
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		10/13/2022 03:26
MeFOSE	1.3 J	2.0	0.53	0.53	1	24448-09-7		10/13/2022 03:26
EtFOSE	ND	2.0	0.91	0.91	1	1691-99-2		10/13/2022 03:26
11-CI-PF3OUdS	ND	1.9	0.57	0.57	1	763051-92-9		10/13/2022 03:26
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		10/13/2022 03:26
PFDoS	ND	2.0	0.60	0.60	1	79780-39-5		10/13/2022 03:26
PFTDA	ND	2.0	0.61	0.61	1	376-06-7		10/13/2022 03:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11 20220912
 Lab Sample ID 10625564004
 Lab File ID B221012C_030
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 245mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	20	99	50-150		10/13/2022 03:26
13C4 PFOA	20	20	100	50-150		10/13/2022 03:26
13C2 PFDA	20	15	74	50-150		10/13/2022 03:26
13C4 PFOS	20	12	62	50-150		10/13/2022 03:26

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	9.4	46	25-150		10/13/2022 03:26
13C5 PFPeA	20	13	66	25-150		10/13/2022 03:26
13C3 PFBS	19	16	84	25-150		10/13/2022 03:26
13C2 4:2FTS	19	48	249	25-150	R	10/13/2022 03:26
13C5 PFHxA	20	17	83	25-150		10/13/2022 03:26
13C4 PFHpA	20	17	85	25-150		10/13/2022 03:26
13C3 PFHxS	19	16	85	25-150		10/13/2022 03:26
13C2 6:2FTS	19	62	322	25-150	R	10/13/2022 03:26
13C8 PFOA	20	18	90	25-150		10/13/2022 03:26
13C9 PFNA	20	17	84	25-150		10/13/2022 03:26
13C8 PFOS	20	8.9	46	25-150		10/13/2022 03:26
13C2 8:2FTS	20	37	190	25-150	R	10/13/2022 03:26
13C6 PFDA	20	12	58	25-150		10/13/2022 03:26
d3-MeFOSAA	20	8.3	41	25-150		10/13/2022 03:26
13C8 PFOSA	20	9.8	48	25-150		10/13/2022 03:26
d5-EtFOSAA	20	9.2	45	25-150		10/13/2022 03:26
13C7 PFUdA	20	8.8	43	25-150		10/13/2022 03:26
13C2 PFDoA	20	7.4	36	25-150		10/13/2022 03:26
13C2 PFTeDA	20	7.9	39	25-150		10/13/2022 03:26
13C3 HFPO-DA	20	12	60	25-150		10/13/2022 03:26
d7-N-MeFOSE	20	7.5	37	10-150		10/13/2022 03:26
d9-N-EtFOSE	20	6.1	30	10-150		10/13/2022 03:26
d3-N-MeFOSA	20	4.0	20	10-150		10/13/2022 03:26
d5-N-EtFOSA	20	3.5	17	10-150		10/13/2022 03:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18 20220912
 Lab Sample ID 10625564005
 Lab File ID B221012C_031
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 241mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	15	2.1	0.52	0.52	1	375-22-4		10/13/2022 03:46
PFPeA	13	2.1	0.85	0.85	1	2706-90-3		10/13/2022 03:46
HFPO-DA	ND	2.1	0.51	0.51	1	13252-13-6		10/13/2022 03:46
PFBS	10	1.8	0.50	0.50	1	375-73-5		10/13/2022 03:46
PFHxA	16	2.1	0.94	0.94	1	307-24-4		10/13/2022 03:46
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		10/13/2022 03:46
PFPeS	2.2 I	1.9	0.62	0.62	1	2706-91-4		10/13/2022 03:46
PFHpA	5.0	2.1	0.71	0.71	1	375-85-9		10/13/2022 03:46
DONA	ND	2.0	0.95	0.95	1	919005-14-4		10/13/2022 03:46
PFHxS	18	1.9	0.55	0.55	1	355-46-4		10/13/2022 03:46
PFOA	12	2.1	0.89	0.89	1	335-67-1		10/13/2022 03:46
6:2 FTS	4.8	2.0	0.70	0.70	1	27619-97-2		10/13/2022 03:46
PFHpS	ND	2.0	0.69	0.69	1	375-92-8		10/13/2022 03:46
PFNA	ND	2.1	0.82	0.82	1	375-95-1		10/13/2022 03:46
PFOSAm	ND	2.1	0.74	0.74	1	754-91-6		10/13/2022 03:46
PFOS	14	1.9	0.69	0.69	1	1763-23-1		10/13/2022 03:46
MeFOSA	ND	2.1	0.57	0.57	1	31506-32-8		10/13/2022 03:46
PFDA	ND	2.1	0.63	0.63	1	335-76-2		10/13/2022 03:46
EtFOSAm	ND	2.1	0.59	0.59	1	4151-50-2		10/13/2022 03:46
8:2 FTS	0.55 J	2.0	0.52	0.52	1	39108-34-4		10/13/2022 03:46
9-CI-PF3ON	ND	1.9	0.49	0.49	1	756426-58-1		10/13/2022 03:46
PFNS	ND	2.0	0.61	0.61	1	68259-12-1		10/13/2022 03:46
PFUnDA	ND	2.1	0.50	0.50	1	2058-94-8		10/13/2022 03:46
NMeFOSAA	2.3	2.1	0.72	0.72	1	2355-31-9		10/13/2022 03:46
NEtFOSAA	3.4	2.1	0.84	0.84	1	2991-50-6		10/13/2022 03:46
PFDS	ND	2.0	0.66	0.66	1	335-77-3		10/13/2022 03:46
PFDOA	ND	2.1	0.50	0.50	1	307-55-1		10/13/2022 03:46
MeFOSE	1.4 J	2.1	0.54	0.54	1	24448-09-7		10/13/2022 03:46
EtFOSE	ND	2.1	0.92	0.92	1	1691-99-2		10/13/2022 03:46
11-CI-PF3OUdS	ND	2.0	0.58	0.58	1	763051-92-9		10/13/2022 03:46
PFTTrDA	ND	2.1	0.64	0.64	1	72629-94-8		10/13/2022 03:46
PFDoS	ND	2.0	0.61	0.61	1	79780-39-5		10/13/2022 03:46
PFTDA	ND	2.1	0.62	0.62	1	376-06-7		10/13/2022 03:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18 20220912
 Lab Sample ID 10625564005
 Lab File ID B221012C_031
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 241mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	21	21	102	50-150		10/13/2022 03:46
13C4 PFOA	21	23	109	50-150		10/13/2022 03:46
13C2 PFDA	21	17	83	50-150		10/13/2022 03:46
13C4 PFOS	20	13	66	50-150		10/13/2022 03:46

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	21	12	57	25-150		10/13/2022 03:46
13C5 PFPeA	21	17	81	25-150		10/13/2022 03:46
13C3 PFBS	19	17	88	25-150		10/13/2022 03:46
13C2 4:2FTS	19	52	268	25-150	R	10/13/2022 03:46
13C5 PFHxA	21	17	84	25-150		10/13/2022 03:46
13C4 PFHpA	21	18	87	25-150		10/13/2022 03:46
13C3 PFHxS	20	18	92	25-150		10/13/2022 03:46
13C2 6:2FTS	20	65	333	25-150	R	10/13/2022 03:46
13C8 PFOA	21	19	93	25-150		10/13/2022 03:46
13C9 PFNA	21	18	89	25-150		10/13/2022 03:46
13C8 PFOS	20	10	51	25-150		10/13/2022 03:46
13C2 8:2FTS	20	39	197	25-150	R	10/13/2022 03:46
13C6 PFDA	21	14	66	25-150		10/13/2022 03:46
d3-MeFOSAA	21	9.5	46	25-150		10/13/2022 03:46
13C8 PFOSA	21	11	53	25-150		10/13/2022 03:46
d5-EtFOSAA	21	11	55	25-150		10/13/2022 03:46
13C7 PFUdA	21	12	56	25-150		10/13/2022 03:46
13C2 PFDoA	21	8.4	41	25-150		10/13/2022 03:46
13C2 PFTeDA	21	10	49	25-150		10/13/2022 03:46
13C3 HFPO-DA	21	13	63	25-150		10/13/2022 03:46
d7-N-MeFOSE	21	10	49	10-150		10/13/2022 03:46
d9-N-EtFOSE	21	7.6	37	10-150		10/13/2022 03:46
d3-N-MeFOSA	21	4.2	20	10-150		10/13/2022 03:46
d5-N-EtFOSA	21	4.2	20	10-150		10/13/2022 03:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Biosolids A 20220914
 Lab Sample ID 10625564006
 Lab File ID B221004B_025
 Matrix Solid
 Collected 09/14/2022 08:28
 Received 09/15/2022 08:50
 Extraction Date 09/22/2022 16:00

Total Amount Extracted 5.17g
 Percent Moisture 68.99%
 Dry Weight Extracted 1.60g
 Ical ID 221003A02
 CCal File B221004B_024
 Ending CCal File B221004B_027
 Blank File B221004B_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	0.31	0.088	0.088	1	375-22-4		10/05/2022 04:44
PFPeA	17	0.31	0.089	0.089	1	2706-90-3		10/05/2022 04:44
HFPO-DA	ND	0.31	0.087	0.087	1	13252-13-6		10/05/2022 04:44
PFBS	1.6	0.28	0.082	0.082	1	375-73-5		10/05/2022 04:44
PFHxA	42 D	1.6	0.43	0.43	5	307-24-4		10/18/2022 04:17
4:2 FTS	ND	0.29	0.072	0.072	1	757124-72-4		10/05/2022 04:44
PFPeS	ND	0.29	0.075	0.075	1	2706-91-4		10/05/2022 04:44
PFHpA	4.9	0.31	0.11	0.11	1	375-85-9		10/05/2022 04:44
DONA	ND	0.29	0.11	0.11	1	919005-14-4		10/05/2022 04:44
PFHxS	1.0	0.28	0.068	0.068	1	355-46-4		10/05/2022 04:44
PFOA	24	0.31	0.097	0.097	1	335-67-1		10/05/2022 04:44
6:2 FTS	2.4	0.30	0.13	0.13	1	27619-97-2		10/05/2022 04:44
PFHpS	0.19 J	0.30	0.087	0.087	1	375-92-8		10/05/2022 04:44
PFNA	1.4	0.31	0.097	0.097	1	375-95-1		10/05/2022 04:44
PFOSAm	0.97	0.31	0.092	0.092	1	754-91-6		10/05/2022 04:44
PFOS	14	0.29	0.092	0.092	1	1763-23-1		10/05/2022 04:44
MeFOSA	0.096 IJ	0.31	0.085	0.085	1	31506-32-8		10/05/2022 04:44
PFDA	12	0.31	0.071	0.071	1	335-76-2		10/05/2022 04:44
EtFOSAm	0.18 J	0.31	0.080	0.080	1	4151-50-2		10/05/2022 04:44
8:2 FTS	1.1	0.30	0.14	0.14	1	39108-34-4		10/05/2022 04:44
9-CI-PF3ON	ND	0.29	0.078	0.078	1	756426-58-1		10/05/2022 04:44
PFNS	ND	0.30	0.11	0.11	1	68259-12-1		10/05/2022 04:44
PFUnDA	1.3	0.31	0.094	0.094	1	2058-94-8		10/05/2022 04:44
NMeFOSAA	31	0.31	0.088	0.088	1	2355-31-9		10/05/2022 04:44
NEtFOSAA	7.9	0.31	0.13	0.13	1	2991-50-6		10/05/2022 04:44
PFDS	1.7	0.30	0.088	0.088	1	335-77-3		10/05/2022 04:44
PFDOA	3.8	0.31	0.10	0.10	1	307-55-1		10/05/2022 04:44
MeFOSE	5.1	0.31	0.094	0.094	1	24448-09-7		10/05/2022 04:44
EtFOSE	2.4	0.31	0.10	0.10	1	1691-99-2		10/05/2022 04:44
11-CI-PF3OUdS	ND	0.29	0.079	0.079	1	763051-92-9		10/05/2022 04:44
PFTTrDA	0.74	0.31	0.099	0.099	1	72629-94-8		10/05/2022 04:44
PFDoS	ND	0.30	0.081	0.081	1	79780-39-5		10/05/2022 04:44
PFTDA	1.1	0.31	0.11	0.11	1	376-06-7		10/05/2022 04:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Biosolids A 20220914	Total Amount Extracted	5.17g
Lab Sample ID	10625564006	Percent Moisture	68.99%
Lab File ID	B221004B_025	Dry Weight Extracted	1.60g
Matrix	Solid	Ical ID	221003A02
Collected	09/14/2022 08:28	CCal File	B221004B_024
Received	09/15/2022 08:50	Ending CCal File	B221004B_027
Extraction Date	09/22/2022 16:00	Blank File	B221004B_005

Injection Internal Standards

Compound	Known Conc. (ug/Kg)	Conc.Found (ug/Kg)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	3.1	2.9	93	50-150		10/05/2022 04:44
13C4 PFOA	3.1	2.5	80	50-150		10/05/2022 04:44
13C2 PFDA	3.1	2.2	72	50-150		10/05/2022 04:44
13C4 PFOS	3.0	2.5	85	50-150		10/05/2022 04:44

Extracted Internal Standards

Compound	Known Conc. (ug/Kg)	Conc.Found (ug/Kg)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	3.1	1.3	40	25-150		10/05/2022 04:44
13C5 PFPeA	3.1	1.3	42	25-150		10/05/2022 04:44
13C3 PFBS	2.9	1.3	46	25-150		10/05/2022 04:44
13C2 4:2FTS	2.9	5.3	181	25-150	R	10/05/2022 04:44
13C5 PFHxA	3.1	1.2	38	25-150	D	10/18/2022 04:17
13C4 PFHpA	3.1	1.3	42	25-150		10/05/2022 04:44
13C3 PFHxS	2.9	1.3	45	25-150		10/05/2022 04:44
13C2 6:2FTS	3.0	5.3	178	25-150	R	10/05/2022 04:44
13C8 PFOA	3.1	1.3	42	25-150		10/05/2022 04:44
13C9 PFNA	3.1	1.4	44	25-150		10/05/2022 04:44
13C8 PFOS	3.0	1.1	35	25-150		10/05/2022 04:44
13C2 8:2FTS	3.0	3.5	118	25-150		10/05/2022 04:44
13C6 PFDA	3.1	1.1	36	25-150		10/05/2022 04:44
d3-MeFOSAA	3.1	0.95	31	25-150		10/05/2022 04:44
13C8 PFOSA	3.1	0.93	30	25-150		10/05/2022 04:44
d5-EtFOSAA	3.1	0.98	32	25-150		10/05/2022 04:44
13C7 PFUdA	3.1	0.95	30	25-150		10/05/2022 04:44
13C2 PFDoA	3.1	0.65	21	25-150	R	10/05/2022 04:44
13C2 PFTeDA	3.1	0.55	18	25-150	R	10/05/2022 04:44
13C3 HFPO-DA	3.1	1.1	35	25-150		10/05/2022 04:44
d7-N-MeFOSE	3.1	0.47	15	10-150		10/05/2022 04:44
d9-N-EtFOSE	3.1	0.30	10	10-150		10/05/2022 04:44
d3-N-MeFOSA	3.1	0.22	7	10-150	R	10/05/2022 04:44
d5-N-EtFOSA	3.1	0.15	5	10-150	R	10/05/2022 04:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Biosolids B 20220914
 Lab Sample ID 10625564007
 Lab File ID B221004B_026
 Matrix Solid
 Collected 09/14/2022 08:35
 Received 09/15/2022 08:50
 Extraction Date 09/22/2022 16:00

Total Amount Extracted 5.42g
 Percent Moisture 94.67%
 Dry Weight Extracted 0.289g
 Ical ID 221003A02
 CCal File B221004B_024
 Ending CCal File B221004B_027
 Blank File B221004B_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.7	0.49	0.49	1	375-22-4		10/05/2022 05:04
PFPeA	0.69 J	1.7	0.49	0.49	1	2706-90-3		10/05/2022 05:04
HFPO-DA	ND	1.7	0.48	0.48	1	13252-13-6		10/05/2022 05:04
PFBS	1.2 IJ	1.5	0.46	0.46	1	375-73-5		10/05/2022 05:04
PFHxA	2.4	1.7	0.48	0.48	1	307-24-4		10/05/2022 05:04
4:2 FTS	ND	1.6	0.40	0.40	1	757124-72-4		10/05/2022 05:04
PFPeS	ND	1.6	0.42	0.42	1	2706-91-4		10/05/2022 05:04
PFHpA	ND	1.7	0.60	0.60	1	375-85-9		10/05/2022 05:04
DONA	ND	1.6	0.63	0.63	1	919005-14-4		10/05/2022 05:04
PFHxS	2.0	1.6	0.38	0.38	1	355-46-4		10/05/2022 05:04
PFOA	1.4 J	1.7	0.54	0.54	1	335-67-1		10/05/2022 05:04
6:2 FTS	ND	1.6	0.72	0.72	1	27619-97-2		10/05/2022 05:04
PFHpS	ND	1.6	0.48	0.48	1	375-92-8		10/05/2022 05:04
PFNA	0.56 J	1.7	0.54	0.54	1	375-95-1		10/05/2022 05:04
PFOSAm	0.52 J	1.7	0.51	0.51	1	754-91-6		10/05/2022 05:04
PFOS	8.7	1.6	0.51	0.51	1	1763-23-1		10/05/2022 05:04
MeFOSA	ND	1.7	0.47	0.47	1	31506-32-8		10/05/2022 05:04
PFDA	4.6	1.7	0.39	0.39	1	335-76-2		10/05/2022 05:04
EtFOSAm	ND	1.7	0.44	0.44	1	4151-50-2		10/05/2022 05:04
8:2 FTS	ND	1.7	0.76	0.76	1	39108-34-4		10/05/2022 05:04
9-CI-PF3ON	ND	1.6	0.43	0.43	1	756426-58-1		10/05/2022 05:04
PFNS	ND	1.7	0.60	0.60	1	68259-12-1		10/05/2022 05:04
PFUnDA	1.0 J	1.7	0.52	0.52	1	2058-94-8		10/05/2022 05:04
NMeFOSAA	13	1.7	0.49	0.49	1	2355-31-9		10/05/2022 05:04
NEtFOSAA	6.7	1.7	0.70	0.70	1	2991-50-6		10/05/2022 05:04
PFDS	1.8	1.7	0.49	0.49	1	335-77-3		10/05/2022 05:04
PFDOA	3.6	1.7	0.57	0.57	1	307-55-1		10/05/2022 05:04
MeFOSE	6.9	1.7	0.52	0.52	1	24448-09-7		10/05/2022 05:04
EtFOSE	2.1	1.7	0.56	0.56	1	1691-99-2		10/05/2022 05:04
11-CI-PF3OUdS	ND	1.6	0.44	0.44	1	763051-92-9		10/05/2022 05:04
PFTTrDA	0.57 J	1.7	0.55	0.55	1	72629-94-8		10/05/2022 05:04
PFDoS	0.89 IJ	1.7	0.45	0.45	1	79780-39-5		10/05/2022 05:04
PFTDA	0.82 J	1.7	0.59	0.59	1	376-06-7		10/05/2022 05:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Biosolids B 20220914	Total Amount Extracted	5.42g
Lab Sample ID	10625564007	Percent Moisture	94.67%
Lab File ID	B221004B_026	Dry Weight Extracted	0.289g
Matrix	Solid	Ical ID	221003A02
Collected	09/14/2022 08:35	CCal File	B221004B_024
Received	09/15/2022 08:50	Ending CCal File	B221004B_027
Extraction Date	09/22/2022 16:00	Blank File	B221004B_005

Injection Internal Standards

Compound	Known Conc. (ug/Kg)	Conc.Found (ug/Kg)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	17	13	77	50-150		10/05/2022 05:04
13C4 PFOA	17	12	67	50-150		10/05/2022 05:04
13C2 PFDA	17	10	59	50-150		10/05/2022 05:04
13C4 PFOS	17	9.4	57	50-150		10/05/2022 05:04

Extracted Internal Standards

Compound	Known Conc. (ug/Kg)	Conc.Found (ug/Kg)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	17	6.8	39	25-150		10/05/2022 05:04
13C5 PFPeA	17	9.2	53	25-150		10/05/2022 05:04
13C3 PFBS	16	9.3	58	25-150		10/05/2022 05:04
13C2 4:2FTS	16	32	196	25-150	R	10/05/2022 05:04
13C5 PFHxA	17	9.1	53	25-150		10/05/2022 05:04
13C4 PFHpA	17	8.7	50	25-150		10/05/2022 05:04
13C3 PFHxS	16	8.3	50	25-150		10/05/2022 05:04
13C2 6:2FTS	16	31	188	25-150	R	10/05/2022 05:04
13C8 PFOA	17	8.2	47	25-150		10/05/2022 05:04
13C9 PFNA	17	9.6	55	25-150		10/05/2022 05:04
13C8 PFOS	17	6.3	38	25-150		10/05/2022 05:04
13C2 8:2FTS	17	25	151	25-150	R	10/05/2022 05:04
13C6 PFDA	17	7.8	45	25-150		10/05/2022 05:04
d3-MeFOSAA	17	6.4	37	25-150		10/05/2022 05:04
13C8 PFOSA	17	9.5	55	25-150		10/05/2022 05:04
d5-EtFOSAA	17	10	59	25-150		10/05/2022 05:04
13C7 PFUdA	17	6.3	36	25-150		10/05/2022 05:04
13C2 PFDoA	17	7.9	46	25-150		10/05/2022 05:04
13C2 PFTeDA	17	9.3	54	25-150		10/05/2022 05:04
13C3 HFPO-DA	17	7.9	46	25-150		10/05/2022 05:04
d7-N-MeFOSE	17	3.7	22	10-150		10/05/2022 05:04
d9-N-EtFOSE	17	3.9	23	10-150		10/05/2022 05:04
d3-N-MeFOSA	17	0.36	2	10-150	R	10/05/2022 05:04
d5-N-EtFOSA	17	0.70	4	10-150	R	10/05/2022 05:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID EB-01 20220914
 Lab Sample ID 10625564008
 Lab File ID B221012C_032
 Matrix Industrial_Water
 Collected 09/14/2022 08:20
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 254mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.49	0.49	1	375-22-4		10/13/2022 04:06
PFPeA	ND	2.0	0.81	0.81	1	2706-90-3		10/13/2022 04:06
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		10/13/2022 04:06
PFBS	ND	1.7	0.48	0.48	1	375-73-5		10/13/2022 04:06
PFHxA	ND	2.0	0.89	0.89	1	307-24-4		10/13/2022 04:06
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		10/13/2022 04:06
PFPeS	ND	1.8	0.59	0.59	1	2706-91-4		10/13/2022 04:06
PFHpA	ND	2.0	0.68	0.68	1	375-85-9		10/13/2022 04:06
DONA	ND	1.9	0.90	0.90	1	919005-14-4		10/13/2022 04:06
PFHxS	ND	1.8	0.52	0.52	1	355-46-4		10/13/2022 04:06
PFOA	ND	2.0	0.85	0.85	1	335-67-1		10/13/2022 04:06
6:2 FTS	ND	1.9	0.66	0.66	1	27619-97-2		10/13/2022 04:06
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/13/2022 04:06
PFNA	ND	2.0	0.78	0.78	1	375-95-1		10/13/2022 04:06
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		10/13/2022 04:06
PFOS	ND	1.8	0.65	0.65	1	1763-23-1		10/13/2022 04:06
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		10/13/2022 04:06
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/13/2022 04:06
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		10/13/2022 04:06
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		10/13/2022 04:06
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		10/13/2022 04:06
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/13/2022 04:06
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/13/2022 04:06
NMeFOSAA	ND	2.0	0.68	0.68	1	2355-31-9		10/13/2022 04:06
NEtFOSAA	ND	2.0	0.80	0.80	1	2991-50-6		10/13/2022 04:06
PFDS	ND	1.9	0.63	0.63	1	335-77-3		10/13/2022 04:06
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		10/13/2022 04:06
MeFOSE	ND	2.0	0.51	0.51	1	24448-09-7		10/13/2022 04:06
EtFOSE	ND	2.0	0.87	0.87	1	1691-99-2		10/13/2022 04:06
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		10/13/2022 04:06
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		10/13/2022 04:06
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		10/13/2022 04:06
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/13/2022 04:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID EB-01 20220914
 Lab Sample ID 10625564008
 Lab File ID B221012C_032
 Matrix Industrial_Water
 Collected 09/14/2022 08:20
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 254mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	22	113	50-150		10/13/2022 04:06
13C4 PFOA	20	23	117	50-150		10/13/2022 04:06
13C2 PFDA	20	26	131	50-150		10/13/2022 04:06
13C4 PFOS	19	20	108	50-150		10/13/2022 04:06

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	18	92	25-150		10/13/2022 04:06
13C5 PFPeA	20	17	88	25-150		10/13/2022 04:06
13C3 PFBS	18	17	91	25-150		10/13/2022 04:06
13C2 4:2FTS	18	19	101	25-150		10/13/2022 04:06
13C5 PFHxA	20	18	92	25-150		10/13/2022 04:06
13C4 PFHpA	20	18	93	25-150		10/13/2022 04:06
13C3 PFHxS	19	16	88	25-150		10/13/2022 04:06
13C2 6:2FTS	19	23	121	25-150		10/13/2022 04:06
13C8 PFOA	20	18	93	25-150		10/13/2022 04:06
13C9 PFNA	20	18	91	25-150		10/13/2022 04:06
13C8 PFOS	19	15	81	25-150		10/13/2022 04:06
13C2 8:2FTS	19	24	126	25-150		10/13/2022 04:06
13C6 PFDA	20	21	104	25-150		10/13/2022 04:06
d3-MeFOSAA	20	16	79	25-150		10/13/2022 04:06
13C8 PFOSA	20	17	84	25-150		10/13/2022 04:06
d5-EtFOSAA	20	17	87	25-150		10/13/2022 04:06
13C7 PFUdA	20	20	101	25-150		10/13/2022 04:06
13C2 PFDoA	20	18	91	25-150		10/13/2022 04:06
13C2 PFTeDA	20	19	98	25-150		10/13/2022 04:06
13C3 HFPO-DA	20	15	79	25-150		10/13/2022 04:06
d7-N-MeFOSE	20	12	59	10-150		10/13/2022 04:06
d9-N-EtFOSE	20	9.7	49	10-150		10/13/2022 04:06
d3-N-MeFOSA	20	5.3	27	10-150		10/13/2022 04:06
d5-N-EtFOSA	20	4.1	21	10-150		10/13/2022 04:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220913
 Lab Sample ID 10625564009
 Lab File ID B221012C_033
 Matrix Industrial_Water
 Collected 09/13/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 259mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	13	1.9	0.48	0.48	1	375-22-4		10/13/2022 04:26
PFPeA	31	1.9	0.79	0.79	1	2706-90-3		10/13/2022 04:26
HFPO-DA	ND	1.9	0.48	0.48	1	13252-13-6		10/13/2022 04:26
PFBS	6.4	1.7	0.47	0.47	1	375-73-5		10/13/2022 04:26
PFHxA	26	1.9	0.88	0.88	1	307-24-4		10/13/2022 04:26
4:2 FTS	ND	1.8	0.45	0.45	1	757124-72-4		10/13/2022 04:26
PFPeS	0.79 IJ	1.8	0.58	0.58	1	2706-91-4		10/13/2022 04:26
PFHpA	3.9	1.9	0.66	0.66	1	375-85-9		10/13/2022 04:26
DONA	ND	1.8	0.89	0.89	1	919005-14-4		10/13/2022 04:26
PFHxS	9.6	1.8	0.51	0.51	1	355-46-4		10/13/2022 04:26
PFOA	11	1.9	0.83	0.83	1	335-67-1		10/13/2022 04:26
6:2 FTS	2.6	1.8	0.65	0.65	1	27619-97-2		10/13/2022 04:26
PFHpS	ND	1.8	0.64	0.64	1	375-92-8		10/13/2022 04:26
PFNA	0.97 J	1.9	0.77	0.77	1	375-95-1		10/13/2022 04:26
PFOSAm	ND	1.9	0.69	0.69	1	754-91-6		10/13/2022 04:26
PFOS	5.9	1.8	0.64	0.64	1	1763-23-1		10/13/2022 04:26
MeFOSA	ND	1.9	0.53	0.53	1	31506-32-8		10/13/2022 04:26
PFDA	1.4 J	1.9	0.59	0.59	1	335-76-2		10/13/2022 04:26
EtFOSAm	ND	1.9	0.55	0.55	1	4151-50-2		10/13/2022 04:26
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/13/2022 04:26
9-CI-PF3ON	ND	1.8	0.45	0.45	1	756426-58-1		10/13/2022 04:26
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		10/13/2022 04:26
PFUnDA	ND	1.9	0.47	0.47	1	2058-94-8		10/13/2022 04:26
NMeFOSAA	1.2 J	1.9	0.67	0.67	1	2355-31-9		10/13/2022 04:26
NEtFOSAA	ND	1.9	0.79	0.79	1	2991-50-6		10/13/2022 04:26
PFDS	ND	1.9	0.62	0.62	1	335-77-3		10/13/2022 04:26
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		10/13/2022 04:26
MeFOSE	ND	1.9	0.50	0.50	1	24448-09-7		10/13/2022 04:26
EtFOSE	ND	1.9	0.86	0.86	1	1691-99-2		10/13/2022 04:26
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		10/13/2022 04:26
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		10/13/2022 04:26
PFDoS	ND	1.9	0.57	0.57	1	79780-39-5		10/13/2022 04:26
PFTDA	ND	1.9	0.58	0.58	1	376-06-7		10/13/2022 04:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220913
 Lab Sample ID 10625564009
 Lab File ID B221012C_033
 Matrix Industrial_Water
 Collected 09/13/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 259mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	22	117	50-150		10/13/2022 04:26
13C4 PFOA	19	23	118	50-150		10/13/2022 04:26
13C2 PFDA	19	27	138	50-150		10/13/2022 04:26
13C4 PFOS	18	22	118	50-150		10/13/2022 04:26

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	14	73	25-150		10/13/2022 04:26
13C5 PFPeA	19	17	89	25-150		10/13/2022 04:26
13C3 PFBS	18	17	94	25-150		10/13/2022 04:26
13C2 4:2FTS	18	41	229	25-150	R	10/13/2022 04:26
13C5 PFHxA	19	19	96	25-150		10/13/2022 04:26
13C4 PFHpA	19	19	99	25-150		10/13/2022 04:26
13C3 PFHxS	18	17	94	25-150		10/13/2022 04:26
13C2 6:2FTS	18	43	236	25-150	R	10/13/2022 04:26
13C8 PFOA	19	20	103	25-150		10/13/2022 04:26
13C9 PFNA	19	20	103	25-150		10/13/2022 04:26
13C8 PFOS	18	17	93	25-150		10/13/2022 04:26
13C2 8:2FTS	18	30	164	25-150	R	10/13/2022 04:26
13C6 PFDA	19	20	102	25-150		10/13/2022 04:26
d3-MeFOSAA	19	20	103	25-150		10/13/2022 04:26
13C8 PFOSA	19	15	77	25-150		10/13/2022 04:26
d5-EtFOSAA	19	19	100	25-150		10/13/2022 04:26
13C7 PFUdA	19	20	105	25-150		10/13/2022 04:26
13C2 PFDoA	19	19	101	25-150		10/13/2022 04:26
13C2 PFTeDA	19	16	83	25-150		10/13/2022 04:26
13C3 HFPO-DA	19	16	81	25-150		10/13/2022 04:26
d7-N-MeFOSE	19	12	60	10-150		10/13/2022 04:26
d9-N-EtFOSE	19	9.4	49	10-150		10/13/2022 04:26
d3-N-MeFOSA	19	2.9	15	10-150		10/13/2022 04:26
d5-N-EtFOSA	19	2.2	11	10-150		10/13/2022 04:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKGV
 Lab Sample ID BLANK-101231
 Lab File ID B221004B_005
 Matrix Soil
 Collected 09/14/2022 20:04
 Received 09/14/2022 20:04
 Extraction Date 09/22/2022 16:00

Total Amount Extracted 5.00g
 Ical ID 221003A02
 CCal File B221004B_003
 Ending CCal File B221004B_015
 Blank File

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	0.10	0.028	0.028	1	375-22-4		10/04/2022 22:04
PFPeA	ND	0.10	0.029	0.029	1	2706-90-3		10/04/2022 22:04
HFPO-DA	ND	0.10	0.028	0.028	1	13252-13-6		10/04/2022 22:04
PFBS	ND	0.088	0.026	0.026	1	375-73-5		10/04/2022 22:04
PFHxA	ND	0.10	0.028	0.028	1	307-24-4		10/04/2022 22:04
4:2 FTS	ND	0.094	0.023	0.023	1	757124-72-4		10/04/2022 22:04
PFPeS	ND	0.094	0.024	0.024	1	2706-91-4		10/04/2022 22:04
PFHpA	ND	0.10	0.035	0.035	1	375-85-9		10/04/2022 22:04
DONA	ND	0.095	0.036	0.036	1	919005-14-4		10/04/2022 22:04
PFHxS	ND	0.091	0.022	0.022	1	355-46-4		10/04/2022 22:04
PFOA	ND	0.10	0.031	0.031	1	335-67-1		10/04/2022 22:04
6:2 FTS	ND	0.095	0.041	0.041	1	27619-97-2		10/04/2022 22:04
PFHpS	ND	0.095	0.028	0.028	1	375-92-8		10/04/2022 22:04
PFNA	ND	0.10	0.031	0.031	1	375-95-1		10/04/2022 22:04
PFOSAm	ND	0.10	0.029	0.029	1	754-91-6		10/04/2022 22:04
PFOS	ND	0.092	0.030	0.030	1	1763-23-1		10/04/2022 22:04
MeFOSA	ND	0.10	0.027	0.027	1	31506-32-8		10/04/2022 22:04
PFDA	ND	0.10	0.023	0.023	1	335-76-2		10/04/2022 22:04
EtFOSAm	ND	0.10	0.026	0.026	1	4151-50-2		10/04/2022 22:04
8:2 FTS	ND	0.096	0.044	0.044	1	39108-34-4		10/04/2022 22:04
9-CI-PF3ON	ND	0.093	0.025	0.025	1	756426-58-1		10/04/2022 22:04
PFNS	ND	0.096	0.035	0.035	1	68259-12-1		10/04/2022 22:04
PFUnDA	ND	0.10	0.030	0.030	1	2058-94-8		10/04/2022 22:04
NMeFOSAA	ND	0.10	0.028	0.028	1	2355-31-9		10/04/2022 22:04
NEtFOSAA	ND	0.10	0.040	0.040	1	2991-50-6		10/04/2022 22:04
PFDS	ND	0.096	0.028	0.028	1	335-77-3		10/04/2022 22:04
PFDOA	ND	0.10	0.033	0.033	1	307-55-1		10/04/2022 22:04
MeFOSE	ND	0.10	0.030	0.030	1	24448-09-7		10/04/2022 22:04
EtFOSE	ND	0.10	0.032	0.032	1	1691-99-2		10/04/2022 22:04
11-CI-PF3OUdS	ND	0.094	0.025	0.025	1	763051-92-9		10/04/2022 22:04
PFTTrDA	ND	0.10	0.032	0.032	1	72629-94-8		10/04/2022 22:04
PFDoS	ND	0.097	0.026	0.026	1	79780-39-5		10/04/2022 22:04
PFTDA	ND	0.10	0.034	0.034	1	376-06-7		10/04/2022 22:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKGV
 Lab Sample ID BLANK-101231
 Lab File ID B221004B_005
 Matrix Soil
 Collected 09/14/2022 20:04
 Received 09/14/2022 20:04
 Extraction Date 09/22/2022 16:00

Total Amount Extracted 5.00g
 Ical ID 221003A02
 CCal File B221004B_003
 Ending CCal File B221004B_015
 Blank File

Injection Internal Standards

Compound	Known Conc. (ug/Kg)	Conc.Found (ug/Kg)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	1.0	0.94	94	50-150		10/04/2022 22:04
13C4 PFOA	1.0	0.97	97	50-150		10/04/2022 22:04
13C2 PFDA	1.0	1.0	102	50-150		10/04/2022 22:04
13C4 PFOS	0.96	1.0	106	50-150		10/04/2022 22:04

Extracted Internal Standards

Compound	Known Conc. (ug/Kg)	Conc.Found (ug/Kg)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	1.0	0.82	82	50-150		10/04/2022 22:04
13C5 PFPeA	1.0	0.82	82	50-150		10/04/2022 22:04
13C3 PFBS	0.93	0.76	82	50-150		10/04/2022 22:04
13C2 4:2FTS	0.94	0.80	85	50-150		10/04/2022 22:04
13C5 PFHxA	1.0	0.84	84	50-150		10/04/2022 22:04
13C4 PFHpA	1.0	0.81	81	50-150		10/04/2022 22:04
13C3 PFHxS	0.95	0.84	88	50-150		10/04/2022 22:04
13C2 6:2FTS	0.95	0.73	77	50-150		10/04/2022 22:04
13C8 PFOA	1.0	0.86	86	50-150		10/04/2022 22:04
13C9 PFNA	1.0	0.83	83	50-150		10/04/2022 22:04
13C8 PFOS	0.96	0.84	87	50-150		10/04/2022 22:04
13C2 8:2FTS	0.96	0.75	78	50-150		10/04/2022 22:04
13C6 PFDA	1.0	0.87	87	50-150		10/04/2022 22:04
d3-MeFOSAA	1.0	0.85	85	50-150		10/04/2022 22:04
13C8 PFOSA	1.0	0.78	78	50-150		10/04/2022 22:04
d5-EtFOSAA	1.0	0.81	81	50-150		10/04/2022 22:04
13C7 PFUdA	1.0	0.86	86	50-150		10/04/2022 22:04
13C2 PFDoA	1.0	0.95	95	50-150		10/04/2022 22:04
13C2 PFTeDA	1.0	0.84	84	50-150		10/04/2022 22:04
13C3 HFPO-DA	1.0	0.80	80	50-150		10/04/2022 22:04
d7-N-MeFOSE	1.0	0.80	80	20-150		10/04/2022 22:04
d9-N-EtFOSE	1.0	0.75	75	20-150		10/04/2022 22:04
d3-N-MeFOSA	1.0	0.70	70	20-150		10/04/2022 22:04
d5-N-EtFOSA	1.0	0.66	66	20-150		10/04/2022 22:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKLH
 Lab Sample ID BLANK-101612
 Lab File ID B221012C_008
 Matrix Water
 Collected 10/03/2022 20:01
 Received 10/03/2022 20:01
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 226mL
 Ical ID 221003A02
 CCal File B221012C_002
 Ending CCal File B221012C_014
 Blank File

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.2	0.55	0.55	1	375-22-4		10/12/2022 20:05
PFPeA	ND	2.2	0.91	0.91	1	2706-90-3		10/12/2022 20:05
HFPO-DA	ND	2.2	0.54	0.54	1	13252-13-6		10/12/2022 20:05
PFBS	ND	2.0	0.54	0.54	1	375-73-5		10/12/2022 20:05
PFHxA	ND	2.2	1.0	1.0	1	307-24-4		10/12/2022 20:05
4:2 FTS	ND	2.1	0.51	0.51	1	757124-72-4		10/12/2022 20:05
PFPeS	ND	2.1	0.66	0.66	1	2706-91-4		10/12/2022 20:05
PFHpA	ND	2.2	0.76	0.76	1	375-85-9		10/12/2022 20:05
DONA	ND	2.1	1.0	1.0	1	919005-14-4		10/12/2022 20:05
PFHxS	ND	2.0	0.59	0.59	1	355-46-4		10/12/2022 20:05
PFOA	ND	2.2	0.95	0.95	1	335-67-1		10/12/2022 20:05
6:2 FTS	ND	2.1	0.75	0.75	1	27619-97-2		10/12/2022 20:05
PFHpS	ND	2.1	0.74	0.74	1	375-92-8		10/12/2022 20:05
PFNA	ND	2.2	0.88	0.88	1	375-95-1		10/12/2022 20:05
PFOSAm	ND	2.2	0.79	0.79	1	754-91-6		10/12/2022 20:05
PFOS	ND	2.0	0.74	0.74	1	1763-23-1		10/12/2022 20:05
MeFOSA	ND	2.2	0.61	0.61	1	31506-32-8		10/12/2022 20:05
PFDA	ND	2.2	0.67	0.67	1	335-76-2		10/12/2022 20:05
EtFOSAm	ND	2.2	0.63	0.63	1	4151-50-2		10/12/2022 20:05
8:2 FTS	ND	2.1	0.56	0.56	1	39108-34-4		10/12/2022 20:05
9-CI-PF3ON	ND	2.1	0.52	0.52	1	756426-58-1		10/12/2022 20:05
PFNS	ND	2.1	0.65	0.65	1	68259-12-1		10/12/2022 20:05
PFUnDA	ND	2.2	0.54	0.54	1	2058-94-8		10/12/2022 20:05
NMeFOSAA	ND	2.2	0.77	0.77	1	2355-31-9		10/12/2022 20:05
NEtFOSAA	ND	2.2	0.90	0.90	1	2991-50-6		10/12/2022 20:05
PFDS	ND	2.1	0.71	0.71	1	335-77-3		10/12/2022 20:05
PFDOA	ND	2.2	0.53	0.53	1	307-55-1		10/12/2022 20:05
MeFOSE	ND	2.2	0.58	0.58	1	24448-09-7		10/12/2022 20:05
EtFOSE	ND	2.2	0.98	0.98	1	1691-99-2		10/12/2022 20:05
11-CI-PF3OUdS	ND	2.1	0.61	0.61	1	763051-92-9		10/12/2022 20:05
PFTTrDA	ND	2.2	0.69	0.69	1	72629-94-8		10/12/2022 20:05
PFDoS	ND	2.1	0.65	0.65	1	79780-39-5		10/12/2022 20:05
PFTDA	ND	2.2	0.66	0.66	1	376-06-7		10/12/2022 20:05

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BLKLH	Total Amount Extracted	226mL
Lab Sample ID	BLANK-101612	Ical ID	221003A02
Lab File ID	B221012C_008	CCal File	B221012C_002
Matrix	Water	Ending CCal File	B221012C_014
Collected	10/03/2022 20:01	Blank File	
Received	10/03/2022 20:01		
Extraction Date	10/10/2022 13:47		

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	22	24	108	50-150		10/12/2022 20:05
13C4 PFOA	22	25	113	50-150		10/12/2022 20:05
13C2 PFDA	22	22	100	50-150		10/12/2022 20:05
13C4 PFOS	21	23	109	50-150		10/12/2022 20:05

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	22	21	96	50-150		10/12/2022 20:05
13C5 PFPeA	22	22	101	50-150		10/12/2022 20:05
13C3 PFBS	21	20	99	50-150		10/12/2022 20:05
13C2 4:2FTS	21	20	96	50-150		10/12/2022 20:05
13C5 PFHxA	22	22	99	50-150		10/12/2022 20:05
13C4 PFHpA	22	23	103	50-150		10/12/2022 20:05
13C3 PFHxS	21	21	98	50-150		10/12/2022 20:05
13C2 6:2FTS	21	20	96	50-150		10/12/2022 20:05
13C8 PFOA	22	20	92	50-150		10/12/2022 20:05
13C9 PFNA	22	22	102	50-150		10/12/2022 20:05
13C8 PFOS	21	19	89	50-150		10/12/2022 20:05
13C2 8:2FTS	21	19	90	50-150		10/12/2022 20:05
13C6 PFDA	22	21	95	50-150		10/12/2022 20:05
d3-MeFOSAA	22	18	79	50-150		10/12/2022 20:05
13C8 PFOSA	22	17	77	50-150		10/12/2022 20:05
d5-EtFOSAA	22	19	84	50-150		10/12/2022 20:05
13C7 PFUdA	22	21	95	50-150		10/12/2022 20:05
13C2 PFDaA	22	21	95	50-150		10/12/2022 20:05
13C2 PFTeDA	22	17	76	50-150		10/12/2022 20:05
13C3 HFPO-DA	22	19	86	50-150		10/12/2022 20:05
d7-N-MeFOSE	22	17	77	20-150		10/12/2022 20:05
d9-N-EtFOSE	22	16	72	20-150		10/12/2022 20:05
d3-N-MeFOSA	22	11	48	20-150		10/12/2022 20:05
d5-N-EtFOSA	22	11	52	20-150		10/12/2022 20:05

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-101232	Instrument ID	10LCMS02
Run File Name	B221004B_006	Column ID	125GA90033
Analyzed	10/04/2022 22:24	Ical ID	221003A02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc. ug/Kg	Conc. Found ug/Kg	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	1.0	1.1	107	50-150	
13C4_PFOA	1.0	1.0	103	50-150	
13C2_PFDA	1.0	1.1	111	50-150	
13C4_PFOS	0.96	1.1	117	50-150	

Extracted Internal Standards

Compound	Known Conc. ug/Kg	Conc. Found ug/Kg	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	1.0	0.91	91	50-150	
13C5_PFPeA	1.0	0.90	90	50-150	
13C3_PFBFS	0.93	0.85	92	50-150	
13C2_4:2FTS	0.94	0.87	93	50-150	
13C5_PFHxA	1.0	0.94	94	50-150	
13C4_PFHpA	1.0	0.87	87	50-150	
13C3_PFHxS	0.95	0.90	95	50-150	
13C2_6:2FTS	0.95	0.80	84	50-150	
13C8_PFOA	1.0	0.93	93	50-150	
13C9_PFNA	1.0	0.95	95	50-150	
13C8_PFOS	0.96	0.93	97	50-150	
13C2_8:2FTS	0.96	0.83	86	50-150	
13C6_PFDA	1.0	0.98	98	50-150	
d3-MeFOSAA	1.0	0.98	98	50-150	
13C8_PFOA	1.0	0.86	86	50-150	
d5-EtFOSAA	1.0	0.94	94	50-150	
13C7_PFUdA	1.0	0.95	95	50-150	
13C2_PFDaA	1.0	1.0	104	50-150	
13C2_PFTeDA	1.0	0.92	92	50-150	
13C3_HFPO-DA	1.0	0.87	87	50-150	
d7-N-MeFOSE	1.0	0.85	85	20-150	
d9-N-EtFOSE	1.0	0.80	80	20-150	
d3-N-MeFOSA	1.0	0.56	56	20-150	
d5-N-EtFOSA	1.0	0.46	46	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

LCS Analysis Summary
 PFAS by Isotope Dilution

Page 2 of 4

Lab Sample ID LCS-101232
 Run File Name B221004B_006
 Analyzed 10/04/2022 22:24
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level L

Native Analytes

Compound	Known Conc. ug/Kg	Conc. Found ug/Kg	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.20	0.20	101	50-150		375-22-4
PFPeA	0.20	0.20	98	50-150		2706-90-3
HFPO-DA	0.20	0.19	96	50-150		13252-13-6
PFBS	0.18	0.17	94	50-150		375-73-5
PFHxA	0.20	0.19	97	50-150		307-24-4
4:2 FTS	0.19	0.18	96	50-150		757124-72-4
PFPeS	0.19	0.18	97	50-150		2706-91-4
PFHpA	0.20	0.20	99	50-150		375-85-9
DONA	0.19	0.19	100	50-150		919005-14-4
PFHxS	0.18	0.17	93	50-150		355-46-4
PFOA	0.20	0.21	105	50-150		335-67-1
6:2 FTS	0.19	0.17	91	50-150		27619-97-2
PFHpS	0.19	0.16	86	50-150		375-92-8
PFNA	0.20	0.19	95	50-150		375-95-1
PFOSAm	0.20	0.18	92	50-150		754-91-6
PFOS	0.18	0.17	90	50-150		1763-23-1
MeFOSA	0.20	0.19	93	50-150		31506-32-8
PFDA	0.20	0.18	92	50-150		335-76-2
EtFOSAm	0.20	0.18	89	50-150		4151-50-2
8:2 FTS	0.19	0.17	88	50-150		39108-34-4
9-CI-PF3ON	0.19	0.17	94	50-150		756426-58-1
PFNS	0.19	0.19	99	50-150		68259-12-1
PFUnDA	0.20	0.18	90	50-150		2058-94-8
NMeFOSAA	0.20	0.17	83	50-150		2355-31-9
NEtFOSAA	0.20	0.17	85	50-150		2991-50-6
PFDS	0.19	0.18	95	50-150		335-77-3
PFDOA	0.20	0.20	98	50-150		307-55-1
MeFOSE	0.20	0.20	98	50-150		24448-09-7
EtFOSE	0.20	0.20	98	50-150		1691-99-2
11-CI-PF3OUdS	0.19	0.19	99	50-150		763051-92-9
PFTrDA	0.20	0.19	95	50-150		72629-94-8
PFDoS	0.19	0.18	92	50-150		79780-39-5
PFTDA	0.20	0.18	91	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101232
 Run File Name B221004B_006
 Analyzed 10/04/2022 22:24
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.67	5.67	1803	
13C4 PFOA	N/A	N/A	6.85	6.83	2422	
13C2 PFDA	N/A	N/A	8.08	8.05	1763	
13C4 PFOS	N/A	N/A	8.50	8.50	7392	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.24	4.34	2384	
13C5 PFPeA	N/A	N/A	5.06	5.12	2287	
13C3 PFBS	N/A	N/A	5.88	5.93	2625	
13C2 4:2FTS	N/A	N/A	5.44	5.48	899	
13C5 PFHxA	N/A	N/A	5.67	5.71	1870	
13C4 PFHpA	N/A	N/A	6.26	6.29	2003	
13C3 PFHxS	N/A	N/A	7.20	7.26	2972	
13C2 6:2FTS	N/A	N/A	6.55	6.59	2031	
13C8 PFOA	N/A	N/A	6.85	6.89	2999	
13C9 PFNA	N/A	N/A	7.45	7.50	2499	
13C8 PFOS	N/A	N/A	8.50	8.54	2426	
13C2 8:2FTS	N/A	N/A	7.73	7.78	6799571	
13C6 PFDA	N/A	N/A	8.08	8.12	1986	
d3-MeFOSAA	N/A	N/A	7.99	8.03	2264	
13C8 PFOSA	N/A	N/A	10.69	10.69	1003	
d5-EtFOSAA	N/A	N/A	8.27	8.31	1570	
13C7 PFUdA	N/A	N/A	8.70	8.73	2388	
13C2 PFDoA	N/A	N/A	9.34	9.35	1826	
13C2 PFTeDA	N/A	N/A	10.57	10.57	1714	
13C3 HFPO-DA	N/A	N/A	5.91	5.94	1461	
d7-N-MeFOSE	N/A	N/A	12.55	12.56	32	
d9-N-EtFOSE	N/A	N/A	13.01	13.10	504	
d3-N-MeFOSA	N/A	N/A	12.75	12.77	647	
d5-N-EtFOSA	N/A	N/A	13.17	13.17	717	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101232
 Run File Name B221004B_006
 Analyzed 10/04/2022 22:24
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.24	4.24	182	
PFPeA	N/A	N/A	5.07	5.06	383	
HFPO-DA	0.32	0.33	5.92	5.96	613	
PFBS	0.45	0.47	5.88	5.92	1764	
PFHxA	0.08	0.08	5.68	5.68	428	
4:2 FTS	0.81	0.85	5.44	5.45	3053	
PFPeS	0.44	0.42	6.55	6.57	1844	
PFHpA	0.28	0.30	6.27	6.25	18	
DONA	0.56	0.58	6.48	6.47	1385	
PFHxS	0.40	0.37	7.21	7.22	1811	
PFOA	0.37	0.38	6.85	6.83	237	
6:2 FTS	0.90	0.86	6.56	6.53	781	
PFHpS	0.44	0.37	7.86	7.87	4305	
PFNA	0.15	0.15	7.46	7.43	299	
PFOSAm	N/A	N/A	10.70	10.79	534	
PFOS	0.42	0.39	8.51	8.51	4206	
MeFOSA	0.61	0.61	12.77	12.86	1370	
PFDA	0.15	0.21	8.09	8.06	408	
EtFOSAm	0.50	0.55	13.19	13.28	1013	
8:2 FTS	0.89	1.00	7.74	7.70	1536908	
9-CI-PF3ON	0.05	0.06	8.97	8.97	1140	
PFNS	0.45	0.45	9.15	9.14	1184	
PFUnDA	0.12	0.12	8.71	8.68	531	
NMeFOSAA	0.88	0.64	8.00	7.96	95945	
NEtFOSAA	0.66	0.85	8.28	8.32	348	
PFDS	0.37	0.36	9.77	9.80	2007	
PFDOA	0.16	0.16	9.34	9.30	453	
MeFOSE	N/A	N/A	12.59	12.67	511	
EtFOSE	0.00	0.00	13.05	13.14	348	
11-CI-PF3OUdS	0.02	0.02	10.22	10.20	814	
PFTrDA	0.15	0.15	9.97	9.92	364	
PFDoS	0.43	0.43	10.94	10.94	1912	
PFTDA	0.23	0.24	10.58	10.59	308	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-101613	Instrument ID	10LCMS02
Run File Name	B221013C_003	Column ID	125GA90033
Analyzed	10/13/2022 15:46	Ical ID	221013B02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C2 PFHxA	21	25	122	50-150	
13C4 PFOA	21	24	113	50-150	
13C2 PFDA	21	24	118	50-150	
13C4 PFOS	20	26	130	50-150	

Extracted Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C4 PFBA	21	22	105	50-150	
13C5 PFPeA	21	22	108	50-150	
13C3 PFBS	19	21	108	50-150	
13C2 4:2FTS	19	22	113	50-150	
13C5 PFHxA	21	23	110	50-150	
13C4 PFHpA	21	22	104	50-150	
13C3 PFHxS	20	21	106	50-150	
13C2 6:2FTS	20	21	105	50-150	
13C8 PFOA	21	23	108	50-150	
13C9 PFNA	21	22	104	50-150	
13C8 PFOS	20	21	105	50-150	
13C2 8:2FTS	20	23	115	50-150	
13C6 PFDA	21	23	110	50-150	
d3-MeFOSAA	21	17	81	50-150	
13C8 PFOSA	21	18	87	50-150	
d5-EtFOSAA	21	17	81	50-150	
13C7 PFUdA	21	22	105	50-150	
13C2 PFDoA	21	23	111	50-150	
13C2 PFTeDA	21	19	92	50-150	
13C3 HFPO-DA	21	21	99	50-150	
d7-N-MeFOSE	21	17	81	20-150	
d9-N-EtFOSE	21	16	76	20-150	
d3-N-MeFOSA	21	13	62	20-150	
d5-N-EtFOSA	21	13	62	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101613
 Run File Name B221013C_003
 Analyzed 10/13/2022 15:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221013B02
 Level L

Native Analytes

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.2	4.7	112	50-150		375-22-4
PFPeA	4.2	4.5	108	50-150		2706-90-3
HFPO-DA	4.2	4.9	118	50-150		13252-13-6
PFBS	3.7	4.0	108	50-150		375-73-5
PFHxA	4.2	4.3	102	50-150		307-24-4
4:2 FTS	3.9	3.8	98	50-150		757124-72-4
PFPeS	3.9	4.3	111	50-150		2706-91-4
PFHpA	4.2	4.4	106	50-150		375-85-9
DONA	3.9	4.2	108	50-150		919005-14-4
PFHxS	3.8	3.9	103	50-150		355-46-4
PFOA	4.2	4.6	109	50-150		335-67-1
6:2 FTS	4.0	4.1	103	50-150		27619-97-2
PFHpS	4.0	4.0	101	50-150		375-92-8
PFNA	4.2	4.3	104	50-150		375-95-1
PFOSAm	4.2	4.4	106	50-150		754-91-6
PFOS	3.8	3.8	100	50-150		1763-23-1
MeFOSA	4.2	4.8	116	50-150		31506-32-8
PFDA	4.2	3.7	88	50-150		335-76-2
EtFOSAm	4.2	4.2	102	50-150		4151-50-2
8:2 FTS	4.0	3.8	96	50-150		39108-34-4
9-CI-PF3ON	3.9	3.8	99	50-150		756426-58-1
PFNS	4.0	4.0	101	50-150		68259-12-1
PFUnDA	4.2	4.1	98	50-150		2058-94-8
NMeFOSAA	4.2	4.9	117	50-150		2355-31-9
NEtFOSAA	4.2	4.3	104	50-150		2991-50-6
PFDS	4.0	3.8	95	50-150		335-77-3
PFDOA	4.2	4.4	105	50-150		307-55-1
MeFOSE	4.2	4.2	102	50-150		24448-09-7
EtFOSE	4.2	4.8	116	50-150		1691-99-2
11-CI-PF3OUdS	3.9	3.6	93	50-150		763051-92-9
PFTrDA	4.2	3.8	90	50-150		72629-94-8
PFDoS	4.0	3.6	90	50-150		79780-39-5
PFTDA	4.2	4.2	101	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101613
 Run File Name B221013C_003
 Analyzed 10/13/2022 15:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221013B02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.66	5.67	1580	
13C4 PFOA	N/A	N/A	6.85	6.83	2113	
13C2 PFDA	N/A	N/A	8.08	8.05	1624	
13C4 PFOS	N/A	N/A	8.49	8.50	2928	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.18	4.17	2026	
13C5 PFPeA	N/A	N/A	5.04	5.03	2133	
13C3 PFBS	N/A	N/A	5.85	5.85	1727	
13C2 4:2FTS	N/A	N/A	5.43	5.42	887	
13C5 PFHxA	N/A	N/A	5.66	5.66	1684	
13C4 PFHpA	N/A	N/A	6.26	6.27	1844	
13C3 PFHxS	N/A	N/A	7.19	7.21	2978	
13C2 6:2FTS	N/A	N/A	6.56	6.58	1938	
13C8 PFOA	N/A	N/A	6.85	6.87	2671	
13C9 PFNA	N/A	N/A	7.46	7.48	2014	
13C8 PFOS	N/A	N/A	8.50	8.51	2540	
13C2 8:2FTS	N/A	N/A	7.75	7.77	1436	
13C6 PFDA	N/A	N/A	8.09	8.10	1687	
d3-MeFOSAA	N/A	N/A	8.01	8.03	1608	
13C8 PFOSA	N/A	N/A	10.73	10.74	1311	
d5-EtFOSAA	N/A	N/A	8.30	8.31	880	
13C7 PFUdA	N/A	N/A	8.72	8.74	2270	
13C2 PFDoA	N/A	N/A	9.36	9.35	1729	
13C2 PFTeDA	N/A	N/A	10.57	10.57	1750	
13C3 HFPO-DA	N/A	N/A	5.90	5.94	1911	
d7-N-MeFOSE	N/A	N/A	12.54	12.56	54	
d9-N-EtFOSE	N/A	N/A	12.99	13.00	284	
d3-N-MeFOSA	N/A	N/A	12.74	12.74	541	
d5-N-EtFOSA	N/A	N/A	13.15	13.16	836	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101613
 Run File Name B221013C_003
 Analyzed 10/13/2022 15:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221013B02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.19	4.17	167	
PFPeA	N/A	N/A	5.04	5.03	330	
HFPO-DA	0.31	0.31	5.92	5.92	953	
PFBS	0.44	0.55	5.86	5.92	899	
PFHxA	0.09	0.08	5.67	5.68	186	
4:2 FTS	0.81	0.84	5.43	5.45	1012	
PFPeS	0.43	0.42	6.54	6.57	1497	
PFHpA	0.28	0.26	6.27	6.25	19	
DONA	0.53	0.56	6.49	6.47	1011	
PFHxS	0.36	0.36	7.20	7.22	1223	
PFOA	0.37	0.36	6.86	6.88	252	
6:2 FTS	0.89	0.82	6.56	6.53	190	
PFHpS	0.36	0.43	7.85	7.87	1750	
PFNA	0.15	0.15	7.47	7.49	318	
PFOSAm	N/A	N/A	10.74	10.79	768	
PFOS	0.36	0.39	8.50	8.51	800	
MeFOSA	0.51	0.52	12.76	12.76	516	
PFDA	0.19	0.13	8.09	8.06	371	
EtFOSAm	0.53	0.51	13.17	13.18	718	
8:2 FTS	0.91	0.91	7.75	7.77	1131	
9-CI-PF3ON	0.06	0.05	8.97	8.98	1008	
PFNS	0.44	0.44	9.15	9.16	1645	
PFUnDA	0.12	0.11	8.73	8.74	479	
NMeFOSAA	0.73	0.71	8.02	8.04	2853	
NEtFOSAA	0.63	0.71	8.31	8.31	202	
PFDS	0.36	0.32	9.77	9.80	1567	
PFDOA	0.16	0.16	9.36	9.38	461	
MeFOSE	N/A	N/A	12.57	12.59	469	
EtFOSE	0.00	0.00	13.03	13.05	409	
11-CI-PF3OUdS	0.02	0.02	10.21	10.23	778	
PFTrDA	0.15	0.15	9.98	10.00	347	
PFDoS	0.44	0.44	10.93	10.95	2426	
PFTDA	0.24	0.25	10.58	10.59	294	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MS
 Run File Name B221012C_034
 Analyzed 10/13/2022 04:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	22	27	122	50-150	
13C4_PFOA	22	27	122	50-150	
13C2_PFDA	22	31	143	50-150	
13C4_PFOS	21	28	132	50-150	

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	22	17	80	25-150	
13C5_PFPeA	22	20	93	25-150	
13C3_PFBS	20	21	103	25-150	
13C2_4:2FTS	20	46	225	25-150	R
13C5_PFHxA	22	21	98	25-150	
13C4_PFHpA	22	23	106	25-150	
13C3_PFHxS	21	21	101	25-150	
13C2_6:2FTS	21	46	222	25-150	R
13C8_PFOA	22	22	100	25-150	
13C9_PFNA	22	22	101	25-150	
13C8_PFOS	21	20	97	25-150	
13C2_8:2FTS	21	32	153	25-150	R
13C6_PFDA	22	22	103	25-150	
d3-MeFOSAA	22	20	93	25-150	
13C8_PFOSA	22	18	82	25-150	
d5-EtFOSAA	22	18	84	25-150	
13C7_PFUdA	22	22	99	25-150	
13C2_PFDoA	22	19	88	25-150	
13C2_PFTeDA	22	17	77	25-150	
13C3_HFPO-DA	22	18	81	25-150	
d7-N-MeFOSE	22	17	79	10-150	
d9-N-EtFOSE	22	14	65	10-150	
d3-N-MeFOSA	22	9.4	43	10-150	
d5-N-EtFOSA	22	8.4	38	10-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MS
 Run File Name B221012C_034
 Analyzed 10/13/2022 04:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Native Analytes

Compound	Sample Conc. (ng/L)	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	13	4.4	17	98	50-150		375-22-4
PFPeA	31	4.4	36	113	50-150		2706-90-3
HFPO-DA	0.00	4.4	5.1	117	50-150		13252-13-6
PFBS	6.4	3.9	9.9	91	50-150		375-73-5
PFHxA	26	4.4	31	106	50-150		307-24-4
4:2 FTS	0.00	4.1	4.7	115	50-150		757124-72-4
PFPeS	0.79 IJ	4.1	5.1	106	50-150		2706-91-4
PFHpA	3.9	4.4	8.5	106	50-150		375-85-9
DONA	0.00	4.1	4.2	101	50-150		919005-14-4
PFHxS	9.6	4.0	13	89	50-150		355-46-4
PFOA	11	4.4	17	126	50-150		335-67-1
6:2 FTS	2.6	4.1	6.8	101	50-150		27619-97-2
PFHpS	0.00	4.1	4.3	104	50-150		375-92-8
PFNA	0.97 J	4.4	5.7	108	50-150		375-95-1
PFOSAm	0.00	4.4	4.6	105	50-150		754-91-6
PFOS	5.9	4.0	11	125	50-150		1763-23-1
MeFOSA	0.00	4.4	5.1	118	50-150		31506-32-8
PFDA	1.4 J	4.4	5.5	94	50-150		335-76-2
EtFOSAm	0.00	4.4	4.1	94	50-150		4151-50-2
8:2 FTS	0.00	4.2	4.1	97	50-150		39108-34-4
9-CI-PF3ON	0.00	4.1	4.5	111	50-150		756426-58-1
PFNS	0.00	4.1	4.4	108	50-150		68259-12-1
PFUnDA	0.00	4.4	4.1	95	50-150		2058-94-8
NMeFOSAA	1.2 J	4.4	5.0	86	50-150		2355-31-9
NEtFOSAA	0.00	4.4	4.7	108	50-150		2991-50-6
PFDS	0.00	4.2	3.9	92	50-150		335-77-3
PFDOA	0.00	4.4	4.7	108	50-150		307-55-1
MeFOSE	0.00	4.4	4.2	96	50-150		24448-09-7
EtFOSE	0.00	4.4	4.7	108	50-150		1691-99-2
11-CI-PF3OUdS	0.00	4.1	4.1	101	50-150		763051-92-9
PFTTrDA	0.00	4.4	4.8	110	50-150		72629-94-8
PFDoS	0.00	4.2	4.2	98	50-150		79780-39-5
PFTDA	0.00	4.4	4.4	100	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MS
 Run File Name B221012C_034
 Analyzed 10/13/2022 04:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.66	5.67	1313	
13C4 PFOA	N/A	N/A	6.84	6.83	1983	
13C2 PFDA	N/A	N/A	8.06	8.05	1301	
13C4 PFOS	N/A	N/A	8.48	8.50	1049	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.18	4.17	1673	
13C5 PFPeA	N/A	N/A	5.02	5.12	1673	
13C3 PFBS	N/A	N/A	5.85	5.85	381	
13C2 4:2FTS	N/A	N/A	5.42	5.48	309	R
13C5 PFHxA	N/A	N/A	5.66	5.71	1087	
13C4 PFHpA	N/A	N/A	6.25	6.29	1473	
13C3 PFHxS	N/A	N/A	7.18	7.26	1200	
13C2 6:2FTS	N/A	N/A	6.55	6.59	483	R
13C8 PFOA	N/A	N/A	6.84	6.89	1495	
13C9 PFNA	N/A	N/A	7.44	7.50	1528	
13C8 PFOS	N/A	N/A	8.48	8.54	1324	
13C2 8:2FTS	N/A	N/A	7.72	7.78	886	R
13C6 PFDA	N/A	N/A	8.06	8.12	1682	
d3-MeFOSAA	N/A	N/A	7.99	8.03	1396	
13C8 PFOSA	N/A	N/A	10.74	10.83	1191	
d5-EtFOSAA	N/A	N/A	8.27	8.31	1438	
13C7 PFUdA	N/A	N/A	8.70	8.73	2687	
13C2 PFDoA	N/A	N/A	9.34	9.35	1498	
13C2 PFTeDA	N/A	N/A	10.57	10.57	1422	
13C3 HFPO-DA	N/A	N/A	5.90	5.94	1009	
d7-N-MeFOSE	N/A	N/A	12.54	12.56	53	
d9-N-EtFOSE	N/A	N/A	12.99	12.98	237	
d3-N-MeFOSA	N/A	N/A	12.74	12.77	513	
d5-N-EtFOSA	N/A	N/A	13.14	13.15	734	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MS
 Run File Name B221012C_034
 Analyzed 10/13/2022 04:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.19	4.18	140	
PFPeA	N/A	N/A	5.03	5.07	176	
HFPO-DA	0.28	0.31	5.91	5.96	742	
PFBS	0.46	0.45	5.86	5.92	314	
PFHxA	0.08	0.08	5.67	5.68	229	
4:2 FTS	0.77	0.84	5.42	5.45	681	
PFPeS	0.46	0.43	6.53	6.57	286	
PFHpA	0.26	0.31	6.26	6.25	19	
DONA	0.57	0.57	6.47	6.47	902	
PFHxS	0.37	0.37	7.18	7.22	588	
PFOA	0.37	0.39	6.85	6.83	336	
6:2 FTS	0.93	0.89	6.55	6.53	346	
PFHpS	0.41	0.43	7.83	7.87	266	
PFNA	0.15	0.15	7.45	7.43	249	
PFOSAm	N/A	N/A	10.75	10.79	523	
PFOS	0.31	0.40	8.49	8.51	293	
MeFOSA	0.43	0.51	12.76	12.86	496	
PFDA	0.16	0.18	8.07	8.06	501	
EtFOSAm	0.53	0.52	13.17	13.28	565	
8:2 FTS	1.00	0.95	7.73	7.70	1904	
9-CI-PF3ON	0.06	0.06	8.96	8.97	1286	
PFNS	0.47	0.44	9.14	9.14	663	
PFUnDA	0.13	0.12	8.71	8.68	457	
NMeFOSAA	0.84	0.79	8.00	7.96	957	
NEtFOSAA	0.69	0.67	8.29	8.32	190	
PFDS	0.38	0.36	9.76	9.80	701	
PFDOA	0.16	0.17	9.35	9.30	532	
MeFOSE	N/A	N/A	12.57	12.67	228	
EtFOSE	0.00	0.00	13.03	13.03	70	
11-CI-PF3OUdS	0.02	0.02	10.21	10.20	1192	
PFTrDA	0.16	0.16	9.97	9.92	466	
PFDoS	0.41	0.45	10.93	10.94	1303	
PFTDA	0.23	0.25	10.57	10.59	611	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MSD
 Run File Name B221012C_035
 Analyzed 10/13/2022 05:06
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	RPD	Qualifiers
13C2 PFHxA	21	26	124	50-150	1.5	
13C4 PFOA	21	27	130	50-150	6.3	
13C2 PFDA	21	29	142	50-150	0.5	
13C4 PFOS	20	26	133	50-150	0.7	

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	RPD	Qualifiers
13C4 PFBA	21	17	81	25-150	1.3	
13C5 PFPeA	21	20	96	25-150	3.1	
13C3 PFBS	19	21	107	25-150	3.7	
13C2 4:2FTS	19	46	237	25-150	5.2	R
13C5 PFHxA	21	20	98	25-150	0.4	
13C4 PFHpA	21	21	102	25-150	3.8	
13C3 PFHxS	20	21	107	25-150	5.9	
13C2 6:2FTS	20	46	235	25-150	5.9	R
13C8 PFOA	21	21	104	25-150	3.4	
13C9 PFNA	21	22	108	25-150	6.6	
13C8 PFOS	20	20	99	25-150	2.0	
13C2 8:2FTS	20	35	176	25-150	14.3	R
13C6 PFDA	21	22	108	25-150	5.4	
d3-MeFOSAA	21	23	109	25-150	15.4	
13C8 PFOSA	21	17	81	25-150	1.8	
d5-EtFOSAA	21	22	104	25-150	21.0	
13C7 PFUdA	21	22	106	25-150	6.3	
13C2 PFDoA	21	22	105	25-150	18.0	
13C2 PFTeDA	21	19	90	25-150	15.5	
13C3 HFPO-DA	21	18	88	25-150	7.8	
d7-N-MeFOSE	21	13	62	10-150	24.4	
d9-N-EtFOSE	21	11	53	10-150	19.5	
d3-N-MeFOSA	21	4.1	20	10-150	72.9	
d5-N-EtFOSA	21	3.4	16	10-150	80.0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MSD
 Run File Name B221012C_035
 Analyzed 10/13/2022 05:06
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Native Analytes

Compound	Sample Conc. (ng/L)	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	13	4.1	17	97	50-150	3.8		375-22-4
PFPeA	31	4.1	34	82	50-150	1.1		2706-90-3
HFPO-DA	0.00	4.1	4.5	109	50-150	7.5		13252-13-6
PFBS	6.4	3.7	10.0	97	50-150	5.8		375-73-5
PFHxA	26	4.1	31	104	50-150	4.5		307-24-4
4:2 FTS	0.00	3.9	4.0	105	50-150	9.8		757124-72-4
PFPeS	0.79 IJ	3.9	4.8	102	50-150	2.2		2706-91-4
PFHpA	3.9	4.1	8.3	106	50-150	2.5		375-85-9
DONA	0.00	3.9	4.0	104	50-150	2.8		919005-14-4
PFHxS	9.6	3.8	13	90	50-150	4.1		355-46-4
PFOA	11	4.1	16	113	50-150	0.5		335-67-1
6:2 FTS	2.6	3.9	5.8	81	50-150	10.3		27619-97-2
PFHpS	0.00	3.9	4.1	105	50-150	0.6		375-92-8
PFNA	0.97 J	4.1	4.9	95	50-150	9.5		375-95-1
PFOSAm	0.00	4.1	4.5	109	50-150	3.4		754-91-6
PFOS	5.9	3.8	11	127	50-150	3.6		1763-23-1
MeFOSA	0.00	4.1	4.5	109	50-150	7.8		31506-32-8
PFDA	1.4 J	4.1	5.4	98	50-150	4.2		335-76-2
EtFOSAm	0.00	4.1	4.2	101	50-150	7.4		4151-50-2
8:2 FTS	0.00	4.0	3.6	90	50-150	7.5		39108-34-4
9-CI-PF3ON	0.00	3.9	4.6	119	50-150	6.3		756426-58-1
PFNS	0.00	3.8	4.5	117	50-150	8.4		68259-12-1
PFUnDA	0.00	4.1	4.3	104	50-150	9.9		2058-94-8
NMeFOSAA	1.2 J	4.1	5.3	100	50-150	12.6		2355-31-9
NEtFOSAA	0.00	4.1	4.5	108	50-150	0.2		2991-50-6
PFDS	0.00	4.0	4.6	116	50-150	23.0		335-77-3
PFDOA	0.00	4.1	4.2	102	50-150	6.0		307-55-1
MeFOSE	0.00	4.1	4.2	102	50-150	5.8		24448-09-7
EtFOSE	0.00	4.1	4.2	102	50-150	5.9		1691-99-2
11-CI-PF3OUdS	0.00	3.9	4.6	117	50-150	14.8		763051-92-9
PFTTrDA	0.00	4.1	4.3	105	50-150	4.7		72629-94-8
PFDoS	0.00	4.0	4.4	110	50-150	10.9		79780-39-5
PFTDA	0.00	4.1	3.9	93	50-150	7.2		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MSD
 Run File Name B221012C_035
 Analyzed 10/13/2022 05:06
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.70	5.67	1296	
13C4 PFOA	N/A	N/A	6.86	6.83	2426	
13C2 PFDA	N/A	N/A	8.06	8.05	1367	
13C4 PFOS	N/A	N/A	8.47	8.50	1272	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.20	4.17	1669	
13C5 PFPeA	N/A	N/A	5.07	5.12	1583	
13C3 PFBS	N/A	N/A	5.89	5.85	315	
13C2 4:2FTS	N/A	N/A	5.46	5.48	168	R
13C5 PFHxA	N/A	N/A	5.70	5.71	1294	
13C4 PFHpA	N/A	N/A	6.29	6.29	1522	
13C3 PFHxS	N/A	N/A	7.19	7.26	1204	
13C2 6:2FTS	N/A	N/A	6.58	6.59	474	R
13C8 PFOA	N/A	N/A	6.86	6.89	1617	
13C9 PFNA	N/A	N/A	7.45	7.50	2003	
13C8 PFOS	N/A	N/A	8.47	8.54	1209	
13C2 8:2FTS	N/A	N/A	7.72	7.78	1220	R
13C6 PFDA	N/A	N/A	8.06	8.12	1455	
d3-MeFOSAA	N/A	N/A	7.98	8.03	2006	
13C8 PFOSA	N/A	N/A	10.72	10.83	1095	
d5-EtFOSAA	N/A	N/A	8.27	8.31	1050	
13C7 PFUdA	N/A	N/A	8.69	8.73	1935	
13C2 PFDoA	N/A	N/A	9.32	9.35	1907	
13C2 PFTeDA	N/A	N/A	10.55	10.57	1667	
13C3 HFPO-DA	N/A	N/A	5.94	5.94	925	
d7-N-MeFOSE	N/A	N/A	12.53	12.56	56	
d9-N-EtFOSE	N/A	N/A	12.99	12.98	201	
d3-N-MeFOSA	N/A	N/A	12.73	12.77	362	
d5-N-EtFOSA	N/A	N/A	13.14	13.15	511	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10625564009-MSD
 Run File Name B221012C_035
 Analyzed 10/13/2022 05:06
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221003A02
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.21	4.18	144	
PFPeA	N/A	N/A	5.07	5.07	167	
HFPO-DA	0.30	0.31	5.95	5.96	525	
PFBS	0.41	0.45	5.90	5.92	292	
PFHxA	0.08	0.08	5.71	5.68	201	
4:2 FTS	0.87	0.84	5.47	5.45	460	
PFPeS	0.48	0.43	6.56	6.57	255	
PFHpA	0.28	0.31	6.30	6.25	20	
DONA	0.55	0.57	6.51	6.47	886	
PFHxS	0.36	0.37	7.20	7.22	535	
PFOA	0.38	0.39	6.87	6.83	351	
6:2 FTS	0.90	0.89	6.58	6.53	315	
PFHpS	0.37	0.43	7.84	7.87	255	
PFNA	0.15	0.15	7.46	7.43	330	
PFOSAm	N/A	N/A	10.73	10.79	562	
PFOS	0.33	0.40	8.48	8.51	604	
MeFOSA	0.48	0.51	12.74	12.86	367	
PFDA	0.16	0.18	8.07	8.06	485	
EtFOSAm	0.47	0.52	13.16	13.28	304	
8:2 FTS	1.00	0.95	7.73	7.70	567	
9-CI-PF3ON	0.05	0.06	8.94	8.97	1162	
PFNS	0.48	0.44	9.12	9.14	744	
PFUnDA	0.12	0.12	8.70	8.68	506	
NMeFOSAA	0.80	0.79	7.99	7.96	617	
NEtFOSAA	0.65	0.67	8.28	8.32	271	
PFDS	0.34	0.36	9.74	9.80	835	
PFDOA	0.17	0.17	9.33	9.30	564	
MeFOSE	N/A	N/A	12.56	12.67	251	
EtFOSE	0.00	0.00	13.03	13.14	209	
11-CI-PF3OUdS	0.02	0.02	10.19	10.20	1046	
PFTrDA	0.15	0.16	9.95	9.92	512	
PFDoS	0.42	0.45	10.91	10.94	1426	
PFTDA	0.24	0.25	10.56	10.59	459	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

October 2022

November 23, 2022

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS
Pace Project No.: 10629584

Dear Mike Ursin:

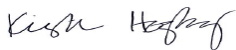
Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS

Pace Project No.: 10629584

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS
Pace Project No.: 10629584

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10629584001	Influent 02 20221010	Water	10/10/22 23:59	10/13/22 08:50
10629584002	Influent 07 20221010	Water	10/10/22 23:59	10/13/22 08:50
10629584003	Influent 08 20221010	Water	10/10/22 23:59	10/13/22 08:50
10629584004	Influent 11 20221010	Water	10/10/22 23:59	10/13/22 08:50
10629584005	Influent 18 20221010	Water	10/10/22 23:59	10/13/22 08:50
10629584006	Effluent 20221011	Water	10/11/22 23:59	10/13/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS

Pace Project No.: 10629584

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10629584001	Influent 02 20221010	SM 2540D	RM3	1
10629584002	Influent 07 20221010	SM 2540D	RM3	1
10629584003	Influent 08 20221010	SM 2540D	RM3	1
10629584004	Influent 11 20221010	SM 2540D	RM3	1
10629584005	Influent 18 20221010	SM 2540D	RM3	1
10629584006	Effluent 20221011	SM 2540D	RM3	1

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10629584

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: November 23, 2022

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10629584

Sample: Influent 02 20221010									
		Lab ID: 10629584001	Collected: 10/10/22 23:59		Received: 10/13/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	247	mg/L	14.3	7.1	1		10/14/22 10:32		

Sample: Influent 07 20221010									
		Lab ID: 10629584002	Collected: 10/10/22 23:59		Received: 10/13/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	175	mg/L	16.7	8.3	1		10/14/22 12:13		

Sample: Influent 08 20221010									
		Lab ID: 10629584003	Collected: 10/10/22 23:59		Received: 10/13/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	243	mg/L	20.0	10.0	1		10/14/22 12:13		

Sample: Influent 11 20221010									
		Lab ID: 10629584004	Collected: 10/10/22 23:59		Received: 10/13/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	224	mg/L	20.0	10.0	1		10/14/22 12:13		

Sample: Influent 18 20221010									
		Lab ID: 10629584005	Collected: 10/10/22 23:59		Received: 10/13/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	193	mg/L	20.0	10.0	1		10/14/22 12:13		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10629584

Sample: Effluent 20221011 **Lab ID: 10629584006** Collected: 10/11/22 23:59 Received: 10/13/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	<5.0	mg/L	10.0	5.0	1		10/14/22 13:59		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10629584

QC Batch: 846892	Analysis Method: SM 2540D
QC Batch Method: SM 2540D	Analysis Description: 2540D Total Suspended Solids
	Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10629584001

METHOD BLANK: 4481054 Matrix: Water

Associated Lab Samples: 10629584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	10/14/22 10:32	

LABORATORY CONTROL SAMPLE: 4481055

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	104	104	80-120	

SAMPLE DUPLICATE: 4481056

Parameter	Units	10629117001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	7.1J		5	

SAMPLE DUPLICATE: 4481057

Parameter	Units	10629117003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10629584

QC Batch: 846950

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10629584002, 10629584003, 10629584004, 10629584005

METHOD BLANK: 4481373

Matrix: Water

Associated Lab Samples: 10629584002, 10629584003, 10629584004, 10629584005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	10/14/22 12:13	

LABORATORY CONTROL SAMPLE: 4481374

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	80.0	80	80-120	

SAMPLE DUPLICATE: 4481376

Parameter	Units	10629168001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

SAMPLE DUPLICATE: 4481377

Parameter	Units	10629223001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10629584

QC Batch: 846983	Analysis Method: SM 2540D
QC Batch Method: SM 2540D	Analysis Description: 2540D Total Suspended Solids
	Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10629584006

METHOD BLANK: 4481569 Matrix: Water

Associated Lab Samples: 10629584006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	10/14/22 13:59	

LABORATORY CONTROL SAMPLE: 4481570

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	93.2	93	80-120	

SAMPLE DUPLICATE: 4481571

Parameter	Units	10629120002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

SAMPLE DUPLICATE: 4481572

Parameter	Units	10629120003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	<5.0		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS

Pace Project No.: 10629584

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS
Pace Project No.: 10629584

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10629584001	Influent 02 20221010	SM 2540D	846892		
10629584002	Influent 07 20221010	SM 2540D	846950		
10629584003	Influent 08 20221010	SM 2540D	846950		
10629584004	Influent 11 20221010	SM 2540D	846950		
10629584005	Influent 18 20221010	SM 2540D	846950		
10629584006	Effluent 20221011	SM 2540D	846983		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC**

Billing Information: **Bill to MMSD**

Address: **708 Heartland Trail Suite 300 Madison, WI 53717**

Report To: **Mike Ursin**

Email To: **mursine@trc.companies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address:

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **WISCONSIN** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Phone:
 Email:

Site/Facility ID #:

Compliance Monitoring?
 [] Yes [X] No

Collected By (print): **Jennifer Faust**

Purchase Order #:
 Quote #:

DW PWS ID #:
 DW Location Code:

Collected By (signature): **Jennifer Faust**

Turnaround Date Required:

Immediately Packed on Ice:
 [X] Yes [] No

Sample Disposal:
 [] Dispose as appropriate [] Return
 [] Archive:
 [] Hold:

Rush:
 [] Same Day [] Next Day
 [] 2 Day [] 3 Day [] 4 Day [] 5 Day
 (Expedite Charges Apply)

Field Filtered (if applicable):
 [] Yes [X] No
 Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
Influent 02 20221010	WW	C	10/10/22	08:00	10/10/22	23:59	3	X X
Influent 07 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X X
Influent 08 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X X
Influent 11 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X X
Influent 18 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X X
Effluent 20221011	WW	C	10/11/22	0:00	10/11/22	23:59	3	X X

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line: **43476**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signatures Present Y N NA

WO#: 10629584



10629584

Sample pH Acceptable Y N NA

pH Strips: Y N NA

Sulfide Present Y N NA

Lead Acetate Strips: Y N NA

LAB USE ONLY:
 Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
 for influent samples follow EA-19-001 (WI PFAS method expectations) Section VI.3. procedure for particulates in aqueous samples & centrifuge if necessary.

Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: **2842752**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: **T4**

Cooler 1 Temp Upon Receipt: **3.5** oC

Cooler 1 Therm Corr. Factor: oC

Cooler 1 Corrected Temp: **3.6** oC

Comments:

Relinquished by/Company: (Signature) **Jennifer Faust**

Date/Time: **10/12/22 7:30**

Received by/Company: (Signature) **Mike Ursin**

Date/Time: **10/13/22 8:50**

MTJL LAB USE ONLY

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Table #:

Acctnum:

Template:

Prelogin:

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

PM:

PB:

Non Conformance(s): YES / NO

Page: of:

Effective Date: 8/26/2022

Sample Condition Upon Receipt
 Client Name: TRC

Project #: **WO# : 10629584**
 PM: KNH Due Date: 11/03/22
 CLIENT: TRC-WI

Courier: FedEx UPS USPS Client
 Pace Speedee Commercial

Tracking Number: 592371416771 See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Biological Tissue Frozen? Yes No N/A
 Packing Material: Bubble Wrap Bubble Bags None Other Temp Blank? Yes No
 Thermometer: T1 (0461) T2 (1336) T3 (0459) T4 (0254) T5 (0178) T6 (0235) T7 (0042) T8 (0775) 01339252/1710 **(19)** Type of Ice: Wet Blue Dry None
 Melted

Did Samples Originate in West Virginia? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Were All Container Temps Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Temp should be above freezing to 6 °C Cooler temp Read w/Temp Blank: <u>3.5</u> °C	Average Corrected Temp (no temp blank only): _____ °C
Correction Factor: <u>add 0.1</u> Cooler Temp Corrected w/temp blank: <u>3.6</u> °C	<input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142 <input type="checkbox"/> 1 Container

USDA Regulated Soil: N/A, water sample/other: _____ Date/Initials of Person Examining Contents: 10/13/22 ADC2

Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 <input type="checkbox"/> No
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E.coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrom <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Residual Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	pH Paper Lot # Residual Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____

Project Manager Review: Kirsten Hogberg Date: 10/14/2022

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled By: ADC2 Line: 2

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Information:

Pace Project #: 10629584
Sample Receipt Date: 10/13/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



November 23, 2022

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

November 22, 2022

DISCUSSION

This report presents the results from the analyses performed on six samples, one matrix spike, and one matrix spike duplicate submitted by a representative of TRC Wisconsin. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance for PFAS. Reporting limits were set to quantification limits.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. This spike indicates that extraction performed as expected.

On the matrix spikes there are several analytes that are marked R as the recoveries are diminished or elevated from the expected levels. These deviations may be due to the presence of the affected analytes in the sample material and/or sample inhomogeneity.

Diminished/elevated extracted internal standard (EIS) recovery ("R" flagged) were present in samples and CCV, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Values were flagged "I" where incorrect isotope ratios were obtained.

All samples required centrifugation prior to extraction due to excessive solids present in

DISCUSSION

the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and centrifuged for 10 mins. Sample bottles were rinsed with methanol as normal. The bottle rinsate was added to the elution. Samples concentrated to <1mL and reconstituted to 1mL using methanol by transfer pipet.

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Missouri	10100
Alaska-DW	MN00064	Montana	CERT0092
Alaska-UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
Arkansas-DW	MN00064	New Jersey	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina-	27700
Connecticut	PH-0256	North Carolina-	530
Florida	E87605	North Dakota	R-036
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Ohio-VAP (170	CL101
Idaho	MN00064	Ohio-VAP (180	CL110
Illinois	200011	Oklahoma	9507
Indiana	C-MN-01	Oregon- rimary	MN300001
Iowa	368	Oregon-Second	MN200001
Kansas	E-10167	Pennsylvania	68-00563
Kentucky-DW	90062	Puerto Rico	MN00064
Kentucky-WW	90062	South Carolina	74003
Louisiana-DEQ	AI-84596	Tennessee	TN02818
Louisiana-DW	MN00064	Texas	T104704192
Maine	MN00064	Utah	MN00064
Maryland	322	Vermont	VT-027053137
Michigan	9909	Virginia	460163
Minnesota	027-053-137	Washington	C486
Minnesota-Ag	via MN 027-053	West Virginia-D	382
Minnesota-Petr	1240	West Virginia-D	9952C
		Wisconsin	999407970
		Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix A

Sample Management

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Influent 02 20221010	10629584001	10/13/2022	Water
Influent 07 20221010	10629584002	10/13/2022	Water
Influent 08 20221010	10629584003	10/13/2022	Water
Influent 11 20221010	10629584004	10/13/2022	Water
Influent 18 20221010	10629584005	10/13/2022	Water
Effluent 20221011	10629584006	10/13/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC**

Billing Information: **Bill to MMSD**

Address: **708 Heartland Trail Suite 300
Madison, WI 53717**

Report To: **Mike Ursin**

Email To: **mursine@trc.companies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address:

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **WISCONSIN** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Phone:
Email:

Site/Facility ID #:

Compliance Monitoring?
[] Yes [X] No

Collected By (print): **Jennifer Faust**

Purchase Order #:
Quote #:

DW PWS ID #:
DW Location Code:

Collected By (signature): **Jennifer Faust**

Turnaround Date Required:

Immediately Packed on Ice:
[X] Yes [] No

Sample Disposal:
[] Dispose as appropriate [] Return
[] Archive:
[] Hold:

Rush:
[] Same Day [] Next Day
[] 2 Day [] 3 Day [] 4 Day [] 5 Day
(Expedite Charges Apply)

Field Filtered (if applicable):
[] Yes [X] No
Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TSS
			Date	Time	Date	Time				
Influent 02 20221010	WW	C	10/10/22	08:00	10/10/22	23:59	3	X	X	
Influent 07 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X	X	
Influent 08 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X	X	
Influent 11 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X	X	
Influent 18 20221010	WW	C	10/10/22	0:00	10/10/22	23:59	3	X	X	
Effluent 20221011	WW	C	10/11/22	0:00	10/11/22	23:59	3	X	X	

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line: **43476**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signatures Present Y N NA

WO#: 10629584



10629584

Sample pH Acceptable Y N NA

pH Strips: Y N NA

Sulfide Present Y N NA

Lead Acetate Strips: Y N NA

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
for influent samples follow EA-19-001 (WI PFAS method expectations) Section VI.3. procedure for particulates in aqueous samples & centrifuge if necessary.

Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #: **2842752**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via:
FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: **T4**

Cooler 1 Temp Upon Receipt: **3.5** oC

Cooler 1 Therm Corr. Factor: oC

Cooler 1 Corrected Temp: **3.6** oC

Comments:

Relinquished by/Company: (Signature)
Jennifer Faust

Date/Time: **10/12/22 7:30**

Received by/Company: (Signature)
Mike Ursin

Date/Time: **10/13/22 8:50**

MTJL LAB USE ONLY

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Table #:

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time:

Acctnum:

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: of:

Report No.: 10629584_ID36_L2_dft

Page 7 of 37

Effective Date: 8/26/2022

Sample Condition Upon Receipt
 Client Name: TRC

Project #: **WO# : 10629584**
 PM: KNH Due Date: 11/03/22
 CLIENT: TRC-WI

Courier: FedEx UPS USPS Client
 Pace Speedee Commercial

Tracking Number: 592371416771 See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Biological Tissue Frozen? Yes No N/A
 Packing Material: Bubble Wrap Bubble Bags None Other Temp Blank? Yes No
 Thermometer: T1 (0461) T2 (1336) T3 (0459) T4 (0254) T5 (0178) T6 (0235) T7 (0042) T8 (0775) 01339252/1710 (19) Type of Ice: Wet Blue Dry None
 Melted

Did Samples Originate in West Virginia? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Were All Container Temps Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Temp should be above freezing to 6 °C Cooler temp Read w/Temp Blank: <u>3.5</u> °C	Average Corrected Temp (no temp blank only): _____ °C
Correction Factor: <u>add 0.1</u> Cooler Temp Corrected w/temp blank: <u>3.6</u> °C	<input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142 <input type="checkbox"/> 1 Container

USDA Regulated Soil: N/A, water sample/other: _____ Date/Initials of Person Examining Contents: 10/13/22 ADC2

Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 <input type="checkbox"/> No
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E.coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrom <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Residual Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	pH Paper Lot # Residual Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____ Field Data Required? Yes No

Project Manager Review: Kirsten Hogberg Date: 10/14/2022

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).
 Labeled By: ADC2 Line: 2

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10629584001	Influent 02 20221010	SW3535	34074	PFAS-36	B221025B_03
10629584002	Influent 07 20221010	SW3535	34074	PFAS-36	B221025B_03
10629584003	Influent 08 20221010	SW3535	34074	PFAS-36	B221025B_03
10629584004	Influent 11 20221010	SW3535	34074	PFAS-36	B221025B_03
10629584005	Influent 18 20221010	SW3535	34074	PFAS-36	B221025B_03
10629584006	Effluent 20221011	SW3535	34074	PFAS-36	B221025B_03



Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Isotope ratio out of specification
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix B

Sample Analysis Summary

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 02 20221010
 Lab Sample ID 10629584001
 Lab File ID B221025B_037
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 255mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.4	2.0	0.49	0.49	1	375-22-4		10/26/2022 03:25
PFPeA	4.1	2.0	0.81	0.81	1	2706-90-3		10/26/2022 03:25
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		10/26/2022 03:25
PFBS	2.5	1.7	0.48	0.48	1	375-73-5		10/26/2022 03:25
PFHxA	3.8 I	2.0	0.89	0.89	1	307-24-4		10/26/2022 03:25
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		10/26/2022 03:25
PFPeS	0.61 IJ	1.8	0.59	0.59	1	2706-91-4		10/26/2022 03:25
PFHpA	1.3 J	2.0	0.68	0.68	1	375-85-9		10/26/2022 03:25
DONA	ND	1.9	0.90	0.90	1	919005-14-4		10/26/2022 03:25
PFHxS	4.6 I	1.8	0.52	0.52	1	355-46-4		10/26/2022 03:25
PFOA	3.0	2.0	0.84	0.84	1	335-67-1		10/26/2022 03:25
6:2 FTS	1.6 J	1.9	0.66	0.66	1	27619-97-2		10/26/2022 03:25
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/26/2022 03:25
PFNA	ND	2.0	0.78	0.78	1	375-95-1		10/26/2022 03:25
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		10/26/2022 03:25
PFOS	7.0 I	1.8	0.65	0.65	1	1763-23-1		10/26/2022 03:25
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		10/26/2022 03:25
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/26/2022 03:25
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		10/26/2022 03:25
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/26/2022 03:25
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		10/26/2022 03:25
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/26/2022 03:25
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/26/2022 03:25
NMeFOSAA	ND	2.0	0.68	0.68	1	2355-31-9		10/26/2022 03:25
NEtFOSAA	4.3	2.0	0.80	0.80	1	2991-50-6		10/26/2022 03:25
PFDS	ND	1.9	0.63	0.63	1	335-77-3		10/26/2022 03:25
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		10/26/2022 03:25
MeFOSE	1.2 J	2.0	0.51	0.51	1	24448-09-7		10/26/2022 03:25
EtFOSE	1.3 J	2.0	0.87	0.87	1	1691-99-2		10/26/2022 03:25
11-CI-PF3OUdS	ND	1.8	0.55	0.55	1	763051-92-9		10/26/2022 03:25
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		10/26/2022 03:25
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		10/26/2022 03:25
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 03:25

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 02 20221010
 Lab Sample ID 10629584001
 Lab File ID B221025B_037
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 255mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	17	87	50-150		10/26/2022 03:25
13C4 PFOA	20	20	100	50-150		10/26/2022 03:25
13C2 PFDA	20	15	79	50-150		10/26/2022 03:25
13C4 PFOS	19	13	69	50-150		10/26/2022 03:25

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	11	55	25-150		10/26/2022 03:25
13C5 PFPeA	20	15	75	25-150		10/26/2022 03:25
13C3 PFBS	18	18	99	25-150		10/26/2022 03:25
13C2 4:2FTS	18	55	301	25-150	R	10/26/2022 03:25
13C5 PFHxA	20	16	82	25-150		10/26/2022 03:25
13C4 PFHpA	20	19	94	25-150		10/26/2022 03:25
13C3 PFHxS	19	20	105	25-150		10/26/2022 03:25
13C2 6:2FTS	19	70	374	25-150	R	10/26/2022 03:25
13C8 PFOA	20	19	96	25-150		10/26/2022 03:25
13C9 PFNA	20	19	96	25-150		10/26/2022 03:25
13C8 PFOS	19	12	63	25-150		10/26/2022 03:25
13C2 8:2FTS	19	45	237	25-150	R	10/26/2022 03:25
13C6 PFDA	20	13	67	25-150		10/26/2022 03:25
d3-MeFOSAA	20	12	61	25-150		10/26/2022 03:25
13C8 PFOSA	20	7.2	37	25-150		10/26/2022 03:25
d5-EtFOSAA	20	12	60	25-150		10/26/2022 03:25
13C7 PFUdA	20	14	71	25-150		10/26/2022 03:25
13C2 PFDoA	20	10	53	25-150		10/26/2022 03:25
13C2 PFTeDA	20	16	82	25-150		10/26/2022 03:25
13C3 HFPO-DA	20	15	78	25-150		10/26/2022 03:25
d7-N-MeFOSE	20	13	64	10-150		10/26/2022 03:25
d9-N-EtFOSE	20	0.88	5	10-150	R	10/26/2022 03:25
d3-N-MeFOSA	20	6.6	34	10-150		10/26/2022 03:25
d5-N-EtFOSA	20	6.7	34	10-150		10/26/2022 03:25

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 07 20221010
 Lab Sample ID 10629584002
 Lab File ID B221025B_038
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 252mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	14	2.0	0.49	0.49	1	375-22-4		10/26/2022 03:45
PFPeA	7.7	2.0	0.81	0.81	1	2706-90-3		10/26/2022 03:45
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		10/26/2022 03:45
PFBS	5.2	1.8	0.48	0.48	1	375-73-5		10/26/2022 03:45
PFHxA	13	2.0	0.90	0.90	1	307-24-4		10/26/2022 03:45
4:2 FTS	ND	1.9	0.46	0.46	1	757124-72-4		10/26/2022 03:45
PFPeS	1.4 J	1.9	0.60	0.60	1	2706-91-4		10/26/2022 03:45
PFHpA	2.5	2.0	0.68	0.68	1	375-85-9		10/26/2022 03:45
DONA	ND	1.9	0.91	0.91	1	919005-14-4		10/26/2022 03:45
PFHxS	12	1.8	0.53	0.53	1	355-46-4		10/26/2022 03:45
PFOA	6.6	2.0	0.85	0.85	1	335-67-1		10/26/2022 03:45
6:2 FTS	1.7 J	1.9	0.67	0.67	1	27619-97-2		10/26/2022 03:45
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/26/2022 03:45
PFNA	ND	2.0	0.79	0.79	1	375-95-1		10/26/2022 03:45
PFOSAm	ND	2.0	0.71	0.71	1	754-91-6		10/26/2022 03:45
PFOS	7.5	1.8	0.66	0.66	1	1763-23-1		10/26/2022 03:45
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		10/26/2022 03:45
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/26/2022 03:45
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		10/26/2022 03:45
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		10/26/2022 03:45
9-CI-PF3ON	ND	1.8	0.47	0.47	1	756426-58-1		10/26/2022 03:45
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/26/2022 03:45
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/26/2022 03:45
NMeFOSAA	1.2 J	2.0	0.69	0.69	1	2355-31-9		10/26/2022 03:45
NEtFOSAA	1.2 J	2.0	0.81	0.81	1	2991-50-6		10/26/2022 03:45
PFDS	ND	1.9	0.64	0.64	1	335-77-3		10/26/2022 03:45
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		10/26/2022 03:45
MeFOSE	2.6	2.0	0.52	0.52	1	24448-09-7		10/26/2022 03:45
EtFOSE	2.0 J	2.0	0.88	0.88	1	1691-99-2		10/26/2022 03:45
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		10/26/2022 03:45
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		10/26/2022 03:45
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		10/26/2022 03:45
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 03:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 07 20221010
 Lab Sample ID 10629584002
 Lab File ID B221025B_038
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 252mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	19	95	50-150		10/26/2022 03:45
13C4 PFOA	20	20	101	50-150		10/26/2022 03:45
13C2 PFDA	20	16	80	50-150		10/26/2022 03:45
13C4 PFOS	19	12	62	50-150		10/26/2022 03:45

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	13	63	25-150		10/26/2022 03:45
13C5 PFPeA	20	16	83	25-150		10/26/2022 03:45
13C3 PFBS	18	19	102	25-150		10/26/2022 03:45
13C2 4:2FTS	19	59	319	25-150	R	10/26/2022 03:45
13C5 PFHxA	20	17	84	25-150		10/26/2022 03:45
13C4 PFHpA	20	19	97	25-150		10/26/2022 03:45
13C3 PFHxS	19	19	101	25-150		10/26/2022 03:45
13C2 6:2FTS	19	72	384	25-150	R	10/26/2022 03:45
13C8 PFOA	20	20	99	25-150		10/26/2022 03:45
13C9 PFNA	20	20	100	25-150		10/26/2022 03:45
13C8 PFOS	19	11	59	25-150		10/26/2022 03:45
13C2 8:2FTS	19	42	221	25-150	R	10/26/2022 03:45
13C6 PFDA	20	13	68	25-150		10/26/2022 03:45
d3-MeFOSAA	20	12	59	25-150		10/26/2022 03:45
13C8 PFOSA	20	7.2	36	25-150		10/26/2022 03:45
d5-EtFOSAA	20	12	58	25-150		10/26/2022 03:45
13C7 PFUdA	20	13	65	25-150		10/26/2022 03:45
13C2 PFDoA	20	9.7	49	25-150		10/26/2022 03:45
13C2 PFTeDA	20	13	67	25-150		10/26/2022 03:45
13C3 HFPO-DA	20	16	81	25-150		10/26/2022 03:45
d7-N-MeFOSE	20	12	61	10-150		10/26/2022 03:45
d9-N-EtFOSE	20	0.95	5	10-150	R	10/26/2022 03:45
d3-N-MeFOSA	20	7.6	39	10-150		10/26/2022 03:45
d5-N-EtFOSA	20	6.4	33	10-150		10/26/2022 03:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 08 20221010
 Lab Sample ID 10629584003
 Lab File ID B221025B_039
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 252mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.1	2.0	0.49	0.49	1	375-22-4		10/26/2022 04:06
PFPeA	3.2	2.0	0.81	0.81	1	2706-90-3		10/26/2022 04:06
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		10/26/2022 04:06
PFBS	1.4 J	1.8	0.48	0.48	1	375-73-5		10/26/2022 04:06
PFHxA	3.5 I	2.0	0.90	0.90	1	307-24-4		10/26/2022 04:06
4:2 FTS	ND	1.9	0.46	0.46	1	757124-72-4		10/26/2022 04:06
PFPeS	ND	1.9	0.60	0.60	1	2706-91-4		10/26/2022 04:06
PFHpA	0.76 J	2.0	0.68	0.68	1	375-85-9		10/26/2022 04:06
DONA	ND	1.9	0.91	0.91	1	919005-14-4		10/26/2022 04:06
PFHxS	3.3 I	1.8	0.53	0.53	1	355-46-4		10/26/2022 04:06
PFOA	2.2	2.0	0.85	0.85	1	335-67-1		10/26/2022 04:06
6:2 FTS	0.83 J	1.9	0.67	0.67	1	27619-97-2		10/26/2022 04:06
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/26/2022 04:06
PFNA	ND	2.0	0.79	0.79	1	375-95-1		10/26/2022 04:06
PFOSAm	ND	2.0	0.71	0.71	1	754-91-6		10/26/2022 04:06
PFOS	8.6 I	1.8	0.66	0.66	1	1763-23-1		10/26/2022 04:06
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		10/26/2022 04:06
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/26/2022 04:06
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		10/26/2022 04:06
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		10/26/2022 04:06
9-CI-PF3ON	ND	1.8	0.47	0.47	1	756426-58-1		10/26/2022 04:06
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/26/2022 04:06
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/26/2022 04:06
NMeFOSAA	ND	2.0	0.69	0.69	1	2355-31-9		10/26/2022 04:06
NEtFOSAA	ND	2.0	0.81	0.81	1	2991-50-6		10/26/2022 04:06
PFDS	ND	1.9	0.64	0.64	1	335-77-3		10/26/2022 04:06
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		10/26/2022 04:06
MeFOSE	2.6	2.0	0.52	0.52	1	24448-09-7		10/26/2022 04:06
EtFOSE	1.5 J	2.0	0.88	0.88	1	1691-99-2		10/26/2022 04:06
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		10/26/2022 04:06
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		10/26/2022 04:06
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		10/26/2022 04:06
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 04:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 08 20221010
 Lab Sample ID 10629584003
 Lab File ID B221025B_039
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 252mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	18	91	50-150		10/26/2022 04:06
13C4 PFOA	20	20	100	50-150		10/26/2022 04:06
13C2 PFDA	20	14	71	50-150		10/26/2022 04:06
13C4 PFOS	19	11	58	50-150		10/26/2022 04:06

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	11	57	25-150		10/26/2022 04:06
13C5 PFPeA	20	16	79	25-150		10/26/2022 04:06
13C3 PFBS	18	19	101	25-150		10/26/2022 04:06
13C2 4:2FTS	19	56	302	25-150	R	10/26/2022 04:06
13C5 PFHxA	20	17	86	25-150		10/26/2022 04:06
13C4 PFHpA	20	20	99	25-150		10/26/2022 04:06
13C3 PFHxS	19	18	93	25-150		10/26/2022 04:06
13C2 6:2FTS	19	71	375	25-150	R	10/26/2022 04:06
13C8 PFOA	20	19	98	25-150		10/26/2022 04:06
13C9 PFNA	20	19	96	25-150		10/26/2022 04:06
13C8 PFOS	19	10	54	25-150		10/26/2022 04:06
13C2 8:2FTS	19	35	185	25-150	R	10/26/2022 04:06
13C6 PFDA	20	12	61	25-150		10/26/2022 04:06
d3-MeFOSAA	20	11	54	25-150		10/26/2022 04:06
13C8 PFOSA	20	4.7	24	25-150	R	10/26/2022 04:06
d5-EtFOSAA	20	8.6	43	25-150		10/26/2022 04:06
13C7 PFUdA	20	11	55	25-150		10/26/2022 04:06
13C2 PFDoA	20	8.2	41	25-150		10/26/2022 04:06
13C2 PFTeDA	20	14	72	25-150		10/26/2022 04:06
13C3 HFPO-DA	20	16	83	25-150		10/26/2022 04:06
d7-N-MeFOSE	20	12	63	10-150		10/26/2022 04:06
d9-N-EtFOSE	20	0.87	4	10-150	R	10/26/2022 04:06
d3-N-MeFOSA	20	8.4	42	10-150		10/26/2022 04:06
d5-N-EtFOSA	20	6.2	31	10-150		10/26/2022 04:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 11 20221010
 Lab Sample ID 10629584004
 Lab File ID B221025B_040
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 258mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.7	1.9	0.48	0.48	1	375-22-4		10/26/2022 04:26
PFPeA	4.4	1.9	0.79	0.79	1	2706-90-3		10/26/2022 04:26
HFPO-DA	ND	1.9	0.48	0.48	1	13252-13-6		10/26/2022 04:26
PFBS	2.4	1.7	0.47	0.47	1	375-73-5		10/26/2022 04:26
PFHxA	4.3 I	1.9	0.88	0.88	1	307-24-4		10/26/2022 04:26
4:2 FTS	ND	1.8	0.45	0.45	1	757124-72-4		10/26/2022 04:26
PFPeS	ND	1.8	0.58	0.58	1	2706-91-4		10/26/2022 04:26
PFHpA	0.96 J	1.9	0.67	0.67	1	375-85-9		10/26/2022 04:26
DONA	ND	1.8	0.89	0.89	1	919005-14-4		10/26/2022 04:26
PFHxS	4.0 I	1.8	0.51	0.51	1	355-46-4		10/26/2022 04:26
PFOA	2.0	1.9	0.83	0.83	1	335-67-1		10/26/2022 04:26
6:2 FTS	ND	1.8	0.65	0.65	1	27619-97-2		10/26/2022 04:26
PFHpS	ND	1.8	0.65	0.65	1	375-92-8		10/26/2022 04:26
PFNA	ND	1.9	0.77	0.77	1	375-95-1		10/26/2022 04:26
PFOSAm	ND	1.9	0.69	0.69	1	754-91-6		10/26/2022 04:26
PFOS	4.3 I	1.8	0.64	0.64	1	1763-23-1		10/26/2022 04:26
MeFOSA	ND	1.9	0.53	0.53	1	31506-32-8		10/26/2022 04:26
PFDA	ND	1.9	0.59	0.59	1	335-76-2		10/26/2022 04:26
EtFOSAm	ND	1.9	0.56	0.56	1	4151-50-2		10/26/2022 04:26
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/26/2022 04:26
9-CI-PF3ON	ND	1.8	0.45	0.45	1	756426-58-1		10/26/2022 04:26
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		10/26/2022 04:26
PFUnDA	ND	1.9	0.47	0.47	1	2058-94-8		10/26/2022 04:26
NMeFOSAA	ND	1.9	0.67	0.67	1	2355-31-9		10/26/2022 04:26
NEtFOSAA	ND	1.9	0.79	0.79	1	2991-50-6		10/26/2022 04:26
PFDS	ND	1.9	0.62	0.62	1	335-77-3		10/26/2022 04:26
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		10/26/2022 04:26
MeFOSE	2.0	1.9	0.50	0.50	1	24448-09-7		10/26/2022 04:26
EtFOSE	1.0 J	1.9	0.86	0.86	1	1691-99-2		10/26/2022 04:26
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		10/26/2022 04:26
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		10/26/2022 04:26
PFDoS	ND	1.9	0.57	0.57	1	79780-39-5		10/26/2022 04:26
PFTDA	ND	1.9	0.58	0.58	1	376-06-7		10/26/2022 04:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 11 20221010
 Lab Sample ID 10629584004
 Lab File ID B221025B_040
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 258mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	17	89	50-150		10/26/2022 04:26
13C4 PFOA	19	19	100	50-150		10/26/2022 04:26
13C2 PFDA	19	14	75	50-150		10/26/2022 04:26
13C4 PFOS	19	12	64	50-150		10/26/2022 04:26

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	12	62	25-150		10/26/2022 04:26
13C5 PFPeA	19	16	81	25-150		10/26/2022 04:26
13C3 PFBS	18	19	104	25-150		10/26/2022 04:26
13C2 4:2FTS	18	57	317	25-150	R	10/26/2022 04:26
13C5 PFHxA	19	17	86	25-150		10/26/2022 04:26
13C4 PFHpA	19	19	98	25-150		10/26/2022 04:26
13C3 PFHxS	18	19	103	25-150		10/26/2022 04:26
13C2 6:2FTS	18	70	383	25-150	R	10/26/2022 04:26
13C8 PFOA	19	19	99	25-150		10/26/2022 04:26
13C9 PFNA	19	18	95	25-150		10/26/2022 04:26
13C8 PFOS	19	11	57	25-150		10/26/2022 04:26
13C2 8:2FTS	19	47	254	25-150	R	10/26/2022 04:26
13C6 PFDA	19	13	68	25-150		10/26/2022 04:26
d3-MeFOSAA	19	12	64	25-150		10/26/2022 04:26
13C8 PFOSA	19	7.7	40	25-150		10/26/2022 04:26
d5-EtFOSAA	19	12	60	25-150		10/26/2022 04:26
13C7 PFUdA	19	13	67	25-150		10/26/2022 04:26
13C2 PFDoA	19	10	52	25-150		10/26/2022 04:26
13C2 PFTeDA	19	14	74	25-150		10/26/2022 04:26
13C3 HFPO-DA	19	16	84	25-150		10/26/2022 04:26
d7-N-MeFOSE	19	12	64	10-150		10/26/2022 04:26
d9-N-EtFOSE	19	1.2	6	10-150	R	10/26/2022 04:26
d3-N-MeFOSA	19	8.1	42	10-150		10/26/2022 04:26
d5-N-EtFOSA	19	6.6	34	10-150		10/26/2022 04:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 18 20221010
 Lab Sample ID 10629584005
 Lab File ID B221025B_041
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 256mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	2.0	0.49	0.49	1	375-22-4		10/26/2022 04:46
PFPeA	6.8	2.0	0.80	0.80	1	2706-90-3		10/26/2022 04:46
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		10/26/2022 04:46
PFBS	4.6	1.7	0.47	0.47	1	375-73-5		10/26/2022 04:46
PFHxA	7.5	2.0	0.89	0.89	1	307-24-4		10/26/2022 04:46
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		10/26/2022 04:46
PFPeS	1.8 IJ	1.8	0.59	0.59	1	2706-91-4		10/26/2022 04:46
PFHpA	2.2	2.0	0.67	0.67	1	375-85-9		10/26/2022 04:46
DONA	ND	1.8	0.90	0.90	1	919005-14-4		10/26/2022 04:46
PFHxS	15	1.8	0.52	0.52	1	355-46-4		10/26/2022 04:46
PFOA	6.8	2.0	0.84	0.84	1	335-67-1		10/26/2022 04:46
6:2 FTS	2.3	1.9	0.66	0.66	1	27619-97-2		10/26/2022 04:46
PFHpS	ND	1.9	0.65	0.65	1	375-92-8		10/26/2022 04:46
PFNA	ND	2.0	0.78	0.78	1	375-95-1		10/26/2022 04:46
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		10/26/2022 04:46
PFOS	9.6	1.8	0.65	0.65	1	1763-23-1		10/26/2022 04:46
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		10/26/2022 04:46
PFDA	ND	2.0	0.59	0.59	1	335-76-2		10/26/2022 04:46
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		10/26/2022 04:46
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/26/2022 04:46
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		10/26/2022 04:46
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		10/26/2022 04:46
PFUnDA	ND	2.0	0.47	0.47	1	2058-94-8		10/26/2022 04:46
NMeFOSAA	1.0 J	2.0	0.68	0.68	1	2355-31-9		10/26/2022 04:46
NEtFOSAA	1.4 J	2.0	0.79	0.79	1	2991-50-6		10/26/2022 04:46
PFDS	ND	1.9	0.63	0.63	1	335-77-3		10/26/2022 04:46
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		10/26/2022 04:46
MeFOSE	2.4	2.0	0.51	0.51	1	24448-09-7		10/26/2022 04:46
EtFOSE	ND	2.0	0.87	0.87	1	1691-99-2		10/26/2022 04:46
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		10/26/2022 04:46
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		10/26/2022 04:46
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		10/26/2022 04:46
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 04:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 18 20221010
 Lab Sample ID 10629584005
 Lab File ID B221025B_041
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 256mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	18	94	50-150		10/26/2022 04:46
13C4 PFOA	20	20	103	50-150		10/26/2022 04:46
13C2 PFDA	20	15	79	50-150		10/26/2022 04:46
13C4 PFOS	19	12	65	50-150		10/26/2022 04:46

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	13	65	25-150		10/26/2022 04:46
13C5 PFPeA	20	17	86	25-150		10/26/2022 04:46
13C3 PFBS	18	20	110	25-150		10/26/2022 04:46
13C2 4:2FTS	18	61	332	25-150	R	10/26/2022 04:46
13C5 PFHxA	20	17	87	25-150		10/26/2022 04:46
13C4 PFHpA	20	20	100	25-150		10/26/2022 04:46
13C3 PFHxS	18	19	104	25-150		10/26/2022 04:46
13C2 6:2FTS	19	72	390	25-150	R	10/26/2022 04:46
13C8 PFOA	20	20	103	25-150		10/26/2022 04:46
13C9 PFNA	20	19	96	25-150		10/26/2022 04:46
13C8 PFOS	19	10	55	25-150		10/26/2022 04:46
13C2 8:2FTS	19	40	216	25-150	R	10/26/2022 04:46
13C6 PFDA	20	13	67	25-150		10/26/2022 04:46
d3-MeFOSAA	20	11	59	25-150		10/26/2022 04:46
13C8 PFOSA	20	6.4	33	25-150		10/26/2022 04:46
d5-EtFOSAA	20	11	55	25-150		10/26/2022 04:46
13C7 PFUdA	20	12	63	25-150		10/26/2022 04:46
13C2 PFDoA	20	9.2	47	25-150		10/26/2022 04:46
13C2 PFTeDA	20	12	62	25-150		10/26/2022 04:46
13C3 HFPO-DA	20	16	84	25-150		10/26/2022 04:46
d7-N-MeFOSE	20	13	68	10-150		10/26/2022 04:46
d9-N-EtFOSE	20	1.1	6	10-150	R	10/26/2022 04:46
d3-N-MeFOSA	20	9.9	51	10-150		10/26/2022 04:46
d5-N-EtFOSA	20	7.1	36	10-150		10/26/2022 04:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20221011
 Lab Sample ID 10629584006
 Lab File ID B221025B_042
 Matrix Industrial_Water
 Collected 10/11/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 261mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.6	1.9	0.48	0.48	1	375-22-4		10/26/2022 05:06
PFPeA	20	1.9	0.79	0.79	1	2706-90-3		10/26/2022 05:06
HFPO-DA	ND	1.9	0.47	0.47	1	13252-13-6		10/26/2022 05:06
PFBS	2.3	1.7	0.46	0.46	1	375-73-5		10/26/2022 05:06
PFHxA	17	1.9	0.87	0.87	1	307-24-4		10/26/2022 05:06
4:2 FTS	ND	1.8	0.45	0.45	1	757124-72-4		10/26/2022 05:06
PFPeS	ND	1.8	0.58	0.58	1	2706-91-4		10/26/2022 05:06
PFHpA	2.1	1.9	0.66	0.66	1	375-85-9		10/26/2022 05:06
DONA	ND	1.8	0.88	0.88	1	919005-14-4		10/26/2022 05:06
PFHxS	7.1	1.7	0.51	0.51	1	355-46-4		10/26/2022 05:06
PFOA	8.5	1.9	0.82	0.82	1	335-67-1		10/26/2022 05:06
6:2 FTS	0.88 J	1.8	0.65	0.65	1	27619-97-2		10/26/2022 05:06
PFHpS	ND	1.8	0.64	0.64	1	375-92-8		10/26/2022 05:06
PFNA	1.3 J	1.9	0.76	0.76	1	375-95-1		10/26/2022 05:06
PFOSAm	ND	1.9	0.69	0.69	1	754-91-6		10/26/2022 05:06
PFOS	5.2	1.8	0.64	0.64	1	1763-23-1		10/26/2022 05:06
MeFOSA	ND	1.9	0.53	0.53	1	31506-32-8		10/26/2022 05:06
PFDA	1.3 J	1.9	0.58	0.58	1	335-76-2		10/26/2022 05:06
EtFOSAm	ND	1.9	0.55	0.55	1	4151-50-2		10/26/2022 05:06
8:2 FTS	ND	1.8	0.48	0.48	1	39108-34-4		10/26/2022 05:06
9-CI-PF3ON	ND	1.8	0.45	0.45	1	756426-58-1		10/26/2022 05:06
PFNS	ND	1.8	0.56	0.56	1	68259-12-1		10/26/2022 05:06
PFUnDA	ND	1.9	0.46	0.46	1	2058-94-8		10/26/2022 05:06
NMeFOSAA	1.2 J	1.9	0.66	0.66	1	2355-31-9		10/26/2022 05:06
NEtFOSAA	ND	1.9	0.78	0.78	1	2991-50-6		10/26/2022 05:06
PFDS	ND	1.8	0.61	0.61	1	335-77-3		10/26/2022 05:06
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		10/26/2022 05:06
MeFOSE	ND	1.9	0.50	0.50	1	24448-09-7		10/26/2022 05:06
EtFOSE	ND	1.9	0.85	0.85	1	1691-99-2		10/26/2022 05:06
11-CI-PF3OUdS	ND	1.8	0.53	0.53	1	763051-92-9		10/26/2022 05:06
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		10/26/2022 05:06
PFDoS	ND	1.9	0.57	0.57	1	79780-39-5		10/26/2022 05:06
PFTDA	ND	1.9	0.57	0.57	1	376-06-7		10/26/2022 05:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20221011
 Lab Sample ID 10629584006
 Lab File ID B221025B_042
 Matrix Industrial_Water
 Collected 10/11/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 261mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	21	109	50-150		10/26/2022 05:06
13C4 PFOA	19	23	120	50-150		10/26/2022 05:06
13C2 PFDA	19	25	129	50-150		10/26/2022 05:06
13C4 PFOS	18	21	116	50-150		10/26/2022 05:06

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	17	88	25-150		10/26/2022 05:06
13C5 PFPeA	19	18	96	25-150		10/26/2022 05:06
13C3 PFBS	18	20	112	25-150		10/26/2022 05:06
13C2 4:2FTS	18	44	247	25-150	R	10/26/2022 05:06
13C5 PFHxA	19	19	102	25-150		10/26/2022 05:06
13C4 PFHpA	19	21	112	25-150		10/26/2022 05:06
13C3 PFHxS	18	21	115	25-150		10/26/2022 05:06
13C2 6:2FTS	18	40	222	25-150	R	10/26/2022 05:06
13C8 PFOA	19	22	115	25-150		10/26/2022 05:06
13C9 PFNA	19	21	109	25-150		10/26/2022 05:06
13C8 PFOS	18	20	111	25-150		10/26/2022 05:06
13C2 8:2FTS	18	40	215	25-150	R	10/26/2022 05:06
13C6 PFDA	19	22	115	25-150		10/26/2022 05:06
d3-MeFOSAA	19	25	128	25-150		10/26/2022 05:06
13C8 PFOSA	19	19	100	25-150		10/26/2022 05:06
d5-EtFOSAA	19	24	125	25-150		10/26/2022 05:06
13C7 PFUdA	19	24	126	25-150		10/26/2022 05:06
13C2 PFDoA	19	24	127	25-150		10/26/2022 05:06
13C2 PFTeDA	19	18	96	25-150		10/26/2022 05:06
13C3 HFPO-DA	19	19	98	25-150		10/26/2022 05:06
d7-N-MeFOSE	19	15	78	10-150		10/26/2022 05:06
d9-N-EtFOSE	19	10	53	10-150		10/26/2022 05:06
d3-N-MeFOSA	19	8.0	42	10-150		10/26/2022 05:06
d5-N-EtFOSA	19	6.2	32	10-150		10/26/2022 05:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKOC
 Lab Sample ID BLANK-101852
 Lab File ID B221025B_026
 Matrix Water
 Collected 10/13/2022 16:42
 Received 10/13/2022 16:42
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 229mL
 Ical ID 221024A02
 CCal File B221025B_025
 Ending CCal File B221025B_036
 Blank File

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.2	0.54	0.54	1	375-22-4		10/25/2022 23:45
PFPeA	ND	2.2	0.90	0.90	1	2706-90-3		10/25/2022 23:45
HFPO-DA	ND	2.2	0.54	0.54	1	13252-13-6		10/25/2022 23:45
PFBS	ND	1.9	0.53	0.53	1	375-73-5		10/25/2022 23:45
PFHxA	ND	2.2	0.99	0.99	1	307-24-4		10/25/2022 23:45
4:2 FTS	ND	2.0	0.51	0.51	1	757124-72-4		10/25/2022 23:45
PFPeS	ND	2.1	0.66	0.66	1	2706-91-4		10/25/2022 23:45
PFHpA	ND	2.2	0.75	0.75	1	375-85-9		10/25/2022 23:45
DONA	ND	2.1	1.0	1.0	1	919005-14-4		10/25/2022 23:45
PFHxS	ND	2.0	0.58	0.58	1	355-46-4		10/25/2022 23:45
PFOA	ND	2.2	0.94	0.94	1	335-67-1		10/25/2022 23:45
6:2 FTS	ND	2.1	0.74	0.74	1	27619-97-2		10/25/2022 23:45
PFHpS	ND	2.1	0.73	0.73	1	375-92-8		10/25/2022 23:45
PFNA	ND	2.2	0.87	0.87	1	375-95-1		10/25/2022 23:45
PFOSAm	ND	2.2	0.78	0.78	1	754-91-6		10/25/2022 23:45
PFOS	ND	2.0	0.73	0.73	1	1763-23-1		10/25/2022 23:45
MeFOSA	ND	2.2	0.60	0.60	1	31506-32-8		10/25/2022 23:45
PFDA	ND	2.2	0.66	0.66	1	335-76-2		10/25/2022 23:45
EtFOSAm	ND	2.2	0.63	0.63	1	4151-50-2		10/25/2022 23:45
8:2 FTS	ND	2.1	0.55	0.55	1	39108-34-4		10/25/2022 23:45
9-CI-PF3ON	ND	2.0	0.51	0.51	1	756426-58-1		10/25/2022 23:45
PFNS	ND	2.1	0.64	0.64	1	68259-12-1		10/25/2022 23:45
PFUnDA	ND	2.2	0.53	0.53	1	2058-94-8		10/25/2022 23:45
NMeFOSAA	ND	2.2	0.76	0.76	1	2355-31-9		10/25/2022 23:45
NEtFOSAA	ND	2.2	0.89	0.89	1	2991-50-6		10/25/2022 23:45
PFDS	ND	2.1	0.70	0.70	1	335-77-3		10/25/2022 23:45
PFDOA	ND	2.2	0.52	0.52	1	307-55-1		10/25/2022 23:45
MeFOSE	ND	2.2	0.57	0.57	1	24448-09-7		10/25/2022 23:45
EtFOSE	ND	2.2	0.97	0.97	1	1691-99-2		10/25/2022 23:45
11-CI-PF3OUdS	ND	2.1	0.61	0.61	1	763051-92-9		10/25/2022 23:45
PFTTrDA	ND	2.2	0.68	0.68	1	72629-94-8		10/25/2022 23:45
PFDoS	ND	2.1	0.65	0.65	1	79780-39-5		10/25/2022 23:45
PFTDA	ND	2.2	0.66	0.66	1	376-06-7		10/25/2022 23:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKOC
 Lab Sample ID BLANK-101852
 Lab File ID B221025B_026
 Matrix Water
 Collected 10/13/2022 16:42
 Received 10/13/2022 16:42
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 229mL
 Ical ID 221024A02
 CCal File B221025B_025
 Ending CCal File B221025B_036
 Blank File

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	22	24	108	50-150		10/25/2022 23:45
13C4 PFOA	22	24	109	50-150		10/25/2022 23:45
13C2 PFDA	22	23	107	50-150		10/25/2022 23:45
13C4 PFOS	21	22	105	50-150		10/25/2022 23:45

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	22	24	109	50-150		10/25/2022 23:45
13C5 PFPeA	22	23	105	50-150		10/25/2022 23:45
13C3 PFBS	20	22	110	50-150		10/25/2022 23:45
13C2 4:2FTS	20	21	103	50-150		10/25/2022 23:45
13C5 PFHxA	22	23	105	50-150		10/25/2022 23:45
13C4 PFHpA	22	23	103	50-150		10/25/2022 23:45
13C3 PFHxS	21	22	109	50-150		10/25/2022 23:45
13C2 6:2FTS	21	24	117	50-150		10/25/2022 23:45
13C8 PFOA	22	23	104	50-150		10/25/2022 23:45
13C9 PFNA	22	24	111	50-150		10/25/2022 23:45
13C8 PFOS	21	20	96	50-150		10/25/2022 23:45
13C2 8:2FTS	21	21	100	50-150		10/25/2022 23:45
13C6 PFDA	22	24	109	50-150		10/25/2022 23:45
d3-MeFOSAA	22	23	107	50-150		10/25/2022 23:45
13C8 PFOSA	22	19	86	50-150		10/25/2022 23:45
d5-EtFOSAA	22	22	98	50-150		10/25/2022 23:45
13C7 PFUdA	22	24	108	50-150		10/25/2022 23:45
13C2 PFDoA	22	24	109	50-150		10/25/2022 23:45
13C2 PFTeDA	22	20	93	50-150		10/25/2022 23:45
13C3 HFPO-DA	22	22	102	50-150		10/25/2022 23:45
d7-N-MeFOSE	22	20	91	20-150		10/25/2022 23:45
d9-N-EtFOSE	22	20	90	20-150		10/25/2022 23:45
d3-N-MeFOSA	22	14	62	20-150		10/25/2022 23:45
d5-N-EtFOSA	22	13	62	20-150		10/25/2022 23:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-101853	Instrument ID	10LCMS02
Run File Name	B221025B_027	Column ID	125GA90033
Analyzed	10/26/2022 00:05	Ical ID	221024A02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	19	98	50-150	
13C4_PFOA	19	19	98	50-150	
13C2_PFDA	19	19	98	50-150	
13C4_PFOS	18	19	104	50-150	

Extracted Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C4_PFBFA	19	19	99	50-150	
13C5_PFPeA	19	18	94	50-150	
13C3_PFBFS	18	17	96	50-150	
13C2_4:2FTS	18	17	92	50-150	
13C5_PFHxA	19	18	96	50-150	
13C4_PFHpA	19	18	92	50-150	
13C3_PFHxS	18	17	96	50-150	
13C2_6:2FTS	18	17	96	50-150	
13C8_PFOA	19	19	96	50-150	
13C9_PFNA	19	18	95	50-150	
13C8_PFOS	18	19	101	50-150	
13C2_8:2FTS	18	17	95	50-150	
13C6_PFDA	19	19	100	50-150	
d3-MeFOSAA	19	18	92	50-150	
13C8_PFOA	19	16	82	50-150	
d5-EtFOSAA	19	16	86	50-150	
13C7_PFUdA	19	20	105	50-150	
13C2_PFDaA	19	20	103	50-150	
13C2_PFTeDA	19	17	87	50-150	
13C3_HFPO-DA	19	18	93	50-150	
d7-N-MeFOSE	19	15	81	20-150	
d9-N-EtFOSE	19	16	82	20-150	
d3-N-MeFOSA	19	12	63	20-150	
d5-N-EtFOSA	19	12	64	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101853
 Run File Name B221025B_027
 Analyzed 10/26/2022 00:05
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level L

Native Analytes

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.8	4.4	114	50-150		375-22-4
PFPeA	3.8	4.4	114	50-150		2706-90-3
HFPO-DA	3.8	4.0	105	50-150		13252-13-6
PFBS	3.4	3.9	116	50-150		375-73-5
PFHxA	3.8	4.3	112	50-150		307-24-4
4:2 FTS	3.6	3.7	102	50-150		757124-72-4
PFPeS	3.6	3.9	107	50-150		2706-91-4
PFHpA	3.8	4.5	117	50-150		375-85-9
DONA	3.6	3.9	107	50-150		919005-14-4
PFHxS	3.5	3.6	102	50-150		355-46-4
PFOA	3.8	4.4	114	50-150		335-67-1
6:2 FTS	3.7	3.9	106	50-150		27619-97-2
PFHpS	3.7	3.7	100	50-150		375-92-8
PFNA	3.8	4.3	111	50-150		375-95-1
PFOSAm	3.8	4.2	109	50-150		754-91-6
PFOS	3.6	3.7	105	50-150		1763-23-1
MeFOSA	3.8	3.7	97	50-150		31506-32-8
PFDA	3.8	4.2	109	50-150		335-76-2
EtFOSAm	3.8	3.9	100	50-150		4151-50-2
8:2 FTS	3.7	3.8	103	50-150		39108-34-4
9-CI-PF3ON	3.6	3.6	100	50-150		756426-58-1
PFNS	3.7	3.9	105	50-150		68259-12-1
PFUnDA	3.8	3.7	97	50-150		2058-94-8
NMeFOSAA	3.8	3.5	91	50-150		2355-31-9
NEtFOSAA	3.8	4.0	105	50-150		2991-50-6
PFDS	3.7	3.8	101	50-150		335-77-3
PFDOA	3.8	3.8	99	50-150		307-55-1
MeFOSE	3.8	4.4	115	50-150		24448-09-7
EtFOSE	3.8	3.9	102	50-150		1691-99-2
11-CI-PF3OUdS	3.6	3.5	97	50-150		763051-92-9
PFTrDA	3.8	3.8	100	50-150		72629-94-8
PFDoS	3.7	3.4	92	50-150		79780-39-5
PFTDA	3.8	4.1	107	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101853
 Run File Name B221025B_027
 Analyzed 10/26/2022 00:05
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.60	5.59	1549	
13C4 PFOA	N/A	N/A	6.79	6.77	2127	
13C2 PFDA	N/A	N/A	8.00	7.97	1582	
13C4 PFOS	N/A	N/A	8.39	8.36	1591	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.28	4.30	2445	
13C5 PFPeA	N/A	N/A	5.03	5.04	2218	
13C3 PFBS	N/A	N/A	5.80	5.82	2490	
13C2 4:2FTS	N/A	N/A	5.37	5.38	688	
13C5 PFHxA	N/A	N/A	5.61	5.62	1512	
13C4 PFHpA	N/A	N/A	6.19	6.20	1758	
13C3 PFHxS	N/A	N/A	7.12	7.15	2836	
13C2 6:2FTS	N/A	N/A	6.49	6.50	3038	
13C8 PFOA	N/A	N/A	6.79	6.80	2045	
13C9 PFNA	N/A	N/A	7.39	7.41	1961	
13C8 PFOS	N/A	N/A	8.39	8.37	1730	
13C2 8:2FTS	N/A	N/A	7.67	7.68	2431	
13C6 PFDA	N/A	N/A	8.00	8.02	1867	
d3-MeFOSAA	N/A	N/A	7.94	7.95	1347	
13C8 PFOSA	N/A	N/A	10.72	10.73	1340	
d5-EtFOSAA	N/A	N/A	8.23	8.24	1220	
13C7 PFUdA	N/A	N/A	8.61	8.63	2152	
13C2 PFDoA	N/A	N/A	9.22	9.24	1652	
13C2 PFTeDA	N/A	N/A	10.43	10.46	1280	
13C3 HFPO-DA	N/A	N/A	5.84	5.85	1498	
d7-N-MeFOSE	N/A	N/A	12.46	12.47	40	
d9-N-EtFOSE	N/A	N/A	12.93	12.95	244	
d3-N-MeFOSA	N/A	N/A	12.67	12.68	455	
d5-N-EtFOSA	N/A	N/A	13.09	13.09	552	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-101853
 Run File Name B221025B_027
 Analyzed 10/26/2022 00:05
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.29	4.28	186	
PFPeA	N/A	N/A	5.03	5.04	369	
HFPO-DA	0.29	0.29	5.85	5.86	816	
PFBS	0.42	0.42	5.80	5.83	574	
PFHxA	0.07	0.07	5.61	5.62	189	
4:2 FTS	0.84	0.83	5.38	5.39	1610	
PFPeS	0.42	0.39	6.48	6.50	1035	
PFHpA	0.29	0.29	6.20	6.21	23	
DONA	0.58	0.55	6.42	6.43	1365	
PFHxS	0.36	0.33	7.13	7.16	1662	
PFOA	0.40	0.39	6.79	6.81	231	
6:2 FTS	0.96	0.97	6.49	6.49	44	
PFHpS	0.37	0.38	7.77	7.80	5200	
PFNA	0.15	0.15	7.40	7.41	318	
PFOSAm	N/A	N/A	10.72	10.74	656	
PFOS	0.35	0.32	8.40	8.43	639	
MeFOSA	0.51	0.49	12.69	12.70	261	
PFDA	0.16	0.14	8.01	8.02	309	
EtFOSAm	0.50	0.51	13.12	13.13	416	
8:2 FTS	0.93	0.88	7.67	7.68	471	
9-CI-PF3ON	0.06	0.06	8.84	8.88	893	
PFNS	0.47	0.46	9.02	9.05	1005	
PFUnDA	0.12	0.11	8.62	8.64	466	
NMeFOSAA	0.83	0.81	7.95	7.96	171618	
NEtFOSAA	0.61	0.63	8.24	8.21	327	
PFDS	0.32	0.31	9.62	9.59	1483	
PFDOA	0.16	0.17	9.22	9.19	395	
MeFOSE	N/A	N/A	12.50	12.50	330	
EtFOSE	0.00	0.00	12.98	12.97	245	
11-CI-PF3OUdS	0.02	0.02	10.06	10.03	746	
PFTrDA	0.16	0.16	9.83	9.80	363	
PFDoS	0.44	0.41	10.79	10.75	1927	
PFTDA	0.25	0.25	10.43	10.40	298	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MS
 Run File Name B221025B_043
 Analyzed 10/26/2022 05:26
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	44	52	119	50-150	
13C4_PFOA	44	55	124	50-150	
13C2_PFDA	44	47	106	50-150	
13C4_PFOS	42	37	88	50-150	

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	44	40	91	25-150	
13C5_PFPeA	44	47	107	25-150	
13C3_PFBFS	41	53	130	25-150	
13C2_4:2FTS	41	160	382	25-150	R
13C5_PFHxA	44	51	116	25-150	
13C4_PFHpA	44	59	132	25-150	
13C3_PFHxS	42	53	127	25-150	
13C2_6:2FTS	42	200	473	25-150	R
13C8_PFOA	44	55	124	25-150	
13C9_PFNA	44	52	116	25-150	
13C8_PFOS	42	36	85	25-150	
13C2_8:2FTS	42	130	303	25-150	R
13C6_PFDA	44	42	94	25-150	
d3-MeFOSAA	44	42	96	25-150	
13C8_PFOSA	44	30	67	25-150	
d5-EtFOSAA	44	44	98	25-150	
13C7_PFUdA	44	43	98	25-150	
13C2_PFDoA	44	41	93	25-150	
13C2_PFTeDA	44	59	134	25-150	
13C3_HFPO-DA	44	49	111	25-150	
d7-N-MeFOSE	44	36	81	10-150	
d9-N-EtFOSE	44	5.1	12	10-150	
d3-N-MeFOSA	44	20	44	10-150	
d5-N-EtFOSA	44	17	39	10-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MS
 Run File Name B221025B_043
 Analyzed 10/26/2022 05:26
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Native Analytes

Compound	Sample Conc. (ng/L)	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.4	8.8	12	88	50-150		375-22-4
PFPeA	4.1	8.8	12	94	50-150		2706-90-3
HFPO-DA	0.00	8.8	8.6	97	50-150	I	13252-13-6
PFBS	2.5	7.8	9.6	91	50-150		375-73-5
PFHxA	3.8 I	8.8	12	92	50-150		307-24-4
4:2 FTS	0.00	8.3	8.3	101	50-150		757124-72-4
PFPeS	0.61 IJ	8.3	9.2	104	50-150		2706-91-4
PFHpA	1.3 J	8.8	10.0	98	50-150		375-85-9
DONA	0.00	8.4	7.9	95	50-150		919005-14-4
PFHxS	4.6 I	8.1	12	88	50-150		355-46-4
PFOA	3.0	8.8	12	102	50-150		335-67-1
6:2 FTS	1.6 J	8.4	9.3	92	50-150		27619-97-2
PFHpS	0.00	8.4	11	131	50-150		375-92-8
PFNA	0.00	8.8	11	119	50-150		375-95-1
PFOSAm	0.00	8.8	9.0	101	50-150		754-91-6
PFOS	7.0 I	8.2	15	102	50-150		1763-23-1
MeFOSA	0.00	8.8	9.2	104	50-150		31506-32-8
PFDA	0.00	8.8	8.7	99	50-150		335-76-2
EtFOSAm	0.00	8.8	8.0	90	50-150		4151-50-2
8:2 FTS	0.00	8.5	9.2	108	50-150		39108-34-4
9-CI-PF3ON	0.00	8.2	11	130	50-150		756426-58-1
PFNS	0.00	8.2	8.3	101	50-150		68259-12-1
PFUnDA	0.00	8.8	9.9	112	50-150		2058-94-8
NMeFOSAA	0.00	8.8	8.7	98	50-150		2355-31-9
NEtFOSAA	4.3	8.8	13	97	50-150		2991-50-6
PFDS	0.00	8.5	11	131	50-150		335-77-3
PFDOA	0.00	8.8	8.7	98	50-150		307-55-1
MeFOSE	1.2 J	8.8	10	103	50-150		24448-09-7
EtFOSE	1.3 J	8.8	13	135	50-150		1691-99-2
11-CI-PF3OUdS	0.00	8.3	11	135	50-150		763051-92-9
PFTTrDA	0.00	8.8	13	148	50-150		72629-94-8
PFDoS	0.00	8.6	12	142	50-150		79780-39-5
PFTDA	0.00	8.8	9.0	102	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MS
 Run File Name B221025B_043
 Analyzed 10/26/2022 05:26
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.60	5.59	1322	
13C4 PFOA	N/A	N/A	6.78	6.77	1634	
13C2 PFDA	N/A	N/A	7.98	7.97	1604	
13C4 PFOS	N/A	N/A	8.36	8.36	328	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.28	4.30	1724	
13C5 PFPeA	N/A	N/A	5.02	5.04	1587	
13C3 PFBS	N/A	N/A	5.79	5.82	221	
13C2 4:2FTS	N/A	N/A	5.37	5.38	208	R
13C5 PFHxA	N/A	N/A	5.61	5.62	1162	
13C4 PFHpA	N/A	N/A	6.19	6.20	1517	
13C3 PFHxS	N/A	N/A	7.12	7.15	604	
13C2 6:2FTS	N/A	N/A	6.49	6.50	346	R
13C8 PFOA	N/A	N/A	6.78	6.80	1618	
13C9 PFNA	N/A	N/A	7.39	7.41	2066	
13C8 PFOS	N/A	N/A	8.36	8.37	304	
13C2 8:2FTS	N/A	N/A	7.66	7.68	384	R
13C6 PFDA	N/A	N/A	7.98	8.02	1512	
d3-MeFOSAA	N/A	N/A	7.93	7.95	1082	
13C8 PFOSA	N/A	N/A	10.72	10.73	960	
d5-EtFOSAA	N/A	N/A	8.21	8.24	2241	
13C7 PFUdA	N/A	N/A	8.58	8.63	2300	
13C2 PFDoA	N/A	N/A	9.19	9.24	1815	
13C2 PFTeDA	N/A	N/A	10.42	10.46	2161	
13C3 HFPO-DA	N/A	N/A	5.84	5.85	1102	
d7-N-MeFOSE	N/A	N/A	12.46	12.47	42	
d9-N-EtFOSE	N/A	N/A	12.94	12.95	181	
d3-N-MeFOSA	N/A	N/A	12.67	12.68	358	
d5-N-EtFOSA	N/A	N/A	13.09	13.09	585	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MS
 Run File Name B221025B_043
 Analyzed 10/26/2022 05:26
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.28	4.28	76	
PFPeA	N/A	N/A	5.03	5.04	162	
HFPO-DA	0.51	0.31	5.85	5.86	449	I
PFBS	0.40	0.39	5.80	5.83	93	
PFHxA	0.09	0.07	5.61	5.62	78	
4:2 FTS	0.78	0.87	5.38	5.39	271	
PFPeS	0.42	0.41	6.47	6.50	108	
PFHpA	0.29	0.32	6.20	6.21	24	
DONA	0.60	0.59	6.42	6.43	992	
PFHxS	0.47	0.36	7.13	7.16	132	
PFOA	0.39	0.38	6.79	6.81	290	
6:2 FTS	0.90	0.88	6.49	6.49	50	
PFHpS	0.34	0.41	7.77	7.80	141	
PFNA	0.14	0.17	7.40	7.41	290	
PFOSAm	N/A	N/A	10.73	10.74	620	
PFOS	0.24	0.36	8.37	8.43	120	
MeFOSA	0.46	0.51	12.69	12.70	267	
PFDA	0.16	0.17	7.99	8.02	452	
EtFOSAm	0.49	0.50	13.12	13.13	514	
8:2 FTS	0.97	0.97	7.67	7.68	2258	
9-Cl-PF3ON	0.05	0.05	8.82	8.88	1152	
PFNS	0.42	0.47	8.92	9.05	171	
PFUnDA	0.11	0.12	8.58	8.64	591	
NMeFOSAA	0.90	0.83	7.94	7.96	548	
NEtFOSAA	0.66	0.65	8.22	8.21	598	
PFDS	0.31	0.34	9.59	9.59	224	
PFDOA	0.15	0.15	9.19	9.19	491	
MeFOSE	N/A	N/A	12.50	12.50	170	
EtFOSE	0.00	0.00	12.98	12.97	154	
11-Cl-PF3OUdS	0.02	0.02	10.06	10.03	1675	
PFTrDA	0.15	0.16	9.82	9.80	643	
PFDoS	0.42	0.44	10.78	10.75	223	
PFTDA	0.25	0.25	10.42	10.40	824	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MSD
 Run File Name B221025B_044
 Analyzed 10/26/2022 05:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	RPD	Qualifiers
13C2 PFHxA	50	56	111	50-150	6.2	
13C4 PFOA	50	60	120	50-150	3.0	
13C2 PFDA	50	52	104	50-150	2.4	
13C4 PFOS	48	41	86	50-150	2.4	

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	RPD	Qualifiers
13C4 PFBA	50	43	86	25-150	5.5	
13C5 PFPeA	50	49	98	25-150	8.2	
13C3 PFBS	47	50	108	25-150	18.0	
13C2 4:2FTS	47	160	331	25-150	14.1	R
13C5 PFHxA	50	51	102	25-150	12.6	
13C4 PFHpA	50	57	114	25-150	15.0	
13C3 PFHxS	47	53	112	25-150	12.7	
13C2 6:2FTS	48	170	360	25-150	27.2	R
13C8 PFOA	50	57	114	25-150	7.9	
13C9 PFNA	50	56	112	25-150	3.5	
13C8 PFOS	48	37	77	25-150	10.5	
13C2 8:2FTS	48	130	269	25-150	11.7	R
13C6 PFDA	50	45	90	25-150	4.3	
d3-MeFOSAA	50	45	89	25-150	6.9	
13C8 PFOSA	50	26	51	25-150	27.2	
d5-EtFOSAA	50	48	95	25-150	3.6	
13C7 PFUdA	50	45	90	25-150	8.4	
13C2 PFDoA	50	45	89	25-150	4.3	
13C2 PFTeDA	50	60	119	25-150	11.4	
13C3 HFPO-DA	50	48	97	25-150	13.6	
d7-N-MeFOSE	50	34	68	10-150	17.5	
d9-N-EtFOSE	50	5.9	12	10-150	2.4	
d3-N-MeFOSA	50	18	36	10-150	20.5	
d5-N-EtFOSA	50	17	33	10-150	17.3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MSD
 Run File Name B221025B_044
 Analyzed 10/26/2022 05:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Native Analytes

Compound	Sample Conc. (ng/L)	Known Conc. (ng/L)	Conc. Found (ng/L)	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	4.4	10	15	106	50-150	8.4		375-22-4
PFPeA	4.1	10	15	105	50-150	3.8		2706-90-3
HFPO-DA	0.00	10	11	106	50-150	9.3	I	13252-13-6
PFBS	2.5	8.9	12	106	50-150	8.8		375-73-5
PFHxA	3.8 I	10	14	105	50-150	6.0		307-24-4
4:2 FTS	0.00	9.4	10	108	50-150	7.1		757124-72-4
PFPeS	0.61 IJ	9.4	11	114	50-150	8.0		2706-91-4
PFHpA	1.3 J	10	13	112	50-150	11.1		375-85-9
DONA	0.00	9.5	9.5	100	50-150	5.2		919005-14-4
PFHxS	4.6 I	9.1	14	104	50-150	6.5		355-46-4
PFOA	3.0	10	14	109	50-150	2.1		335-67-1
6:2 FTS	1.6 J	9.5	12	109	50-150	13.1		27619-97-2
PFHpS	0.00	9.5	14	146	50-150	10.7		375-92-8
PFNA	0.00	10	11	115	50-150	3.8		375-95-1
PFOSAm	0.00	10	11	113	50-150	10.7		754-91-6
PFOS	7.0 I	9.3	17	105	50-150	3.7		1763-23-1
MeFOSA	0.00	10	11	105	50-150	1.0		31506-32-8
PFDA	0.00	10	11	108	50-150	9.3		335-76-2
EtFOSAm	0.00	10	9.9	99	50-150	9.9		4151-50-2
8:2 FTS	0.00	9.6	12	121	50-150	10.9		39108-34-4
9-CI-PF3ON	0.00	9.3	13	135	50-150	4.1		756426-58-1
PFNS	0.00	9.3	10	108	50-150	6.6		68259-12-1
PFUnDA	0.00	10	11	114	50-150	2.1		2058-94-8
NMeFOSAA	0.00	10	12	121	50-150	20.5		2355-31-9
NEtFOSAA	4.3	10	15	106	50-150	2.1		2991-50-6
PFDS	0.00	9.7	14	143	50-150	8.3		335-77-3
PFDOA	0.00	10	11	106	50-150	7.8		307-55-1
MeFOSE	1.2 J	10	14	126	50-150	16.1		24448-09-7
EtFOSE	1.3 J	10	19	175	50-150	22.2	R	1691-99-2
11-CI-PF3OUdS	0.00	9.4	14	145	50-150	7.1		763051-92-9
PFTTrDA	0.00	10	16	160	50-150	8.0	R	72629-94-8
PFDoS	0.00	9.7	15	153	50-150	7.6	R	79780-39-5
PFTDA	0.00	10	11	113	50-150	9.7		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MSD
 Run File Name B221025B_044
 Analyzed 10/26/2022 05:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.60	5.59	1071	
13C4 PFOA	N/A	N/A	6.79	6.77	2270	
13C2 PFDA	N/A	N/A	7.99	7.97	1564	
13C4 PFOS	N/A	N/A	8.37	8.36	342	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.28	4.30	1908	
13C5 PFPeA	N/A	N/A	5.02	5.04	1648	
13C3 PFBS	N/A	N/A	5.79	5.82	239	
13C2 4:2FTS	N/A	N/A	5.37	5.38	183	R
13C5 PFHxA	N/A	N/A	5.61	5.62	1318	
13C4 PFHpA	N/A	N/A	6.19	6.20	1404	
13C3 PFHxS	N/A	N/A	7.12	7.15	617	
13C2 6:2FTS	N/A	N/A	6.49	6.50	310	R
13C8 PFOA	N/A	N/A	6.79	6.80	2053	
13C9 PFNA	N/A	N/A	7.39	7.41	1848	
13C8 PFOS	N/A	N/A	8.37	8.37	354	
13C2 8:2FTS	N/A	N/A	7.66	7.68	324	R
13C6 PFDA	N/A	N/A	7.99	8.02	1836	
d3-MeFOSAA	N/A	N/A	7.93	7.95	1223	
13C8 PFOSA	N/A	N/A	10.72	10.73	1114	
d5-EtFOSAA	N/A	N/A	8.21	8.24	1096	
13C7 PFUdA	N/A	N/A	8.58	8.63	1719	
13C2 PFDoA	N/A	N/A	9.20	9.24	1673	
13C2 PFTeDA	N/A	N/A	10.43	10.46	1858	
13C3 HFPO-DA	N/A	N/A	5.84	5.85	922	
d7-N-MeFOSE	N/A	N/A	12.46	12.47	37	
d9-N-EtFOSE	N/A	N/A	12.94	12.95	163	
d3-N-MeFOSA	N/A	N/A	12.67	12.68	378	
d5-N-EtFOSA	N/A	N/A	13.09	13.09	580	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



MSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID 10629584001-MSD
 Run File Name B221025B_044
 Analyzed 10/26/2022 05:46
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221024A02
 Level

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.28	4.28	91	
PFPeA	N/A	N/A	5.03	5.04	192	
HFPO-DA	0.48	0.31	5.85	5.86	524	I
PFBS	0.43	0.39	5.80	5.83	99	
PFHxA	0.08	0.07	5.61	5.62	77	
4:2 FTS	0.83	0.87	5.38	5.39	281	
PFPeS	0.43	0.41	6.48	6.50	112	
PFHpA	0.29	0.32	6.20	6.21	24	
DONA	0.54	0.59	6.42	6.43	787	
PFHxS	0.41	0.36	7.13	7.16	144	
PFOA	0.37	0.38	6.79	6.81	259	
6:2 FTS	0.85	0.88	6.49	6.49	49	
PFHpS	0.32	0.41	7.77	7.80	170	
PFNA	0.15	0.17	7.40	7.41	286	
PFOSAm	N/A	N/A	10.73	10.74	555	
PFOS	0.24	0.36	8.38	8.43	117	
MeFOSA	0.43	0.51	12.69	12.70	237	
PFDA	0.16	0.17	8.00	8.02	442	
EtFOSAm	0.52	0.50	13.12	13.13	339	
8:2 FTS	0.93	0.97	7.67	7.68	5619299	
9-Cl-PF3ON	0.05	0.05	8.83	8.88	1422	
PFNS	0.48	0.47	8.94	9.05	179	
PFUnDA	0.12	0.12	8.59	8.64	565	
NMeFOSAA	0.73	0.83	7.95	7.96	339	
NEtFOSAA	0.69	0.65	8.22	8.21	824	
PFDS	0.32	0.34	9.60	9.59	241	
PFDOA	0.15	0.15	9.20	9.19	549	
MeFOSE	N/A	N/A	12.50	12.50	198	
EtFOSE	0.00	0.00	12.99	12.97	177	R
11-Cl-PF3OUdS	0.02	0.02	10.06	10.03	1457	
PFTrDA	0.16	0.16	9.83	9.80	839	R
PFDoS	0.44	0.44	10.78	10.75	227	R
PFTDA	0.24	0.25	10.43	10.40	698	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

November 2022

January 04, 2023

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS
Pace Project No.: 10634264

Dear Mike Ursin:

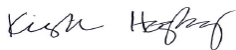
Enclosed are the analytical results for sample(s) received by the laboratory on November 17, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS

Pace Project No.: 10634264

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

A2LA Certification #: 2926.01*

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

GMP+ Certification #: GMP050884

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS
Pace Project No.: 10634264

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10634264001	Influent 02 20221114	Water	11/14/22 23:59	11/17/22 08:50
10634264002	Influent 07 20221114	Water	11/14/22 23:59	11/17/22 08:50
10634264003	Influent 08 20221114	Water	11/14/22 23:59	11/17/22 08:50
10634264004	Influent 11 20221114	Water	11/14/22 23:59	11/17/22 08:50
10634264005	Influent 18 20221114	Water	11/14/22 23:59	11/17/22 08:50
10634264006	Effluent 20221115	Water	11/15/22 23:59	11/17/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS

Pace Project No.: 10634264

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10634264001	Influent 02 20221114	SM 2540D	RM3	1
10634264002	Influent 07 20221114	SM 2540D	RM3	1
10634264003	Influent 08 20221114	SM 2540D	RM3	1
10634264004	Influent 11 20221114	SM 2540D	RM3	1
10634264005	Influent 18 20221114	SM 2540D	RM3	1
10634264006	Effluent 20221115	SM 2540D	RM3	1

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10634264

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: January 04, 2023

General Information:

6 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 854621

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 4518674)
- Total Suspended Solids

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10634264

Sample: Influent 02 20221114									
		Lab ID: 10634264001	Collected: 11/14/22 23:59		Received: 11/17/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	239	mg/L	10.0	5.0	1		11/21/22 11:03		

Sample: Influent 07 20221114									
		Lab ID: 10634264002	Collected: 11/14/22 23:59		Received: 11/17/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	234	mg/L	18.2	9.1	1		11/21/22 11:03		

Sample: Influent 08 20221114									
		Lab ID: 10634264003	Collected: 11/14/22 23:59		Received: 11/17/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	211	mg/L	20.0	10.0	1		11/21/22 11:03		

Sample: Influent 11 20221114									
		Lab ID: 10634264004	Collected: 11/14/22 23:59		Received: 11/17/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	239	mg/L	20.0	10.0	1		11/21/22 11:03		

Sample: Influent 18 20221114									
		Lab ID: 10634264005	Collected: 11/14/22 23:59		Received: 11/17/22 08:50		Matrix: Water		
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	264	mg/L	20.0	10.0	1		11/21/22 11:03		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10634264

Sample: Effluent 20221115 **Lab ID: 10634264006** Collected: 11/15/22 23:59 Received: 11/17/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Pace Analytical Services - Minneapolis									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		11/22/22 13:12		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10634264

QC Batch: 854621

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10634264001, 10634264002, 10634264003, 10634264004, 10634264005

METHOD BLANK: 4518672

Matrix: Water

Associated Lab Samples: 10634264001, 10634264002, 10634264003, 10634264004, 10634264005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	11/21/22 11:02	

LABORATORY CONTROL SAMPLE: 4518673

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	116	116	80-120	

SAMPLE DUPLICATE: 4518674

Parameter	Units	10634106002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	65.1	56.7	14	5	D6

SAMPLE DUPLICATE: 4518675

Parameter	Units	10634106003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	57.8	59.9	4	5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10634264

QC Batch: 854934

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10634264006

METHOD BLANK: 4519636

Matrix: Water

Associated Lab Samples: 10634264006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	11/22/22 13:11	

LABORATORY CONTROL SAMPLE: 4519637

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	101	101	80-120	

SAMPLE DUPLICATE: 4519638

Parameter	Units	10634132001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	10.2	8.3J		5	

SAMPLE DUPLICATE: 4519639

Parameter	Units	10634020001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS

Pace Project No.: 10634264

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS

Pace Project No.: 10634264

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10634264001	Influent 02 20221114	SM 2540D	854621		
10634264002	Influent 07 20221114	SM 2540D	854621		
10634264003	Influent 08 20221114	SM 2540D	854621		
10634264004	Influent 11 20221114	SM 2540D	854621		
10634264005	Influent 18 20221114	SM 2540D	854621		
10634264006	Effluent 20221115	SM 2540D	854934		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC**

Billing Information: **Bill to Madison Metro. Sewerage District**

Address: **708 Heartland Trail Suite 3000 Madison, WI 53717**

Report To: **Mike Ursin**

Email To: **mursintrc.companies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address: **1610 Moorland**

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **Madison** Time Zone Collected: **[] PT [] MT [X] CT [] ET**

Phone: _____
Email: _____

Site/Facility ID #: _____

Compliance Monitoring? Yes No

Collected By (print): **Jennifer Faust**

Purchase Order #: _____
Quote #: **2200666**

DW PWS ID #: _____
DW Location Code: _____

Collected By (signature): *Jennifer Faust*

Turnaround Date Required: **Standard TAT**

Immediately Packed on Ice: Yes No

Sample Disposal: Dispose as appropriate Return Archive: _____ Hold: _____

Rush: Same Day Next Day 2 Day 3 Day 4 Day 5 Day (Expedite Charges Apply)

Field Filtered (if applicable): Yes No
Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
Influent 02 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 07 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 08 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 11 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 18 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Effluent 20221115	WW	C	11/15/22	0:00	11/15/22	23:59		3

Analyses	
PFAS	33 List
TSS	

WO#: 10634264

Lab Project Manager: _____
** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Lab Profile/Line: **43476**
Lab Sample Receipt Checklist:
Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Y N NA
N NA
N NA
N NA
N NA
N NA
N NA
N NA
N NA

Sample pH Acceptable Y N NA
pH Strips: _____
Sulfide Present Y N NA
Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards: **For Influent samples follow EA-19-0001 (WI PFAS method expectations) Section VI-3 procedure for particulates in aqueous samples + centrifugation if necessary based on visual appearance.**

Type of Ice Used: **(Wet)** Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used: **Plastic Bags**

Lab Tracking #: **2843254**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: **(FEDEX)** UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: **(Y)** N NA
Therm ID#: **T4**
Cooler 1 Temp Upon Receipt: **4.1** oC
Cooler 1 Therm Corr. Factor: **4.2** oC
Cooler 1 Corrected Temp: **4.3** oC
Comments:

Relinquished by/Company: (Signature) *Jennifer Faust*

Date/Time: **11/16/22 26:45**

Received by/Company: (Signature) *Nancy Pace*

Date/Time: **11/17/22 8:50**

MTJL LAB USE ONLY

Relinquished by/Company: (Signature) _____

Date/Time: _____

Received by/Company: (Signature) _____

Date/Time: _____

Table #: _____
Acctnum: _____
Template: _____
Prelogin: _____

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Relinquished by/Company: (Signature) _____

Date/Time: _____

Received by/Company: (Signature) _____

Date/Time: _____

PM: _____
PB: _____

Non Conformance(s): YES / NO
Page: _____
of: _____

Effective Date: 11/16/2022

Sample Condition Upon Receipt
 Client Name: TRC

Project #: **WO#: 10634264**
 PM: KNH Due Date: 12/12/22
 CLIENT: TRC-WI

Courier: FedEx UPS USPS Client
 Pace Speedee Commercial
 Tracking Number: 5405 1824 7691 See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Packing Material: Bubble Wrap Bubble Bags None Other
 Thermometer: T1 (0461) T2 (1336) T3 (0459) T4 (0254) T5 (0178)
 T6 (0235) T7 (0042) T8 (0775) T9(0727) 01339252/1710
 Biological Tissue Frozen? Yes No N/A
 Temp Blank? Yes No
 Type of Ice: Wet Blue Dry None
 Melted

Did Samples Originate in West Virginia? Yes No Were All Container Temps Taken? Yes No N/A
 Temp should be above freezing to 6°C Cooler temp Read w/Temp Blank: 4.1 °C Average Corrected Temp (no temp blank only): _____ °C
 Correction Factor: +0.2 Cooler Temp Corrected w/temp blank: 4.3 °C See Exceptions ENV-FRM-MIN4-0142 1 Container

USDA Regulated Soil: N/A (water sample/other: _____) Date/Initials of Person Examining Contents: 11/17/22 NV
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 1.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 2.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A 3.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 4. If fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 <input type="checkbox"/> No
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E.coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrom <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other _____
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 6.
Sufficient Sample Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 7.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A 8.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 9.
Field Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	11. If no, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.)	Positive for Residual Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142 pH Paper Lot #
Headspace in Methyl Mercury Container?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 13. Residual Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 14. <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3 Trip Blanks Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION
 Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____
 Project Manager Review: Kirsten Hojberg Date: 11/18/2022

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).
 Labeled By: NV Line: 3

Report Prepared for:

Mike Ursin
TRC-WI
708 Heartland Trail
Madison WI 53717

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Prepared Date:
December 30, 2022

Report Information:

Pace Project #: 10634264
Sample Receipt Date: 11/17/2022
Client Project #: MMSD PFAS
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



January 04, 2023

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of TRC-WI. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR guidance for PFAS. Reporting limits were set to MDL.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. The RPDs (relative percent differences) between one designated spike and its duplicate were outside of the method limits due to a double spike on the LCS. These spikes indicate that extraction performed as expected. A matrix spike was prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

Several samples have elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

None of the samples were centrifuged prior to extraction.

Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Values were flagged "I" where incorrect isotope ratios were obtained.

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Missouri	10100
Alabama	40770	Montana	CERT0092
Alaska-DW	MN00064	Nebraska	NE-OS-18-06
Alaska-UST	17-009	Nevada	MN00064
Arizona	AZ0014	New Hampshire	2081
Arkansas - WW	88-0680	New Jersey	MN002
Arkansas-DW	MN00064	New York	11647
California	2929	North Carolina-	27700
Colorado	MN00064	North Carolina-	530
Connecticut	PH-0256	North Dakota	R-036
Florida	E87605	Ohio-DW	41244
Georgia	959	Ohio-VAP (170	CL101
Hawaii	MN00064	Ohio-VAP (180	CL110
Idaho	MN00064	Oklahoma	9507
Illinois	200011	Oregon-Primary	MN300001
Indiana	C-MN-01	Oregon-Second	MN200001
Iowa	368	Pennsylvania	68-00563
Kansas	E-10167	Puerto Rico	MN00064
Kentucky-DW	90062	South Carolina	74003
Kentucky-WW	90062	Tennessee	TN02818
Louisiana-DEQ	AI-84596	Texas	T104704192
Louisiana-DW	MN00064	Utah	MN00064
Maine	MN00064	Vermont	VT-027053137
Maryland	322	Virginia	460163
Michigan	9909	Washington	C486
Minnesota	027-053-137	West Virginia-D	382
Minnesota-Ag	via MN 027-053	West Virginia-D	9952C
Minnesota-Petr	1240	Wisconsin	999407970
Mississippi	MN00064	Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix A

Sample Management

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Influent 02 20221114	10634264001	11/17/2022	Water
Influent 07 20221114	10634264002	11/17/2022	Water
Influent 08 20221114	10634264003	11/17/2022	Water
Influent 11 20221114	10634264004	11/17/2022	Water
Influent 18 20221114	10634264005	11/17/2022	Water
Effluent 20221115	10634264006	11/17/2022	Water

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: **TRC**
Address: **708 Heartland Trail Suite 3000 Madison, WI 53717**

Billing Information: **Bill to Madison Metro. Sewerage District**

Report To: **Mike Ursin**
Copy To: **Lydia Auner, Jeff Ramey**

Email To: **mursintrccompanies.com**
Site Collection Info/Address: **1610 Moorland**

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **Madison** Time Zone Collected: [] ET [] CT [] MT [] PT

Phone: _____
Email: _____

Site/Facility ID #: _____

Compliance Monitoring? [] Yes [X] No

Collected By (print): **Jennifer Faust**

Purchase Order #: _____
Quote #: **2200666**

DW PWS ID #: _____
DW Location Code: _____

Collected By (signature): *Jennifer Faust*

Turnaround Date Required: **Standard TAT**

Immediately Packed on Ice: [X] Yes [] No

Sample Disposal: [X] Dispose as appropriate [] Return [] Archive: _____ [] Hold: _____

Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day (Expedite Charges Apply)

Field Filtered (if applicable): [] Yes [X] No
Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
Influent 02 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 07 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 08 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 11 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Influent 18 20221114	WW	C	11/14/22	0:00	11/14/22	23:59		3
Effluent 20221115	WW	C	11/15/22	0:00	11/15/22	23:59		3

Analyses	
PFAS	33 List
TSS	

WO#: 10634264

Container Preservative Type **: _____
Lab Project Manager: _____

Lab Profile/Line: **43476**
Lab Sample Receipt Checklist:
Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Y N NA

Sample pH Acceptable Y N NA
pH Strips: _____
Sulfide Present Y N NA
Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
For Influent samples follow EA-19-001 (WI PFAS method expectations) Section VI-3 procedure for particulates in aqueous samples + centrifugation if necessary based on visual appearance.

Type of Ice Used: (Wet) Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used: **Plastic Bags**

Lab Tracking #: **2843254**

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: (FEDEX) UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: (Y) N NA
Therm ID#: **T4**
Cooler 1 Temp Upon Receipt: **4.1** oC
Cooler 1 Therm Corr. Factor: **4.2** oC
Cooler 1 Corrected Temp: **4.3** oC
Comments:

Relinquished by/Company: (Signature) *Jennifer Faust*
Date/Time: **11/16/22 26:45**

Received by/Company: (Signature) *Nancy Pace*
Date/Time: **11/17/22 8:50**

MTJL LAB USE ONLY
Table #: _____
Acctnum: _____
Template: _____
Prelogin: _____
PM: _____
PB: _____

Trip Blank Received: Y N NA
HCL MeOH TSP Other
Non Conformance(s): YES / NO
Page: _____
of: _____

Effective Date: 11/16/2022

Sample Condition Upon Receipt
 Client Name: TRC

Project #: **WO#: 10634264**
 PM: KNH Due Date: 12/12/22
 CLIENT: TRC-WI

Courier: FedEx UPS USPS Client
 Pace Speedee Commercial
 Tracking Number: 5405 1824 7691 See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Packing Material: Bubble Wrap Bubble Bags None Other
 Thermometer: T1 (0461) T2 (1336) T3 (0459) T4 (0254) T5 (0178)
 T6 (0235) T7 (0042) T8 (0775) T9(0727) 01339252/1710
 Biological Tissue Frozen? Yes No N/A
 Temp Blank? Yes No
 Type of Ice: Wet Blue Dry None
 Melted

Did Samples Originate in West Virginia? Yes No Were All Container Temps Taken? Yes No N/A
 Temp should be above freezing to 6°C Cooler temp Read w/Temp Blank: 4.1 °C Average Corrected Temp (no temp blank only): _____ °C
 Correction Factor: +0.2 Cooler Temp Corrected w/temp blank: 4.3 °C See Exceptions ENV-FRM-MIN4-0142 1 Container

USDA Regulated Soil: N/A (water sample/other: _____) Date/Initials of Person Examining Contents: 11/17/22 NV
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 1.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 2.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A 3.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 4. If fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 <input type="checkbox"/> No
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E.coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrom <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other _____
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 6.
Sufficient Sample Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 7.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A 8.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 9.
Field Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	11. If no, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.)	Positive for Residual Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142 pH Paper Lot #
Headspace in Methyl Mercury Container?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 13. Residual Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 14. <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3 Trip Blanks Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A 15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION
 Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____
 Project Manager Review: Kirsten Hojberg Date: 11/18/2022

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).
 Labeled By: NV Line: 3

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10634264001	Influent 02 20221114	SW3535	34294	PFAS-36	B221128A_02
10634264002	Influent 07 20221114	SW3535	34294	PFAS-36	B221128A_02
10634264003	Influent 08 20221114	SW3535	34294	PFAS-36	B221128A_02
10634264004	Influent 11 20221114	SW3535	34294	PFAS-36	B221128A_02
10634264005	Influent 18 20221114	SW3535	34294	PFAS-36	B221128A_02
10634264006	Effluent 20221115	SW3535	34294	PFAS-36	B221124B_01



Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- H2 = Extracted outside of holding time
- I = Isotope ratio out of specification
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Appendix B

Sample Analysis Summary

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 02 20221114
 Lab Sample ID 10634264001
 Lab File ID B221128A_027
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 256mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.9	2.0	0.49	0.49	1	375-22-4		11/28/2022 20:21
PFPeA	5.7	2.0	0.80	0.80	1	2706-90-3		11/28/2022 20:21
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		11/28/2022 20:21
PFBS	4.9	1.7	0.47	0.47	1	375-73-5		11/28/2022 20:21
PFHxA	11	2.0	0.89	0.89	1	307-24-4		11/28/2022 20:21
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		11/28/2022 20:21
PFPeS	ND	1.8	0.59	0.59	1	2706-91-4		11/28/2022 20:21
PFHpA	2.4	2.0	0.67	0.67	1	375-85-9		11/28/2022 20:21
DONA	ND	1.8	0.90	0.90	1	919005-14-4		11/28/2022 20:21
PFHxS	4.5	1.8	0.52	0.52	1	355-46-4		11/28/2022 20:21
PFOA	4.3	2.0	0.84	0.84	1	335-67-1		11/28/2022 20:21
6:2 FTS	1.7 J	1.9	0.66	0.66	1	27619-97-2		11/28/2022 20:21
PFHpS	ND	1.9	0.65	0.65	1	375-92-8		11/28/2022 20:21
PFNA	ND	2.0	0.78	0.78	1	375-95-1		11/28/2022 20:21
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		11/28/2022 20:21
PFOS	4.8	1.8	0.65	0.65	1	1763-23-1		11/28/2022 20:21
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		11/28/2022 20:21
PFDA	ND	2.0	0.59	0.59	1	335-76-2		11/28/2022 20:21
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		11/28/2022 20:21
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		11/28/2022 20:21
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		11/28/2022 20:21
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		11/28/2022 20:21
PFUnDA	ND	2.0	0.47	0.47	1	2058-94-8		11/28/2022 20:21
NMeFOSAA	ND	2.0	0.68	0.68	1	2355-31-9		11/28/2022 20:21
NEtFOSAA	ND	2.0	0.79	0.79	1	2991-50-6		11/28/2022 20:21
PFDS	ND	1.9	0.63	0.63	1	335-77-3		11/28/2022 20:21
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		11/28/2022 20:21
MeFOSE	1.0 J	2.0	0.51	0.51	1	24448-09-7		11/28/2022 20:21
EtFOSE	ND	2.0	0.87	0.87	1	1691-99-2		11/28/2022 20:21
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		11/28/2022 20:21
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		11/28/2022 20:21
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		11/28/2022 20:21
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		11/28/2022 20:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 02 20221114
 Lab Sample ID 10634264001
 Lab File ID B221128A_027
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 256mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	18	94	50-150		11/28/2022 20:21
13C4 PFOA	20	17	89	50-150		11/28/2022 20:21
13C2 PFDA	20	14	73	50-150		11/28/2022 20:21
13C4 PFOS	19	14	77	50-150		11/28/2022 20:21

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	12	59	25-150		11/28/2022 20:21
13C5 PFPeA	20	15	75	25-150		11/28/2022 20:21
13C3 PFBS	18	20	112	25-150		11/28/2022 20:21
13C2 4:2FTS	18	45	246	25-150	R	11/28/2022 20:21
13C5 PFHxA	20	15	78	25-150		11/28/2022 20:21
13C4 PFHpA	20	18	90	25-150		11/28/2022 20:21
13C3 PFHxS	18	23	125	25-150		11/28/2022 20:21
13C2 6:2FTS	19	74	398	25-150	R	11/28/2022 20:21
13C8 PFOA	20	17	87	25-150		11/28/2022 20:21
13C9 PFNA	20	19	97	25-150		11/28/2022 20:21
13C8 PFOS	19	12	62	25-150		11/28/2022 20:21
13C2 8:2FTS	19	47	252	25-150	R	11/28/2022 20:21
13C6 PFDA	20	13	64	25-150		11/28/2022 20:21
d3-MeFOSAA	20	11	55	25-150		11/28/2022 20:21
13C8 PFOSA	20	13	67	25-150		11/28/2022 20:21
d5-EtFOSAA	20	12	59	25-150		11/28/2022 20:21
13C7 PFUdA	20	13	64	25-150		11/28/2022 20:21
13C2 PFDoA	20	11	55	25-150		11/28/2022 20:21
13C2 PFTeDA	20	13	65	25-150		11/28/2022 20:21
13C3 HFPO-DA	20	18	92	25-150		11/28/2022 20:21
d7-N-MeFOSE	20	7.7	39	10-150		11/28/2022 20:21
d9-N-EtFOSE	20	12	61	10-150		11/28/2022 20:21
d3-N-MeFOSA	20	8.2	42	10-150		11/28/2022 20:21
d5-N-EtFOSA	20	9.7	50	10-150		11/28/2022 20:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 07 20221114
 Lab Sample ID 10634264002
 Lab File ID B221128A_028
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 252mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	13	2.0	0.49	0.49	1	375-22-4		11/28/2022 20:41
PFPeA	7.8	2.0	0.81	0.81	1	2706-90-3		11/28/2022 20:41
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		11/28/2022 20:41
PFBS	8.3	1.8	0.48	0.48	1	375-73-5		11/28/2022 20:41
PFHxA	15	2.0	0.90	0.90	1	307-24-4		11/28/2022 20:41
4:2 FTS	ND	1.9	0.46	0.46	1	757124-72-4		11/28/2022 20:41
PFPeS	1.1 J	1.9	0.60	0.60	1	2706-91-4		11/28/2022 20:41
PFHpA	3.0	2.0	0.68	0.68	1	375-85-9		11/28/2022 20:41
DONA	ND	1.9	0.91	0.91	1	919005-14-4		11/28/2022 20:41
PFHxS	12	1.8	0.53	0.53	1	355-46-4		11/28/2022 20:41
PFOA	7.1	2.0	0.85	0.85	1	335-67-1		11/28/2022 20:41
6:2 FTS	1.9 J	1.9	0.67	0.67	1	27619-97-2		11/28/2022 20:41
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		11/28/2022 20:41
PFNA	ND	2.0	0.79	0.79	1	375-95-1		11/28/2022 20:41
PFOSAm	ND	2.0	0.71	0.71	1	754-91-6		11/28/2022 20:41
PFOS	8.6	1.8	0.66	0.66	1	1763-23-1		11/28/2022 20:41
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		11/28/2022 20:41
PFDA	ND	2.0	0.60	0.60	1	335-76-2		11/28/2022 20:41
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		11/28/2022 20:41
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		11/28/2022 20:41
9-CI-PF3ON	ND	1.8	0.47	0.47	1	756426-58-1		11/28/2022 20:41
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		11/28/2022 20:41
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		11/28/2022 20:41
NMeFOSAA	1.4 J	2.0	0.69	0.69	1	2355-31-9		11/28/2022 20:41
NEtFOSAA	0.98 J	2.0	0.81	0.81	1	2991-50-6		11/28/2022 20:41
PFDS	ND	1.9	0.64	0.64	1	335-77-3		11/28/2022 20:41
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		11/28/2022 20:41
MeFOSE	1.8 J	2.0	0.52	0.52	1	24448-09-7		11/28/2022 20:41
EtFOSE	ND	2.0	0.88	0.88	1	1691-99-2		11/28/2022 20:41
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		11/28/2022 20:41
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		11/28/2022 20:41
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		11/28/2022 20:41
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		11/28/2022 20:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 07 20221114
 Lab Sample ID 10634264002
 Lab File ID B221128A_028
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 252mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	18	90	50-150		11/28/2022 20:41
13C4 PFOA	20	16	82	50-150		11/28/2022 20:41
13C2 PFDA	20	13	66	50-150		11/28/2022 20:41
13C4 PFOS	19	13	66	50-150		11/28/2022 20:41

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	14	68	25-150		11/28/2022 20:41
13C5 PFPeA	20	17	87	25-150		11/28/2022 20:41
13C3 PFBS	18	21	115	25-150		11/28/2022 20:41
13C2 4:2FTS	19	57	310	25-150	R	11/28/2022 20:41
13C5 PFHxA	20	17	87	25-150		11/28/2022 20:41
13C4 PFHpA	20	20	101	25-150		11/28/2022 20:41
13C3 PFHxS	19	24	127	25-150		11/28/2022 20:41
13C2 6:2FTS	19	87	460	25-150	R	11/28/2022 20:41
13C8 PFOA	20	17	87	25-150		11/28/2022 20:41
13C9 PFNA	20	19	96	25-150		11/28/2022 20:41
13C8 PFOS	19	12	62	25-150		11/28/2022 20:41
13C2 8:2FTS	19	44	233	25-150	R	11/28/2022 20:41
13C6 PFDA	20	13	65	25-150		11/28/2022 20:41
d3-MeFOSAA	20	10	52	25-150		11/28/2022 20:41
13C8 PFOSA	20	13	64	25-150		11/28/2022 20:41
d5-EtFOSAA	20	11	56	25-150		11/28/2022 20:41
13C7 PFUdA	20	12	62	25-150		11/28/2022 20:41
13C2 PFDoA	20	8.3	42	25-150		11/28/2022 20:41
13C2 PFTeDA	20	11	57	25-150		11/28/2022 20:41
13C3 HFPO-DA	20	20	98	25-150		11/28/2022 20:41
d7-N-MeFOSE	20	9.1	46	10-150		11/28/2022 20:41
d9-N-EtFOSE	20	11	55	10-150		11/28/2022 20:41
d3-N-MeFOSA	20	8.7	44	10-150		11/28/2022 20:41
d5-N-EtFOSA	20	8.6	43	10-150		11/28/2022 20:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 08 20221114
 Lab Sample ID 10634264003
 Lab File ID B221128A_029
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 250mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.0	2.0	0.50	0.50	1	375-22-4		11/28/2022 21:01
PFPeA	4.2	2.0	0.82	0.82	1	2706-90-3		11/28/2022 21:01
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		11/28/2022 21:01
PFBS	4.1	1.8	0.49	0.49	1	375-73-5		11/28/2022 21:01
PFHxA	6.4	2.0	0.91	0.91	1	307-24-4		11/28/2022 21:01
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		11/28/2022 21:01
PFPeS	ND	1.9	0.60	0.60	1	2706-91-4		11/28/2022 21:01
PFHpA	1.2 J	2.0	0.69	0.69	1	375-85-9		11/28/2022 21:01
DONA	ND	1.9	0.92	0.92	1	919005-14-4		11/28/2022 21:01
PFHxS	4.3	1.8	0.53	0.53	1	355-46-4		11/28/2022 21:01
PFOA	2.6	2.0	0.86	0.86	1	335-67-1		11/28/2022 21:01
6:2 FTS	ND	1.9	0.68	0.68	1	27619-97-2		11/28/2022 21:01
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		11/28/2022 21:01
PFNA	ND	2.0	0.80	0.80	1	375-95-1		11/28/2022 21:01
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		11/28/2022 21:01
PFOS	3.8	1.9	0.67	0.67	1	1763-23-1		11/28/2022 21:01
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		11/28/2022 21:01
PFDA	ND	2.0	0.61	0.61	1	335-76-2		11/28/2022 21:01
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		11/28/2022 21:01
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		11/28/2022 21:01
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		11/28/2022 21:01
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		11/28/2022 21:01
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		11/28/2022 21:01
NMeFOSAA	ND	2.0	0.70	0.70	1	2355-31-9		11/28/2022 21:01
NEtFOSAA	ND	2.0	0.82	0.82	1	2991-50-6		11/28/2022 21:01
PFDS	ND	1.9	0.64	0.64	1	335-77-3		11/28/2022 21:01
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		11/28/2022 21:01
MeFOSE	1.3 J	2.0	0.52	0.52	1	24448-09-7		11/28/2022 21:01
EtFOSE	ND	2.0	0.89	0.89	1	1691-99-2		11/28/2022 21:01
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		11/28/2022 21:01
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		11/28/2022 21:01
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		11/28/2022 21:01
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		11/28/2022 21:01

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 08 20221114
 Lab Sample ID 10634264003
 Lab File ID B221128A_029
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 250mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	19	96	50-150		11/28/2022 21:01
13C4 PFOA	20	17	87	50-150		11/28/2022 21:01
13C2 PFDA	20	13	66	50-150		11/28/2022 21:01
13C4 PFOS	19	14	71	50-150		11/28/2022 21:01

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	13	64	25-150		11/28/2022 21:01
13C5 PFPeA	20	16	81	25-150		11/28/2022 21:01
13C3 PFBS	19	23	121	25-150		11/28/2022 21:01
13C2 4:2FTS	19	59	313	25-150	R	11/28/2022 21:01
13C5 PFHxA	20	18	91	25-150		11/28/2022 21:01
13C4 PFHpA	20	21	105	25-150		11/28/2022 21:01
13C3 PFHxS	19	25	130	25-150		11/28/2022 21:01
13C2 6:2FTS	19	93	488	25-150	R	11/28/2022 21:01
13C8 PFOA	20	18	91	25-150		11/28/2022 21:01
13C9 PFNA	20	21	104	25-150		11/28/2022 21:01
13C8 PFOS	19	13	67	25-150		11/28/2022 21:01
13C2 8:2FTS	19	54	280	25-150	R	11/28/2022 21:01
13C6 PFDA	20	14	69	25-150		11/28/2022 21:01
d3-MeFOSAA	20	11	57	25-150		11/28/2022 21:01
13C8 PFOSA	20	14	70	25-150		11/28/2022 21:01
d5-EtFOSAA	20	12	61	25-150		11/28/2022 21:01
13C7 PFUdA	20	13	65	25-150		11/28/2022 21:01
13C2 PFDoA	20	9.8	49	25-150		11/28/2022 21:01
13C2 PFTeDA	20	18	91	25-150		11/28/2022 21:01
13C3 HFPO-DA	20	21	103	25-150		11/28/2022 21:01
d7-N-MeFOSE	20	11	55	10-150		11/28/2022 21:01
d9-N-EtFOSE	20	14	71	10-150		11/28/2022 21:01
d3-N-MeFOSA	20	9.2	46	10-150		11/28/2022 21:01
d5-N-EtFOSA	20	10	51	10-150		11/28/2022 21:01

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 11 20221114
 Lab Sample ID 10634264004
 Lab File ID B221128A_030
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 253mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.6	2.0	0.49	0.49	1	375-22-4		11/28/2022 21:21
PFPeA	2.9	2.0	0.81	0.81	1	2706-90-3		11/28/2022 21:21
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		11/28/2022 21:21
PFBS	2.6	1.7	0.48	0.48	1	375-73-5		11/28/2022 21:21
PFHxA	4.5 I	2.0	0.90	0.90	1	307-24-4		11/28/2022 21:21
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		11/28/2022 21:21
PFPeS	ND	1.9	0.59	0.59	1	2706-91-4		11/28/2022 21:21
PFHpA	0.92 J	2.0	0.68	0.68	1	375-85-9		11/28/2022 21:21
DONA	ND	1.9	0.91	0.91	1	919005-14-4		11/28/2022 21:21
PFHxS	2.9	1.8	0.52	0.52	1	355-46-4		11/28/2022 21:21
PFOA	2.2	2.0	0.85	0.85	1	335-67-1		11/28/2022 21:21
6:2 FTS	ND	1.9	0.67	0.67	1	27619-97-2		11/28/2022 21:21
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		11/28/2022 21:21
PFNA	ND	2.0	0.78	0.78	1	375-95-1		11/28/2022 21:21
PFOSAm	ND	2.0	0.71	0.71	1	754-91-6		11/28/2022 21:21
PFOS	2.2	1.8	0.66	0.66	1	1763-23-1		11/28/2022 21:21
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		11/28/2022 21:21
PFDA	ND	2.0	0.60	0.60	1	335-76-2		11/28/2022 21:21
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		11/28/2022 21:21
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		11/28/2022 21:21
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		11/28/2022 21:21
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		11/28/2022 21:21
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		11/28/2022 21:21
NMeFOSAA	ND	2.0	0.69	0.69	1	2355-31-9		11/28/2022 21:21
NEtFOSAA	ND	2.0	0.80	0.80	1	2991-50-6		11/28/2022 21:21
PFDS	ND	1.9	0.63	0.63	1	335-77-3		11/28/2022 21:21
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		11/28/2022 21:21
MeFOSE	2.6	2.0	0.52	0.52	1	24448-09-7		11/28/2022 21:21
EtFOSE	ND	2.0	0.88	0.88	1	1691-99-2		11/28/2022 21:21
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		11/28/2022 21:21
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		11/28/2022 21:21
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		11/28/2022 21:21
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		11/28/2022 21:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 11 20221114
 Lab Sample ID 10634264004
 Lab File ID B221128A_030
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 253mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	18	91	50-150		11/28/2022 21:21
13C4 PFOA	20	16	79	50-150		11/28/2022 21:21
13C2 PFDA	20	12	58	50-150		11/28/2022 21:21
13C4 PFOS	19	11	57	50-150		11/28/2022 21:21

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	12	62	25-150		11/28/2022 21:21
13C5 PFPeA	20	15	75	25-150		11/28/2022 21:21
13C3 PFBS	18	21	114	25-150		11/28/2022 21:21
13C2 4:2FTS	18	53	288	25-150	R	11/28/2022 21:21
13C5 PFHxA	20	16	83	25-150		11/28/2022 21:21
13C4 PFHpA	20	21	104	25-150		11/28/2022 21:21
13C3 PFHxS	19	24	128	25-150		11/28/2022 21:21
13C2 6:2FTS	19	100	533	25-150	R	11/28/2022 21:21
13C8 PFOA	20	17	87	25-150		11/28/2022 21:21
13C9 PFNA	20	19	95	25-150		11/28/2022 21:21
13C8 PFOS	19	11	57	25-150		11/28/2022 21:21
13C2 8:2FTS	19	39	207	25-150	R	11/28/2022 21:21
13C6 PFDA	20	12	59	25-150		11/28/2022 21:21
d3-MeFOSAA	20	9.6	49	25-150		11/28/2022 21:21
13C8 PFOSA	20	11	56	25-150		11/28/2022 21:21
d5-EtFOSAA	20	8.6	43	25-150		11/28/2022 21:21
13C7 PFUdA	20	10	52	25-150		11/28/2022 21:21
13C2 PFDaA	20	9.3	47	25-150		11/28/2022 21:21
13C2 PFTeDA	20	14	73	25-150		11/28/2022 21:21
13C3 HFPO-DA	20	19	95	25-150		11/28/2022 21:21
d7-N-MeFOSE	20	9.2	47	10-150		11/28/2022 21:21
d9-N-EtFOSE	20	12	59	10-150		11/28/2022 21:21
d3-N-MeFOSA	20	6.8	34	10-150		11/28/2022 21:21
d5-N-EtFOSA	20	8.4	43	10-150		11/28/2022 21:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 18 20221114
 Lab Sample ID 10634264005
 Lab File ID B221128A_031
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 265mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	10	1.9	0.47	0.47	1	375-22-4		11/28/2022 21:41
PFPeA	5.9	1.9	0.78	0.78	1	2706-90-3		11/28/2022 21:41
HFPO-DA	ND	1.9	0.47	0.47	1	13252-13-6		11/28/2022 21:41
PFBS	6.8	1.7	0.46	0.46	1	375-73-5		11/28/2022 21:41
PFHxA	8.7	1.9	0.86	0.86	1	307-24-4		11/28/2022 21:41
4:2 FTS	ND	1.8	0.44	0.44	1	757124-72-4		11/28/2022 21:41
PFPeS	1.9	1.8	0.57	0.57	1	2706-91-4		11/28/2022 21:41
PFHpA	2.4	1.9	0.65	0.65	1	375-85-9		11/28/2022 21:41
DONA	ND	1.8	0.87	0.87	1	919005-14-4		11/28/2022 21:41
PFHxS	16	1.7	0.50	0.50	1	355-46-4		11/28/2022 21:41
PFOA	7.4	1.9	0.81	0.81	1	335-67-1		11/28/2022 21:41
6:2 FTS	2.1	1.8	0.64	0.64	1	27619-97-2		11/28/2022 21:41
PFHpS	ND	1.8	0.63	0.63	1	375-92-8		11/28/2022 21:41
PFNA	ND	1.9	0.75	0.75	1	375-95-1		11/28/2022 21:41
PFOSAm	ND	1.9	0.68	0.68	1	754-91-6		11/28/2022 21:41
PFOS	8.4	1.7	0.63	0.63	1	1763-23-1		11/28/2022 21:41
MeFOSA	ND	1.9	0.52	0.52	1	31506-32-8		11/28/2022 21:41
PFDA	ND	1.9	0.57	0.57	1	335-76-2		11/28/2022 21:41
EtFOSAm	ND	1.9	0.54	0.54	1	4151-50-2		11/28/2022 21:41
8:2 FTS	ND	1.8	0.48	0.48	1	39108-34-4		11/28/2022 21:41
9-CI-PF3ON	ND	1.8	0.44	0.44	1	756426-58-1		11/28/2022 21:41
PFNS	ND	1.8	0.55	0.55	1	68259-12-1		11/28/2022 21:41
PFUnDA	ND	1.9	0.46	0.46	1	2058-94-8		11/28/2022 21:41
NMeFOSAA	0.84 J	1.9	0.66	0.66	1	2355-31-9		11/28/2022 21:41
NEtFOSAA	1.2 J	1.9	0.77	0.77	1	2991-50-6		11/28/2022 21:41
PFDS	ND	1.8	0.61	0.61	1	335-77-3		11/28/2022 21:41
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		11/28/2022 21:41
MeFOSE	1.5 J	1.9	0.49	0.49	1	24448-09-7		11/28/2022 21:41
EtFOSE	ND	1.9	0.84	0.84	1	1691-99-2		11/28/2022 21:41
11-CI-PF3OUdS	ND	1.8	0.53	0.53	1	763051-92-9		11/28/2022 21:41
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		11/28/2022 21:41
PFDoS	ND	1.8	0.56	0.56	1	79780-39-5		11/28/2022 21:41
PFTDA	ND	1.9	0.57	0.57	1	376-06-7		11/28/2022 21:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 18 20221114
 Lab Sample ID 10634264005
 Lab File ID B221128A_031
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 265mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	19	20	104	50-150		11/28/2022 21:41
13C4 PFOA	19	19	100	50-150		11/28/2022 21:41
13C2 PFDA	19	14	73	50-150		11/28/2022 21:41
13C4 PFOS	18	14	79	50-150		11/28/2022 21:41

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	19	15	79	25-150		11/28/2022 21:41
13C5 PFPeA	19	19	101	25-150		11/28/2022 21:41
13C3 PFBS	18	22	127	25-150		11/28/2022 21:41
13C2 4:2FTS	18	61	344	25-150	R	11/28/2022 21:41
13C5 PFHxA	19	17	92	25-150		11/28/2022 21:41
13C4 PFHpA	19	20	104	25-150		11/28/2022 21:41
13C3 PFHxS	18	25	138	25-150		11/28/2022 21:41
13C2 6:2FTS	18	94	527	25-150	R	11/28/2022 21:41
13C8 PFOA	19	19	99	25-150		11/28/2022 21:41
13C9 PFNA	19	19	102	25-150		11/28/2022 21:41
13C8 PFOS	18	12	66	25-150		11/28/2022 21:41
13C2 8:2FTS	18	42	234	25-150	R	11/28/2022 21:41
13C6 PFDA	19	13	71	25-150		11/28/2022 21:41
d3-MeFOSAA	19	11	56	25-150		11/28/2022 21:41
13C8 PFOSA	19	12	66	25-150		11/28/2022 21:41
d5-EtFOSAA	19	10	53	25-150		11/28/2022 21:41
13C7 PFUdA	19	12	64	25-150		11/28/2022 21:41
13C2 PFDoA	19	8.7	46	25-150		11/28/2022 21:41
13C2 PFTeDA	19	12	66	25-150		11/28/2022 21:41
13C3 HFPO-DA	19	18	97	25-150		11/28/2022 21:41
d7-N-MeFOSE	19	10	56	10-150		11/28/2022 21:41
d9-N-EtFOSE	19	9.3	49	10-150		11/28/2022 21:41
d3-N-MeFOSA	19	9.6	51	10-150		11/28/2022 21:41
d5-N-EtFOSA	19	9.7	52	10-150		11/28/2022 21:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20221115
 Lab Sample ID 10634264006
 Lab File ID B221124B_025
 Matrix Industrial_Water
 Collected 11/15/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 255mL
 Ical ID 221115B02
 CCal File B221124B_017
 Ending CCal File B221124B_028
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	10	2.0	0.49	0.49	1	375-22-4		11/25/2022 12:43
PFPeA	16	2.0	0.80	0.80	1	2706-90-3		11/25/2022 12:43
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		11/25/2022 12:43
PFBS	2.9	1.7	0.48	0.48	1	375-73-5		11/25/2022 12:43
PFHxA	18	2.0	0.89	0.89	1	307-24-4		11/25/2022 12:43
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		11/25/2022 12:43
PFPeS	0.63 J	1.8	0.59	0.59	1	2706-91-4		11/25/2022 12:43
PFHpA	2.0	2.0	0.68	0.68	1	375-85-9		11/25/2022 12:43
DONA	ND	1.9	0.90	0.90	1	919005-14-4		11/25/2022 12:43
PFHxS	7.1	1.8	0.52	0.52	1	355-46-4		11/25/2022 12:43
PFOA	7.8	2.0	0.84	0.84	1	335-67-1		11/25/2022 12:43
6:2 FTS	0.79 J	1.9	0.66	0.66	1	27619-97-2		11/25/2022 12:43
PFHpS	ND	1.9	0.65	0.65	1	375-92-8		11/25/2022 12:43
PFNA	ND	2.0	0.78	0.78	1	375-95-1		11/25/2022 12:43
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		11/25/2022 12:43
PFOS	4.4	1.8	0.65	0.65	1	1763-23-1		11/25/2022 12:43
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		11/25/2022 12:43
PFDA	1.1 J	2.0	0.60	0.60	1	335-76-2		11/25/2022 12:43
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		11/25/2022 12:43
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		11/25/2022 12:43
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		11/25/2022 12:43
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		11/25/2022 12:43
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		11/25/2022 12:43
NMeFOSAA	1.3 J	2.0	0.68	0.68	1	2355-31-9		11/25/2022 12:43
NEtFOSAA	ND	2.0	0.80	0.80	1	2991-50-6		11/25/2022 12:43
PFDS	ND	1.9	0.63	0.63	1	335-77-3		11/25/2022 12:43
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		11/25/2022 12:43
MeFOSE	ND	2.0	0.51	0.51	1	24448-09-7		11/25/2022 12:43
EtFOSE	ND	2.0	0.87	0.87	1	1691-99-2		11/25/2022 12:43
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		11/25/2022 12:43
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		11/25/2022 12:43
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		11/25/2022 12:43
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		11/25/2022 12:43

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20221115
 Lab Sample ID 10634264006
 Lab File ID B221124B_025
 Matrix Industrial_Water
 Collected 11/15/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 255mL
 Ical ID 221115B02
 CCal File B221124B_017
 Ending CCal File B221124B_028
 Blank File B221124B_007

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	22	111	50-150		11/25/2022 12:43
13C4 PFOA	20	21	106	50-150		11/25/2022 12:43
13C2 PFDA	20	23	115	50-150		11/25/2022 12:43
13C4 PFOS	19	18	99	50-150		11/25/2022 12:43

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	15	77	25-150		11/25/2022 12:43
13C5 PFPeA	20	19	96	25-150		11/25/2022 12:43
13C3 PFBS	18	20	110	25-150		11/25/2022 12:43
13C2 4:2FTS	18	49	267	25-150	R	11/25/2022 12:43
13C5 PFHxA	20	19	95	25-150		11/25/2022 12:43
13C4 PFHpA	20	19	95	25-150		11/25/2022 12:43
13C3 PFHxS	19	20	108	25-150		11/25/2022 12:43
13C2 6:2FTS	19	42	225	25-150	R	11/25/2022 12:43
13C8 PFOA	20	20	103	25-150		11/25/2022 12:43
13C9 PFNA	20	20	100	25-150		11/25/2022 12:43
13C8 PFOS	19	18	95	25-150		11/25/2022 12:43
13C2 8:2FTS	19	36	192	25-150	R	11/25/2022 12:43
13C6 PFDA	20	22	114	25-150		11/25/2022 12:43
d3-MeFOSAA	20	16	81	25-150		11/25/2022 12:43
13C8 PFOSA	20	13	65	25-150		11/25/2022 12:43
d5-EtFOSAA	20	19	96	25-150		11/25/2022 12:43
13C7 PFUdA	20	17	87	25-150		11/25/2022 12:43
13C2 PFDoA	20	18	90	25-150		11/25/2022 12:43
13C2 PFTeDA	20	16	80	25-150		11/25/2022 12:43
13C3 HFPO-DA	20	20	100	25-150		11/25/2022 12:43
d7-N-MeFOSE	20	13	65	10-150		11/25/2022 12:43
d9-N-EtFOSE	20	13	66	10-150		11/25/2022 12:43
d3-N-MeFOSA	20	9.7	49	10-150		11/25/2022 12:43
d5-N-EtFOSA	20	9.2	47	10-150		11/25/2022 12:43

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKWI
 Lab Sample ID BLANK-102528
 Lab File ID B221124B_007
 Matrix Water
 Collected 11/16/2022 17:22
 Received 11/16/2022 17:22
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 245mL
 Ical ID 221115B02
 CCal File B221124B_005
 Ending CCal File B221124B_017
 Blank File

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.51	0.51	1	375-22-4		11/25/2022 06:43
PFPeA	ND	2.0	0.84	0.84	1	2706-90-3		11/25/2022 06:43
HFPO-DA	ND	2.0	0.50	0.50	1	13252-13-6		11/25/2022 06:43
PFBS	ND	1.8	0.49	0.49	1	375-73-5		11/25/2022 06:43
PFHxA	ND	2.0	0.93	0.93	1	307-24-4		11/25/2022 06:43
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		11/25/2022 06:43
PFPeS	ND	1.9	0.61	0.61	1	2706-91-4		11/25/2022 06:43
PFHpA	ND	2.0	0.70	0.70	1	375-85-9		11/25/2022 06:43
DONA	ND	1.9	0.93	0.93	1	919005-14-4		11/25/2022 06:43
PFHxS	ND	1.9	0.54	0.54	1	355-46-4		11/25/2022 06:43
PFOA	ND	2.0	0.88	0.88	1	335-67-1		11/25/2022 06:43
6:2 FTS	ND	1.9	0.69	0.69	1	27619-97-2		11/25/2022 06:43
PFHpS	ND	1.9	0.68	0.68	1	375-92-8		11/25/2022 06:43
PFNA	ND	2.0	0.81	0.81	1	375-95-1		11/25/2022 06:43
PFOSAm	ND	2.0	0.73	0.73	1	754-91-6		11/25/2022 06:43
PFOS	ND	1.9	0.68	0.68	1	1763-23-1		11/25/2022 06:43
MeFOSA	ND	2.0	0.56	0.56	1	31506-32-8		11/25/2022 06:43
PFDA	ND	2.0	0.62	0.62	1	335-76-2		11/25/2022 06:43
EtFOSAm	ND	2.0	0.58	0.58	1	4151-50-2		11/25/2022 06:43
8:2 FTS	ND	2.0	0.51	0.51	1	39108-34-4		11/25/2022 06:43
9-CI-PF3ON	ND	1.9	0.48	0.48	1	756426-58-1		11/25/2022 06:43
PFNS	ND	2.0	0.60	0.60	1	68259-12-1		11/25/2022 06:43
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		11/25/2022 06:43
NMeFOSAA	ND	2.0	0.71	0.71	1	2355-31-9		11/25/2022 06:43
NEtFOSAA	ND	2.0	0.83	0.83	1	2991-50-6		11/25/2022 06:43
PFDS	ND	2.0	0.65	0.65	1	335-77-3		11/25/2022 06:43
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		11/25/2022 06:43
MeFOSE	ND	2.0	0.53	0.53	1	24448-09-7		11/25/2022 06:43
EtFOSE	ND	2.0	0.91	0.91	1	1691-99-2		11/25/2022 06:43
11-CI-PF3OUdS	ND	1.9	0.57	0.57	1	763051-92-9		11/25/2022 06:43
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		11/25/2022 06:43
PFDoS	ND	2.0	0.60	0.60	1	79780-39-5		11/25/2022 06:43
PFTDA	ND	2.0	0.61	0.61	1	376-06-7		11/25/2022 06:43

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Method Blank Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID BLKWI
 Lab Sample ID BLANK-102528
 Lab File ID B221124B_007
 Matrix Water
 Collected 11/16/2022 17:22
 Received 11/16/2022 17:22
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 245mL
 Ical ID 221115B02
 CCal File B221124B_005
 Ending CCal File B221124B_017
 Blank File

Injection Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	20	99	50-150		11/25/2022 06:43
13C4 PFOA	20	20	99	50-150		11/25/2022 06:43
13C2 PFDA	20	23	111	50-150		11/25/2022 06:43
13C4 PFOS	19	19	96	50-150		11/25/2022 06:43

Extracted Internal Standards

Compound	Known Conc. (ng/L)	Conc.Found (ng/L)	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	21	102	50-150		11/25/2022 06:43
13C5 PFPeA	20	22	106	50-150		11/25/2022 06:43
13C3 PFBS	19	21	108	50-150		11/25/2022 06:43
13C2 4:2FTS	19	21	110	50-150		11/25/2022 06:43
13C5 PFHxA	20	21	104	50-150		11/25/2022 06:43
13C4 PFHpA	20	21	104	50-150		11/25/2022 06:43
13C3 PFHxS	19	20	101	50-150		11/25/2022 06:43
13C2 6:2FTS	19	18	91	50-150		11/25/2022 06:43
13C8 PFOA	20	20	100	50-150		11/25/2022 06:43
13C9 PFNA	20	21	102	50-150		11/25/2022 06:43
13C8 PFOS	19	20	100	50-150		11/25/2022 06:43
13C2 8:2FTS	20	18	93	50-150		11/25/2022 06:43
13C6 PFDA	20	22	106	50-150		11/25/2022 06:43
d3-MeFOSAA	20	15	76	50-150		11/25/2022 06:43
13C8 PFOSA	20	15	74	50-150		11/25/2022 06:43
d5-EtFOSAA	20	18	90	50-150		11/25/2022 06:43
13C7 PFUdA	20	19	93	50-150		11/25/2022 06:43
13C2 PFDoA	20	20	97	50-150		11/25/2022 06:43
13C2 PFTeDA	20	18	89	50-150		11/25/2022 06:43
13C3 HFPO-DA	20	21	104	50-150		11/25/2022 06:43
d7-N-MeFOSE	20	14	68	20-150		11/25/2022 06:43
d9-N-EtFOSE	20	14	71	20-150		11/25/2022 06:43
d3-N-MeFOSA	20	11	53	20-150		11/25/2022 06:43
d5-N-EtFOSA	20	11	56	20-150		11/25/2022 06:43

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID	LCS-102529	Instrument ID	10LCMS02
Run File Name	B221128A_007	Column ID	125GA90033
Analyzed	11/28/2022 13:41	Ical ID	221115B02
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C2 PFHxA	20	22	108	50-150	
13C4 PFOA	20	19	93	50-150	
13C2 PFDA	20	20	98	50-150	
13C4 PFOS	19	20	102	50-150	

Extracted Internal Standards

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers
13C4 PFBA	20	20	101	50-150	
13C5 PFPeA	20	21	104	50-150	
13C3 PFBS	19	19	100	50-150	
13C2 4:2FTS	19	18	96	50-150	
13C5 PFHxA	20	21	102	50-150	
13C4 PFHpA	20	20	97	50-150	
13C3 PFHxS	19	19	102	50-150	
13C2 6:2FTS	19	18	92	50-150	
13C8 PFOA	20	22	106	50-150	
13C9 PFNA	20	20	100	50-150	
13C8 PFOS	19	20	105	50-150	
13C2 8:2FTS	19	18	91	50-150	
13C6 PFDA	20	21	105	50-150	
d3-MeFOSAA	20	17	82	50-150	
13C8 PFOSA	20	16	81	50-150	
d5-EtFOSAA	20	15	74	50-150	
13C7 PFUdA	20	19	92	50-150	
13C2 PFDoA	20	20	99	50-150	
13C2 PFTeDA	20	17	83	50-150	
13C3 HFPO-DA	20	21	106	50-150	
d7-N-MeFOSE	20	14	71	20-150	
d9-N-EtFOSE	20	15	76	20-150	
d3-N-MeFOSA	20	12	60	20-150	
d5-N-EtFOSA	20	12	58	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-102529
 Run File Name B221128A_007
 Analyzed 11/28/2022 13:41
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221115B02
 Level L

Native Analytes

Compound	Known Conc. ng/L	Conc. Found ng/L	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	8.1	7.8	96	50-150		375-22-4
PFPeA	8.1	7.5	93	50-150		2706-90-3
HFPO-DA	8.1	7.3	90	50-150		13252-13-6
PFBS	7.2	7.2	101	50-150		375-73-5
PFHxA	8.1	8.1	101	50-150		307-24-4
4:2 FTS	7.6	7.0	93	50-150		757124-72-4
PFPeS	7.6	7.2	95	50-150		2706-91-4
PFHpA	8.1	8.5	105	50-150		375-85-9
DONA	7.6	7.2	94	50-150		919005-14-4
PFHxS	7.4	6.7	91	50-150		355-46-4
PFOA	8.1	7.6	94	50-150		335-67-1
6:2 FTS	7.7	8.0	104	50-150		27619-97-2
PFHpS	7.7	7.2	94	50-150		375-92-8
PFNA	8.1	8.2	102	50-150		375-95-1
PFOSAm	8.1	7.7	95	50-150		754-91-6
PFOS	7.5	6.1	82	50-150		1763-23-1
MeFOSA	8.1	7.0	86	50-150		31506-32-8
PFDA	8.1	7.3	90	50-150		335-76-2
EtFOSAm	8.1	7.6	94	50-150		4151-50-2
8:2 FTS	7.8	7.3	94	50-150		39108-34-4
9-CI-PF3ON	7.5	5.8	77	50-150		756426-58-1
PFNS	7.8	7.8	101	50-150		68259-12-1
PFUnDA	8.1	8.2	101	50-150		2058-94-8
NMeFOSAA	8.1	8.4	104	50-150		2355-31-9
NEtFOSAA	8.1	8.4	103	50-150		2991-50-6
PFDS	7.8	6.3	81	50-150		335-77-3
PFDOA	8.1	7.6	94	50-150		307-55-1
MeFOSE	8.1	8.1	100	50-150		24448-09-7
EtFOSE	8.1	7.7	95	50-150		1691-99-2
11-CI-PF3OUdS	7.6	6.1	80	50-150		763051-92-9
PFTrDA	8.1	7.6	94	50-150		72629-94-8
PFDoS	7.8	6.0	77	50-150		79780-39-5
PFTDA	8.1	7.6	94	50-150		376-06-7

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-102529
 Run File Name B221128A_007
 Analyzed 11/28/2022 13:41
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221115B02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.52	5.53	1243	
13C4 PFOA	N/A	N/A	6.69	6.68	2214	
13C2 PFDA	N/A	N/A	7.92	7.90	1938	
13C4 PFOS	N/A	N/A	8.34	8.30	2167	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.19	4.22	2313	
13C5 PFPeA	N/A	N/A	4.94	4.97	2053	
13C3 PFBS	N/A	N/A	5.73	5.72	2231	
13C2 4:2FTS	N/A	N/A	5.29	5.31	983	
13C5 PFHxA	N/A	N/A	5.52	5.53	1540	
13C4 PFHpA	N/A	N/A	6.10	6.10	2070	
13C3 PFHxS	N/A	N/A	7.05	7.01	2648	
13C2 6:2FTS	N/A	N/A	6.40	6.39	1947	
13C8 PFOA	N/A	N/A	6.70	6.68	2288	
13C9 PFNA	N/A	N/A	7.30	7.28	1592	
13C8 PFOS	N/A	N/A	8.34	8.30	1805	
13C2 8:2FTS	N/A	N/A	7.58	7.56	2708	
13C6 PFDA	N/A	N/A	7.92	7.90	1370	
d3-MeFOSAA	N/A	N/A	7.86	7.85	1181	
13C8 PFOSA	N/A	N/A	10.71	10.65	1268	
d5-EtFOSAA	N/A	N/A	8.15	8.14	639	
13C7 PFUdA	N/A	N/A	8.55	8.53	2133	
13C2 PFDoA	N/A	N/A	9.18	9.16	1537	
13C2 PFTeDA	N/A	N/A	10.44	10.41	1592	
13C3 HFPO-DA	N/A	N/A	5.75	5.76	1484	
d7-N-MeFOSE	N/A	N/A	12.53	12.46	48	
d9-N-EtFOSE	N/A	N/A	13.01	12.94	357	
d3-N-MeFOSA	N/A	N/A	12.74	12.67	738	
d5-N-EtFOSA	N/A	N/A	13.16	13.10	928	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCS Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCS-102529
 Run File Name B221128A_007
 Analyzed 11/28/2022 13:41
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221115B02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.19	4.22	199	
PFPeA	N/A	N/A	4.94	4.98	498	
HFPO-DA	0.30	0.32	5.77	5.77	1225	
PFBS	0.37	0.46	5.73	5.72	1147	
PFHxA	0.07	0.07	5.53	5.54	414	
4:2 FTS	0.85	0.78	5.30	5.32	2232	
PFPeS	0.44	0.42	6.40	6.37	1562	
PFHpA	0.31	0.32	6.11	6.10	18	
DONA	0.54	0.56	6.33	6.32	946	
PFHxS	0.36	0.32	7.05	7.02	12778	
PFOA	0.39	0.42	6.70	6.68	326	
6:2 FTS	0.80	0.82	6.40	6.39	67	
PFHpS	0.44	0.44	7.71	7.66	1337	
PFNA	0.15	0.14	7.31	7.29	649	
PFOSAm	N/A	N/A	10.72	10.66	953	
PFOS	0.49	0.43	8.35	8.30	430	
MeFOSA	0.50	0.58	12.76	12.69	658	
PFDA	0.19	0.16	7.93	7.91	533	
EtFOSAm	0.45	0.47	13.19	13.12	836	
8:2 FTS	0.92	0.80	7.59	7.57	4233	
9-Cl-PF3ON	0.07	0.06	8.81	8.76	1545	
PFNS	0.45	0.50	8.99	8.94	1151	
PFUnDA	0.12	0.11	8.55	8.53	486	
NMeFOSAA	0.76	0.95	7.87	7.86	588	
NEtFOSAA	0.69	0.69	8.16	8.15	403	
PFDS	0.39	0.38	9.62	9.58	1736	
PFDOA	0.18	0.20	9.18	9.16	512	
MeFOSE	N/A	N/A	12.57	12.50	482	
EtFOSE	0.00	0.00	13.04	12.98	507	
11-Cl-PF3OUdS	0.02	0.02	10.08	10.03	1288	
PFTDA	0.15	0.16	9.82	9.80	517	
PFDoS	0.41	0.38	10.84	10.78	3558	
PFTDA	0.24	0.27	10.44	10.42	344	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-102630
 Run File Name B221124B_009
 Analyzed 11/25/2022 07:23
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221115B02
 Level L

Injection Internal Standards

Compound	Known Conc. ng/L	LCS Conc. Found ng/L	LCS Rec. %	LCSD Conc. Found ng/L	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
13C2_PFHxA	19	22	108	18	94	13.3	50-150	
13C4_PFOA	19	19	93	19	98	5.5	50-150	
13C2_PFDA	19	20	98	21	106	7.5	50-150	
13C4_PFOS	19	20	102	17	93	9.6	50-150	

Extracted Internal Standards

Compound	Known Conc. ng/L	LCS Conc. Found ng/L	LCS Rec. %	LCSD Conc. Found ng/L	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
13C4_PFBA	19	20	101	18	92	9.3	50-150	
13C5_PFPeA	19	21	104	18	93	11.4	50-150	
13C3_PFBS	18	19	100	17	96	3.7	50-150	
13C2_4:2FTS	18	18	96	18	97	0.2	50-150	
13C5_PFHxA	19	21	102	18	95	7.8	50-150	
13C4_PFHpA	19	20	97	19	97	0.4	50-150	
13C3_PFHxS	18	19	102	17	93	8.6	50-150	
13C2_6:2FTS	18	18	92	17	92	0.0	50-150	
13C8_PFOA	19	22	106	18	91	15.4	50-150	
13C9_PFNA	19	20	100	19	96	4.7	50-150	
13C8_PFOS	19	20	105	19	102	3.5	50-150	
13C2_8:2FTS	19	18	91	18	95	3.9	50-150	
13C6_PFDA	19	21	105	20	105	0.4	50-150	
d3-MeFOSAA	19	17	82	16	83	1.2	50-150	
13C8_PFOA	19	16	81	15	78	4.0	50-150	
d5-EtFOSAA	19	15	74	17	88	16.8	50-150	
13C7_PFUdA	19	19	92	19	98	5.8	50-150	
13C2_PFDoA	19	20	99	18	94	5.8	50-150	
13C2_PFTeDA	19	17	83	17	89	6.8	50-150	
13C3_HFPO-DA	19	21	106	17	90	16.8	50-150	
d7-N-MeFOSE	19	14	71	14	74	4.9	20-150	
d9-N-EtFOSE	19	15	76	14	75	1.0	20-150	
d3-N-MeFOSA	19	12	60	12	64	6.4	20-150	
d5-N-EtFOSA	19	12	58	14	74	23.9	20-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-102630
 Run File Name B221124B_009
 Analyzed 11/25/2022 07:23
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221115B02
 Level L

Native Analytes

Compound	Known Conc. ng/L	LCS Conc. Found ng/L	LCS Rec. %	LCSD Conc. Found ng/L	LCSD Rec. %	RPD %	Recovery Limits	Qualifiers
PFBA	3.9	7.8	96	4.1	106	57.6	50-150	
PFPeA	3.9	7.5	93	4.0	102	57.8	50-150	
HFPO-DA	3.9	7.3	90	3.6	92	64.1	50-150	
PFBS	3.4	7.2	101	3.5	102	66.2	50-150	
PFHxA	3.9	8.1	101	3.8	97	70.1	50-150	
4:2 FTS	3.6	7.0	93	3.3	91	67.9	50-150	
PFPeS	3.6	7.2	95	3.6	97	64.0	50-150	
PFHpA	3.9	8.5	105	4.1	106	65.5	50-150	
DONA	3.7	7.2	94	4.2	115	48.3	50-150	
PFHxS	3.5	6.7	91	3.5	99	59.1	50-150	
PFOA	3.9	7.6	94	4.0	104	57.6	50-150	
6:2 FTS	3.7	8.0	104	3.8	102	67.8	50-150	
PFHpS	3.7	7.2	94	3.6	97	64.4	50-150	
PFNA	3.9	8.2	102	4.0	102	66.5	50-150	
PFOSAm	3.9	7.7	95	4.1	105	57.5	50-150	
PFOS	3.6	6.1	82	3.1	86	62.2	50-150	
MeFOSA	3.9	7.0	86	3.7	95	57.8	50-150	
PFDA	3.9	7.3	90	3.6	93	63.7	50-150	
EtFOSAm	3.9	7.6	94	3.9	100	61.0	50-150	
8:2 FTS	3.7	7.3	94	3.6	96	64.2	50-150	
9-CI-PF3ON	3.6	5.8	77	2.8	76	67.4	50-150	
PFNS	3.7	7.8	101	3.5	94	73.3	50-150	
PFUnDA	3.9	8.2	101	3.5	92	75.1	50-150	
NMeFOSAA	3.9	8.4	104	4.2	108	62.9	50-150	
NEtFOSAA	3.9	8.4	103	3.3	85	83.6	50-150	
PFDS	3.7	6.3	81	3.0	80	67.5	50-150	
PFDOA	3.9	7.6	94	4.0	102	59.5	50-150	
MeFOSE	3.9	8.1	100	4.1	106	61.5	50-150	
EtFOSE	3.9	7.7	95	3.5	89	72.4	50-150	
11-CI-PF3OUdS	3.7	6.1	80	2.7	75	72.4	50-150	
PFTTrDA	3.9	7.6	94	4.1	105	57.3	50-150	
PFDoS	3.8	6.0	77	2.8	74	69.8	50-150	
PFTDA	3.9	7.6	94	3.2	81	78.7	50-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-102630
 Run File Name B221124B_009
 Analyzed 11/25/2022 07:23
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221115B02
 Level L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C2 PFHxA	N/A	N/A	5.52	5.53	1737	
13C4 PFOA	N/A	N/A	6.70	6.68	1932	
13C2 PFDA	N/A	N/A	7.93	7.90	1588	
13C4 PFOS	N/A	N/A	8.36	8.30	1679	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
13C4 PFBA	N/A	N/A	4.19	4.22	2227	
13C5 PFPeA	N/A	N/A	4.94	4.97	1803	
13C3 PFBS	N/A	N/A	5.72	5.72	2736	
13C2 4:2FTS	N/A	N/A	5.29	5.31	1234	
13C5 PFHxA	N/A	N/A	5.52	5.53	1375	
13C4 PFHpA	N/A	N/A	6.10	6.10	1397	
13C3 PFHxS	N/A	N/A	7.05	7.01	2705	
13C2 6:2FTS	N/A	N/A	6.40	6.39	1961	
13C8 PFOA	N/A	N/A	6.70	6.68	2104	
13C9 PFNA	N/A	N/A	7.31	7.28	1713	
13C8 PFOS	N/A	N/A	8.37	8.30	2627	
13C2 8:2FTS	N/A	N/A	7.59	7.56	535941	
13C6 PFDA	N/A	N/A	7.94	7.90	1390	
d3-MeFOSAA	N/A	N/A	7.87	7.85	1032	
13C8 PFOSA	N/A	N/A	10.73	10.65	1152	
d5-EtFOSAA	N/A	N/A	8.17	8.14	1044	
13C7 PFUdA	N/A	N/A	8.57	8.53	2730	
13C2 PFDoA	N/A	N/A	9.20	9.16	1528	
13C2 PFTeDA	N/A	N/A	10.45	10.41	1229	
13C3 HFPO-DA	N/A	N/A	5.75	5.76	1389	
d7-N-MeFOSE	N/A	N/A	12.57	12.46	40	
d9-N-EtFOSE	N/A	N/A	13.04	13.01	516	
d3-N-MeFOSA	N/A	N/A	12.78	12.75	804	
d5-N-EtFOSA	N/A	N/A	13.20	13.17	825	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



LCSD Analysis Summary
 PFAS by Isotope Dilution

Lab Sample ID LCSD-102630
 Run File Name B221124B_009
 Analyzed 11/25/2022 07:23
 Injected By NH

Instrument ID 10LCMS02
 Column ID 125GA90033
 Ical ID 221115B02
 Level L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers
PFBA	N/A	N/A	4.20	4.22	213	
PFPeA	N/A	N/A	4.94	4.98	423	
HFPO-DA	0.39	0.35	5.76	5.77	923	
PFBS	0.39	0.43	5.73	5.72	710	
PFHxA	0.08	0.07	5.53	5.54	316	
4:2 FTS	0.90	0.81	5.29	5.32	51537	
PFPeS	0.46	0.52	6.40	6.37	1306	
PFHpA	0.32	0.31	6.11	6.10	18	
DONA	0.54	0.63	6.33	6.32	1117	
PFHxS	0.37	0.37	7.06	7.02	1679	
PFOA	0.38	0.43	6.70	6.68	257	
6:2 FTS	0.75	0.84	6.40	6.39	55	
PFHpS	0.42	0.43	7.71	7.66	2745	
PFNA	0.17	0.15	7.31	7.29	481	
PFOSAm	N/A	N/A	10.74	10.66	913	
PFOS	0.44	0.44	8.37	8.30	407	
MeFOSA	0.47	0.54	12.80	12.77	400	
PFDA	0.17	0.17	7.94	7.91	336	
EtFOSAm	0.48	0.51	13.22	13.12	731	
8:2 FTS	0.99	0.76	7.59	7.57	194684	
9-CI-PF3ON	0.05	0.05	8.84	8.76	951	
PFNS	0.46	0.52	9.02	8.94	913	
PFUnDA	0.12	0.12	8.58	8.53	379	
NMeFOSAA	0.74	0.83	7.88	7.86	572	
NEtFOSAA	0.67	0.73	8.17	8.15	426	
PFDS	0.36	0.39	9.64	9.58	2040	
PFDOA	0.17	0.17	9.21	9.16	350	
MeFOSE	N/A	N/A	12.61	12.50	350	
EtFOSE	0.00	0.00	13.08	12.98	445	
11-CI-PF3OUdS	0.02	0.02	10.09	10.03	792	
PFTrDA	0.16	0.15	9.83	9.80	392	
PFDoS	0.40	0.44	10.84	10.78	3125	
PFTDA	0.28	0.27	10.45	10.42	288	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

December 2022

March 22, 2023

Mike Ursin
TRC Environmental
708 Heartland Trail
Madison, WI 53717

RE: Project: MMSD PFAS
Pace Project No.: 10637158

Dear Mike Ursin:

Enclosed are the analytical results for sample(s) received by the laboratory on December 15, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

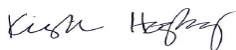
The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

This report was finalized excluding the TOP Assay data as directed by TRC.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kirsten Hogberg
kirsten.hogberg@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Lydia Auner, TRC
Peggy Popp, TRC Solutions
Jeff Ramey, TRC



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: MMSD PFAS

Pace Project No.: 10637158

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
GMP+ Certification #: GMP050884
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064

Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification (A2LA) #: R-036
North Dakota Certification (MN) #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #: 74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: MMSD PFAS

Pace Project No.: 10637158

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10637158001	Influent 02 20221212	Water	12/12/22 23:59	12/15/22 08:50
10637158002	Influent 07 20221212	Water	12/12/22 23:59	12/15/22 08:50
10637158003	Influent 08 20221212	Water	12/12/22 23:59	12/15/22 08:50
10637158004	Influent 11 20221212	Water	12/12/22 23:59	12/15/22 08:50
10637158005	Influent 18 20221212	Water	12/12/22 23:59	12/15/22 08:50
10637158006	Influent Comp 20221212	Water	12/12/22 23:59	12/15/22 08:50
10637158007	Effluent 20221213	Water	12/13/22 23:59	12/15/22 08:50
10637158009	Biosolids A20221214	Solid	12/14/22 07:20	12/15/22 08:50
10637158010	Biosolids B20221214	Solid	12/14/22 07:45	12/15/22 08:50
10637158011	EB01 20221214	Water	12/14/22 07:30	12/15/22 08:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: MMSD PFAS

Pace Project No.: 10637158

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10637158001	Influent 02 20221212	ENV-SOP-MIN4-0178	QLL	57	PASI-M
		SM 2540D	RM3	1	PASI-M
10637158002	Influent 07 20221212	ENV-SOP-MIN4-0178	QLL	57	PASI-M
		SM 2540D	RM3	1	PASI-M
10637158003	Influent 08 20221212	ENV-SOP-MIN4-0178	QLL	57	PASI-M
		SM 2540D	RM3	1	PASI-M
10637158004	Influent 11 20221212	ENV-SOP-MIN4-0178	QLL	57	PASI-M
		SM 2540D	RM3	1	PASI-M
10637158005	Influent 18 20221212	ENV-SOP-MIN4-0178	QLL	57	PASI-M
		SM 2540D	RM3	1	PASI-M
10637158006	Influent Comp 20221212	ENV-SOP-MIN4-0178	QLL	57	PASI-M
		SM 2540D	RM3	1	PASI-M
10637158007	Effluent 20221213	ENV-SOP-MIN4-0178	QLL	57	PASI-M
		SM 2540D	EPT	1	PASI-M
10637158009	Biosolids A20221214	ASTM D2974	JDL	1	PASI-M
		ENV-SOP-MIN4-0178	MM4	58	PASI-M
10637158010	Biosolids B20221214	ASTM D2974	JDL	1	PASI-M
		ENV-SOP-MIN4-0178	MM4	58	PASI-M
10637158011	EB01 20221214	ENV-SOP-MIN4-0178	QLL	57	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10637158

Method: ENV-SOP-MIN4-0178

Description: WI ID NPW

Client: TRC-WI

Date: March 22, 2023

General Information:

8 samples were analyzed for ENV-SOP-MIN4-0178 by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with ENV-SOP-MIN4-0178 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 860677

S0: Surrogate recovery outside laboratory control limits.

- DUP (Lab ID: 4547279)
 - 13C2-PFTA (S)
 - 13C26:2FTS (S)
 - 13C2PFHxDA (S)
 - 13C8-PFOA (S)
 - d3-MeFOSAA (S)
 - d3-NMeFOSA (S)
 - d5-EtFOSAA (S)
 - d5-NEtFOSA (S)
 - d7-NMeFOSE (S)
 - d9-NEtFOSE (S)
- Influent 02 20221212 (Lab ID: 10637158001)
 - 13C8-PFOA (S)
 - d3-MeFOSAA (S)
 - d3-NMeFOSA (S)
 - d5-EtFOSAA (S)
 - d5-NEtFOSA (S)
 - d7-NMeFOSE (S)
 - d9-NEtFOSE (S)
- Influent 07 20221212 (Lab ID: 10637158002)

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10637158

Method: ENV-SOP-MIN4-0178

Description: WI ID NPW

Client: TRC-WI

Date: March 22, 2023

QC Batch: 860677

S0: Surrogate recovery outside laboratory control limits.

- 13C8-PFOSA (S)
- d3-MeFOSAA (S)
- d3-NMeFOSA (S)
- d5-EtFOSAA (S)
- d5-NEtFOSA (S)
- d7-NMeFOSE (S)
- d9-NEtFOSE (S)
- Influent 08 20221212 (Lab ID: 10637158003)
 - 13C8-PFOSA (S)
 - d3-MeFOSAA (S)
 - d3-NMeFOSA (S)
 - d5-EtFOSAA (S)
 - d5-NEtFOSA (S)
 - d7-NMeFOSE (S)
 - d9-NEtFOSE (S)
- Influent 11 20221212 (Lab ID: 10637158004)
 - 13C2-PFDoA (S)
 - 13C7-PFUdA (S)
 - 13C8-PFOSA (S)
 - d3-MeFOSAA (S)
 - d3-NMeFOSA (S)
 - d5-EtFOSAA (S)
 - d5-NEtFOSA (S)
 - d7-NMeFOSE (S)
 - d9-NEtFOSE (S)
- Influent 18 20221212 (Lab ID: 10637158005)
 - 13C2-PFDoA (S)
 - 13C26:2FTS (S)
 - 13C8-PFOSA (S)
 - d3-MeFOSAA (S)
 - d3-NMeFOSA (S)
 - d5-EtFOSAA (S)
 - d5-NEtFOSA (S)
 - d7-NMeFOSE (S)
 - d9-NEtFOSE (S)
- Influent Comp 20221212 (Lab ID: 10637158006)
 - 13C8-PFOS (S)
 - 13C8-PFOSA (S)
 - d3-MeFOSAA (S)
 - d3-NMeFOSA (S)
 - d5-EtFOSAA (S)
 - d5-NEtFOSA (S)
 - d7-NMeFOSE (S)
 - d9-NEtFOSE (S)

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10637158

Method: ENV-SOP-MIN4-0178

Description: WI ID NPW

Client: TRC-WI

Date: March 22, 2023

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 860677

B: Analyte was detected in the associated method blank.

- BLANK for HBN 860677 [PFAS/145 (Lab ID: 4547124)]
- Perfluorobutanesulfonic acid

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 860677

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 4547279)
- PFBA

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10637158

Method: ENV-SOP-MIN4-0178

Description: WI ID SL

Client: TRC-WI

Date: March 22, 2023

General Information:

2 samples were analyzed for ENV-SOP-MIN4-0178 by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with ENV-SOP-MIN4-0178 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 861904

S0: Surrogate recovery outside laboratory control limits.

- Biosolids A20221214 (Lab ID: 10637158009)
 - 13C2-PFDoA (S)
 - 13C24:2FTS (S)
 - 13C2PFHxDA (S)
- Biosolids B20221214 (Lab ID: 10637158010)
 - 13C24:2FTS (S)
 - 13C2PFHxDA (S)
 - d3-NMeFOSA (S)
 - d5-NEtFOSA (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS
Pace Project No.: 10637158

Method: ENV-SOP-MIN4-0178
Description: WI ID SL
Client: TRC-WI
Date: March 22, 2023

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: MMSD PFAS

Pace Project No.: 10637158

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: TRC-WI

Date: March 22, 2023

General Information:

7 samples were analyzed for SM 2540D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 858901

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 4538967)
- Total Suspended Solids

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 02 20221212 **Lab ID:** 10637158001 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.56	ng/L	1.9	0.56	1	12/30/22 09:11	01/06/23 12:02	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:02	757124-72-4	
6:2 FTS	<0.68	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:02	27619-97-2	
8:2 FTS	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:02	39108-34-4	
9CI-PF3ONS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:02	756426-58-1	
ADONA	<0.93	ng/L	1.9	0.93	1	12/30/22 09:11	01/06/23 12:02	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:02	13252-13-6	
NEtFOSAA	<0.82	ng/L	2.0	0.82	1	12/30/22 09:11	01/06/23 12:02	2991-50-6	
NEtFOSA	<0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:02	4151-50-2	
NEtFOSE	<0.90	ng/L	2.0	0.90	1	12/30/22 09:11	01/06/23 12:02	1691-99-2	
NMeFOSAA	<0.70	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:02	2355-31-9	
NMeFOSA	<0.56	ng/L	2.0	0.56	1	12/30/22 09:11	01/06/23 12:02	31506-32-8	
NMeFOSE	<0.53	ng/L	2.0	0.53	1	12/30/22 09:11	01/06/23 12:02	24448-09-7	
Perfluorobutanesulfonic acid	2.2	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:02	375-73-5	B
Perfluorodecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:02	335-76-2	
Perfluorohexanoic acid	9.0	ng/L	2.0	0.92	1	12/30/22 09:11	01/06/23 12:02	307-24-4	
PFBA	9.7	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:02	375-22-4	
PFDS	<0.65	ng/L	2.0	0.65	1	12/30/22 09:11	01/06/23 12:02	335-77-3	
PFDoS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:02	79780-39-5	
PFHpS	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:02	375-92-8	
PFNS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:02	68259-12-1	
PFOSA	<0.72	ng/L	2.0	0.72	1	12/30/22 09:11	01/06/23 12:02	754-91-6	
PFPeA	126	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:02	2706-90-3	
PFPeS	<0.61	ng/L	1.9	0.61	1	12/30/22 09:11	01/06/23 12:02	2706-91-4	
Perfluorododecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:02	307-55-1	
Perfluoroheptanoic acid	1.0J	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:02	375-85-9	
Perfluorohexanesulfonic acid	4.2	ng/L	1.8	0.54	1	12/30/22 09:11	01/06/23 12:02	355-46-4	
Perfluorononanoic acid	<0.80	ng/L	2.0	0.80	1	12/30/22 09:11	01/06/23 12:02	375-95-1	
Perfluorooctanesulfonic acid	2.4	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:02	1763-23-1	
Perfluorooctanoic acid	2.2	ng/L	2.0	0.87	1	12/30/22 09:11	01/06/23 12:02	335-67-1	
Perfluorotetradecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:02	376-06-7	
Perfluorotridecanoic acid	<0.63	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:02	72629-94-8	
Perfluoroundecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:02	2058-94-8	
Surrogates									
13C4-PFBA (S)	55	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C5-PFPeA (S)	79	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C3-PFBS (S)	69	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C24:2FTS (S)	104	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C3HFPO-DA (S)	47	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C4-PFHpA (S)	80	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C3-PFHxS (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C26:2FTS (S)	131	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C8-PFOA (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C8-PFOS (S)	81	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C9-PFNA (S)	64	%	25-150		1	12/30/22 09:11	01/06/23 12:02		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 02 20221212 **Lab ID: 10637158001** Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

13C6-PFDA (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C28:2FTS (S)	93	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
d3-MeFOSAA (S)	19	%	25-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C7-PFUdA (S)	37	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C8-PFOA (S)	8	%	25-150		1	12/30/22 09:11	01/06/23 12:02		S0
d5-EtFOSAA (S)	15	%	25-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C2-PFDoA (S)	29	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
d3-NMeFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
d7-NMeFOSE (S)	5	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C2-PFTA (S)	30	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
d9-NEtFOSE (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
d5-NEtFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C5-PFHxA (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:02		

2540D Total Suspended Solids

Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	282	mg/L	20.0	10.0	1		12/16/22 12:07		D6
------------------------	------------	------	------	------	---	--	----------------	--	----

Sample: Influent 07 20221212 **Lab ID: 10637158002** Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

11CI-PF3OUdS	<0.55	ng/L	1.9	0.55	1	12/30/22 09:11	01/06/23 12:09	763051-92-9	
4:2 FTS	<0.46	ng/L	1.9	0.46	1	12/30/22 09:11	01/06/23 12:09	757124-72-4	
6:2 FTS	1.5J	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:09	27619-97-2	
8:2 FTS	<0.50	ng/L	1.9	0.50	1	12/30/22 09:11	01/06/23 12:09	39108-34-4	
9CI-PF3ONS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:09	756426-58-1	
ADONA	1.8J	ng/L	1.9	0.91	1	12/30/22 09:11	01/06/23 12:09	919005-14-4	
HFPO-DA	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:09	13252-13-6	
NEtFOSAA	0.82J	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 12:09	2991-50-6	
NEtFOSA	<0.57	ng/L	2.0	0.57	1	12/30/22 09:11	01/06/23 12:09	4151-50-2	
NEtFOSE	<0.89	ng/L	2.0	0.89	1	12/30/22 09:11	01/06/23 12:09	1691-99-2	
NMeFOSAA	<0.69	ng/L	2.0	0.69	1	12/30/22 09:11	01/06/23 12:09	2355-31-9	
NMeFOSA	<0.55	ng/L	2.0	0.55	1	12/30/22 09:11	01/06/23 12:09	31506-32-8	
NMeFOSE	<0.52	ng/L	2.0	0.52	1	12/30/22 09:11	01/06/23 12:09	24448-09-7	
Perfluorobutanesulfonic acid	4.6	ng/L	1.8	0.48	1	12/30/22 09:11	01/06/23 12:09	375-73-5	B
Perfluorodecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:09	335-76-2	
Perfluorohexanoic acid	11.8	ng/L	2.0	0.91	1	12/30/22 09:11	01/06/23 12:09	307-24-4	
PFBA	17.2	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:09	375-22-4	
PFDS	<0.64	ng/L	1.9	0.64	1	12/30/22 09:11	01/06/23 12:09	335-77-3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 07 20221212 Lab ID: 10637158002 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
PFDoS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:09	79780-39-5	
PFHpS	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:09	375-92-8	
PFNS	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 12:09	68259-12-1	
PFOSA	<0.71	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 12:09	754-91-6	
PFPeA	98.9	ng/L	2.0	0.82	1	12/30/22 09:11	01/06/23 12:09	2706-90-3	
PFPeS	0.84J	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:09	2706-91-4	
Perfluorododecanoic acid	<0.48	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 12:09	307-55-1	
Perfluoroheptanoic acid	1.8J	ng/L	2.0	0.69	1	12/30/22 09:11	01/06/23 12:09	375-85-9	
Perfluorohexanesulfonic acid	11.2	ng/L	1.8	0.53	1	12/30/22 09:11	01/06/23 12:09	355-46-4	
Perfluorononanoic acid	<0.79	ng/L	2.0	0.79	1	12/30/22 09:11	01/06/23 12:09	375-95-1	
Perfluorooctanesulfonic acid	3.4	ng/L	1.8	0.66	1	12/30/22 09:11	01/06/23 12:09	1763-23-1	
Perfluorooctanoic acid	5.9	ng/L	2.0	0.86	1	12/30/22 09:11	01/06/23 12:09	335-67-1	
Perfluorotetradecanoic acid	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:09	376-06-7	
Perfluorotridecanoic acid	<0.62	ng/L	2.0	0.62	1	12/30/22 09:11	01/06/23 12:09	72629-94-8	
Perfluoroundecanoic acid	<0.48	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 12:09	2058-94-8	
Surrogates									
13C4-PFBA (S)	56	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C5-PFPeA (S)	77	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C3-PFBS (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C24:2FTS (S)	118	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C3HFPO-DA (S)	48	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C4-PFHpA (S)	78	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C3-PFHxS (S)	71	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C26:2FTS (S)	140	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C8-PFOA (S)	70	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C8-PFOS (S)	133	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C9-PFNA (S)	62	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C6-PFDA (S)	56	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C28:2FTS (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
d3-MeFOSAA (S)	15	%	25-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C7-PFUDa (S)	35	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C8-PFOSA (S)	9	%	25-150		1	12/30/22 09:11	01/06/23 12:09		S0
d5-EtFOSAA (S)	13	%	25-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C2-PFDoA (S)	29	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
d3-NMeFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
d7-NMeFOSE (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C2-PFTA (S)	27	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
d9-NEtFOSE (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
d5-NEtFOSA (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C5-PFHxA (S)	77	%	25-150		1	12/30/22 09:11	01/06/23 12:09		

2540D Total Suspended Solids

Analytical Method: SM 2540D

Pace Analytical Services - Minneapolis

Total Suspended Solids	149	mg/L	10.0	5.0	1		12/16/22 12:07		
------------------------	-----	------	------	-----	---	--	----------------	--	--

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 08 20221212 **Lab ID: 10637158003** Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.54	ng/L	1.8	0.54	1	12/30/22 09:11	01/06/23 12:16	763051-92-9	
4:2 FTS	<0.45	ng/L	1.8	0.45	1	12/30/22 09:11	01/06/23 12:16	757124-72-4	
6:2 FTS	<0.65	ng/L	1.8	0.65	1	12/30/22 09:11	01/06/23 12:16	27619-97-2	
8:2 FTS	<0.49	ng/L	1.9	0.49	1	12/30/22 09:11	01/06/23 12:16	39108-34-4	
9CI-PF3ONS	<0.45	ng/L	1.8	0.45	1	12/30/22 09:11	01/06/23 12:16	756426-58-1	
ADONA	0.89J	ng/L	1.8	0.89	1	12/30/22 09:11	01/06/23 12:16	919005-14-4	
HFPO-DA	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:16	13252-13-6	
NEtFOSAA	<0.79	ng/L	1.9	0.79	1	12/30/22 09:11	01/06/23 12:16	2991-50-6	
NEtFOSA	<0.55	ng/L	1.9	0.55	1	12/30/22 09:11	01/06/23 12:16	4151-50-2	
NEtFOSE	<0.86	ng/L	1.9	0.86	1	12/30/22 09:11	01/06/23 12:16	1691-99-2	
NMeFOSAA	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:16	2355-31-9	
NMeFOSA	<0.53	ng/L	1.9	0.53	1	12/30/22 09:11	01/06/23 12:16	31506-32-8	
NMeFOSE	<0.50	ng/L	1.9	0.50	1	12/30/22 09:11	01/06/23 12:16	24448-09-7	
Perfluorobutanesulfonic acid	1.2J	ng/L	1.7	0.47	1	12/30/22 09:11	01/06/23 12:16	375-73-5	
Perfluorodecanoic acid	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:16	335-76-2	
Perfluorohexanoic acid	6.8	ng/L	1.9	0.88	1	12/30/22 09:11	01/06/23 12:16	307-24-4	
PFBA	7.5	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:16	375-22-4	
PFDS	<0.62	ng/L	1.9	0.62	1	12/30/22 09:11	01/06/23 12:16	335-77-3	
PFDoS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:16	79780-39-5	
PFHpS	<0.64	ng/L	1.8	0.64	1	12/30/22 09:11	01/06/23 12:16	375-92-8	
PFNS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:16	68259-12-1	
PFOSA	<0.69	ng/L	1.9	0.69	1	12/30/22 09:11	01/06/23 12:16	754-91-6	
PFPeA	124	ng/L	1.9	0.79	1	12/30/22 09:11	01/06/23 12:16	2706-90-3	
PFPeS	<0.58	ng/L	1.8	0.58	1	12/30/22 09:11	01/06/23 12:16	2706-91-4	
Perfluorododecanoic acid	<0.46	ng/L	1.9	0.46	1	12/30/22 09:11	01/06/23 12:16	307-55-1	
Perfluoroheptanoic acid	0.86J	ng/L	1.9	0.66	1	12/30/22 09:11	01/06/23 12:16	375-85-9	
Perfluorohexanesulfonic acid	4.8	ng/L	1.8	0.51	1	12/30/22 09:11	01/06/23 12:16	355-46-4	
Perfluorononanoic acid	<0.77	ng/L	1.9	0.77	1	12/30/22 09:11	01/06/23 12:16	375-95-1	
Perfluorooctanesulfonic acid	2.2	ng/L	1.8	0.64	1	12/30/22 09:11	01/06/23 12:16	1763-23-1	
Perfluorooctanoic acid	2.0	ng/L	1.9	0.83	1	12/30/22 09:11	01/06/23 12:16	335-67-1	
Perfluorotetradecanoic acid	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 12:16	376-06-7	
Perfluorotridecanoic acid	<0.60	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:16	72629-94-8	
Perfluoroundecanoic acid	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:16	2058-94-8	
Surrogates									
13C4-PFBA (S)	57	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C5-PFPeA (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C3-PFBS (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C24:2FTS (S)	130	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C3HFPO-DA (S)	55	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C4-PFHpA (S)	87	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C3-PFHxS (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C26:2FTS (S)	133	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C8-PFOA (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C8-PFOS (S)	91	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C9-PFNA (S)	69	%	25-150		1	12/30/22 09:11	01/06/23 12:16		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 08 20221212 Lab ID: 10637158003 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

13C6-PFDA (S)	55	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C28:2FTS (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
d3-MeFOSAA (S)	12	%	25-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C7-PFUdA (S)	34	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C8-PFOA (S)	9	%	25-150		1	12/30/22 09:11	01/06/23 12:16		S0
d5-EtFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C2-PFDoA (S)	26	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
d3-NMeFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
d7-NMeFOSE (S)	5	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C2-PFTA (S)	29	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
d9-NEtFOSE (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
d5-NEtFOSA (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C5-PFHxA (S)	86	%	25-150		1	12/30/22 09:11	01/06/23 12:16		

2540D Total Suspended Solids

Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	367	mg/L	18.2	9.1	1		12/16/22 12:08		
------------------------	-----	------	------	-----	---	--	----------------	--	--

Sample: Influent 11 20221212 Lab ID: 10637158004 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

11CI-PF3OUdS	<0.54	ng/L	1.8	0.54	1	12/30/22 09:11	01/06/23 12:23	763051-92-9	
4:2 FTS	<0.45	ng/L	1.8	0.45	1	12/30/22 09:11	01/06/23 12:23	757124-72-4	
6:2 FTS	<0.66	ng/L	1.8	0.66	1	12/30/22 09:11	01/06/23 12:23	27619-97-2	
8:2 FTS	<0.49	ng/L	1.9	0.49	1	12/30/22 09:11	01/06/23 12:23	39108-34-4	
9CI-PF3ONS	<0.46	ng/L	1.8	0.46	1	12/30/22 09:11	01/06/23 12:23	756426-58-1	
ADONA	2.2	ng/L	1.8	0.89	1	12/30/22 09:11	01/06/23 12:23	919005-14-4	
HFPO-DA	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:23	13252-13-6	
NEtFOSAA	<0.79	ng/L	1.9	0.79	1	12/30/22 09:11	01/06/23 12:23	2991-50-6	
NEtFOSA	<0.56	ng/L	1.9	0.56	1	12/30/22 09:11	01/06/23 12:23	4151-50-2	
NEtFOSE	<0.86	ng/L	1.9	0.86	1	12/30/22 09:11	01/06/23 12:23	1691-99-2	
NMeFOSAA	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:23	2355-31-9	
NMeFOSA	<0.54	ng/L	1.9	0.54	1	12/30/22 09:11	01/06/23 12:23	31506-32-8	
NMeFOSE	<0.51	ng/L	1.9	0.51	1	12/30/22 09:11	01/06/23 12:23	24448-09-7	
Perfluorobutanesulfonic acid	0.92J	ng/L	1.7	0.47	1	12/30/22 09:11	01/06/23 12:23	375-73-5	
Perfluorodecanoic acid	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:23	335-76-2	
Perfluorohexanoic acid	5.4	ng/L	1.9	0.88	1	12/30/22 09:11	01/06/23 12:23	307-24-4	
PFBA	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:23	375-22-4	
PFDS	<0.62	ng/L	1.9	0.62	1	12/30/22 09:11	01/06/23 12:23	335-77-3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 11 20221212 **Lab ID: 10637158004** Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
PFDoS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:23	79780-39-5	
PFHpS	<0.65	ng/L	1.8	0.65	1	12/30/22 09:11	01/06/23 12:23	375-92-8	
PFNS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:23	68259-12-1	
PFOSA	<0.70	ng/L	1.9	0.70	1	12/30/22 09:11	01/06/23 12:23	754-91-6	
PFPeA	164	ng/L	1.9	0.80	1	12/30/22 09:11	01/06/23 12:23	2706-90-3	
PFPeS	<0.58	ng/L	1.8	0.58	1	12/30/22 09:11	01/06/23 12:23	2706-91-4	
Perfluorododecanoic acid	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:23	307-55-1	
Perfluoroheptanoic acid	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:23	375-85-9	
Perfluorohexanesulfonic acid	2.7	ng/L	1.8	0.52	1	12/30/22 09:11	01/06/23 12:23	355-46-4	
Perfluorononanoic acid	<0.77	ng/L	1.9	0.77	1	12/30/22 09:11	01/06/23 12:23	375-95-1	
Perfluorooctanesulfonic acid	1.6J	ng/L	1.8	0.65	1	12/30/22 09:11	01/06/23 12:23	1763-23-1	
Perfluorooctanoic acid	1.8J	ng/L	1.9	0.84	1	12/30/22 09:11	01/06/23 12:23	335-67-1	
Perfluorotetradecanoic acid	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 12:23	376-06-7	
Perfluorotridecanoic acid	<0.60	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:23	72629-94-8	
Perfluoroundecanoic acid	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:23	2058-94-8	
Surrogates									
13C4-PFBA (S)	40	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C5-PFPeA (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C3-PFBS (S)	65	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C24:2FTS (S)	104	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C3HFPO-DA (S)	49	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C4-PFHpA (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C3-PFHxS (S)	75	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C26:2FTS (S)	125	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C8-PFOA (S)	71	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C8-PFOS (S)	70	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C9-PFNA (S)	54	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C6-PFDA (S)	38	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C28:2FTS (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
d3-MeFOSAA (S)	7	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C7-PFUDa (S)	21	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C8-PFOSA (S)	4	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
d5-EtFOSAA (S)	7	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C2-PFDoA (S)	14	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
d3-NMeFOSA (S)	5	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
d7-NMeFOSE (S)	3	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C2-PFTA (S)	25	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
d9-NEtFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
d5-NEtFOSA (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C5-PFHxA (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:23		

2540D Total Suspended Solids

Analytical Method: SM 2540D

Pace Analytical Services - Minneapolis

Total Suspended Solids	291	mg/L	20.0	10.0	1	12/16/22 12:08			
------------------------	------------	------	------	------	---	----------------	--	--	--

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 18 20221212 Lab ID: 10637158005 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.56	ng/L	1.9	0.56	1	12/30/22 09:11	01/06/23 12:30	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:30	757124-72-4	
6:2 FTS	2.0	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:30	27619-97-2	
8:2 FTS	<0.51	ng/L	1.9	0.51	1	12/30/22 09:11	01/06/23 12:30	39108-34-4	
9CI-PF3ONS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:30	756426-58-1	
ADONA	2.3	ng/L	1.9	0.92	1	12/30/22 09:11	01/06/23 12:30	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:30	13252-13-6	
NEtFOSAA	0.91J	ng/L	2.0	0.82	1	12/30/22 09:11	01/06/23 12:30	2991-50-6	
NEtFOSA	<0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:30	4151-50-2	
NEtFOSE	<0.89	ng/L	2.0	0.89	1	12/30/22 09:11	01/06/23 12:30	1691-99-2	
NMeFOSAA	<0.70	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:30	2355-31-9	
NMeFOSA	<0.55	ng/L	2.0	0.55	1	12/30/22 09:11	01/06/23 12:30	31506-32-8	
NMeFOSE	<0.52	ng/L	2.0	0.52	1	12/30/22 09:11	01/06/23 12:30	24448-09-7	
Perfluorobutanesulfonic acid	3.2	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:30	375-73-5	B
Perfluorodecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:30	335-76-2	
Perfluorohexanoic acid	8.5	ng/L	2.0	0.91	1	12/30/22 09:11	01/06/23 12:30	307-24-4	
PFBA	8.5	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:30	375-22-4	D6
PFDS	<0.64	ng/L	1.9	0.64	1	12/30/22 09:11	01/06/23 12:30	335-77-3	
PFDoS	<0.59	ng/L	2.0	0.59	1	12/30/22 09:11	01/06/23 12:30	79780-39-5	
PFHpS	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:30	375-92-8	
PFNS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:30	68259-12-1	
PFOSA	<0.72	ng/L	2.0	0.72	1	12/30/22 09:11	01/06/23 12:30	754-91-6	
PFPeA	109	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:30	2706-90-3	
PFPeS	1.2J	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:30	2706-91-4	
Perfluorododecanoic acid	<0.48	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 12:30	307-55-1	
Perfluoroheptanoic acid	1.7J	ng/L	2.0	0.69	1	12/30/22 09:11	01/06/23 12:30	375-85-9	
Perfluorohexanesulfonic acid	13.9	ng/L	1.8	0.53	1	12/30/22 09:11	01/06/23 12:30	355-46-4	
Perfluorononanoic acid	<0.80	ng/L	2.0	0.80	1	12/30/22 09:11	01/06/23 12:30	375-95-1	
Perfluorooctanesulfonic acid	5.1	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:30	1763-23-1	
Perfluorooctanoic acid	6.3	ng/L	2.0	0.86	1	12/30/22 09:11	01/06/23 12:30	335-67-1	
Perfluorotetradecanoic acid	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:30	376-06-7	
Perfluorotridecanoic acid	<0.63	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:30	72629-94-8	
Perfluoroundecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:30	2058-94-8	
Surrogates									
13C4-PFBA (S)	43	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C5-PFPeA (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C3-PFBS (S)	74	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C24:2FTS (S)	130	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C3HFPO-DA (S)	53	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C4-PFHpA (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C3-PFHxS (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C26:2FTS (S)	151	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C8-PFOA (S)	75	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C8-PFOS (S)	94	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C9-PFNA (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:30		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 18 20221212 Lab ID: 10637158005 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

13C6-PFDA (S)	54	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C28:2FTS (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
d3-MeFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C7-PFUdA (S)	35	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C8-PFOA (S)	6	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
d5-EtFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C2-PFDoA (S)	23	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
d3-NMeFOSA (S)	3	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
d7-NMeFOSE (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C2-PFTA (S)	28	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
d9-NEtFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
d5-NEtFOSA (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C5-PFHxA (S)	86	%	25-150		1	12/30/22 09:11	01/06/23 12:30		

2540D Total Suspended Solids

Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	220	mg/L	20.0	10.0	1		12/16/22 12:08		
------------------------	-----	------	------	------	---	--	----------------	--	--

Sample: Influent Comp 20221212 Lab ID: 10637158006 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

11CI-PF3OUdS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:52	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:52	757124-72-4	
6:2 FTS	<0.69	ng/L	1.9	0.69	1	12/30/22 09:11	01/06/23 12:52	27619-97-2	
8:2 FTS	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:52	39108-34-4	
9CI-PF3ONS	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:52	756426-58-1	
ADONA	2.1	ng/L	1.9	0.94	1	12/30/22 09:11	01/06/23 12:52	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:52	13252-13-6	
NEtFOSAA	<0.83	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:52	2991-50-6	
NEtFOSA	<0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:52	4151-50-2	
NEtFOSE	<0.91	ng/L	2.0	0.91	1	12/30/22 09:11	01/06/23 12:52	1691-99-2	
NMeFOSAA	<0.71	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 12:52	2355-31-9	
NMeFOSA	<0.56	ng/L	2.0	0.56	1	12/30/22 09:11	01/06/23 12:52	31506-32-8	
NMeFOSE	<0.53	ng/L	2.0	0.53	1	12/30/22 09:11	01/06/23 12:52	24448-09-7	
Perfluorobutanesulfonic acid	2.1	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:52	375-73-5	B
Perfluorodecanoic acid	<0.62	ng/L	2.0	0.62	1	12/30/22 09:11	01/06/23 12:52	335-76-2	
Perfluorohexanoic acid	8.6	ng/L	2.0	0.93	1	12/30/22 09:11	01/06/23 12:52	307-24-4	
PFBA	9.7	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:52	375-22-4	
PFDS	<0.65	ng/L	2.0	0.65	1	12/30/22 09:11	01/06/23 12:52	335-77-3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent Comp 20221212 **Lab ID: 10637158006** Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
PFDoS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:52	79780-39-5	
PFHpS	<0.68	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:52	375-92-8	
PFNS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:52	68259-12-1	
PFOSA	<0.73	ng/L	2.0	0.73	1	12/30/22 09:11	01/06/23 12:52	754-91-6	
PFPeA	128	ng/L	2.0	0.84	1	12/30/22 09:11	01/06/23 12:52	2706-90-3	
PFPeS	<0.61	ng/L	1.9	0.61	1	12/30/22 09:11	01/06/23 12:52	2706-91-4	
Perfluorododecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:52	307-55-1	
Perfluoroheptanoic acid	1.3J	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:52	375-85-9	
Perfluorohexanesulfonic acid	6.6	ng/L	1.9	0.54	1	12/30/22 09:11	01/06/23 12:52	355-46-4	
Perfluorononanoic acid	<0.81	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 12:52	375-95-1	
Perfluorooctanesulfonic acid	1.2J	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:52	1763-23-1	
Perfluorooctanoic acid	3.5	ng/L	2.0	0.88	1	12/30/22 09:11	01/06/23 12:52	335-67-1	
Perfluorotetradecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:52	376-06-7	
Perfluorotridecanoic acid	<0.63	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:52	72629-94-8	
Perfluoroundecanoic acid	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:52	2058-94-8	
Surrogates									
13C4-PFBA (S)	57	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C5-PFPeA (S)	90	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C3-PFBS (S)	83	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C24:2FTS (S)	146	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C3HFPO-DA (S)	57	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C4-PFHpA (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C3-PFHxS (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C26:2FTS (S)	126	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C8-PFOA (S)	79	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C8-PFOS (S)	439	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C9-PFNA (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C6-PFDA (S)	53	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C28:2FTS (S)	68	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
d3-MeFOSAA (S)	12	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C7-PFUDa (S)	31	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C8-PFOSA (S)	8	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
d5-EtFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C2-PFDoA (S)	26	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
d3-NMeFOSA (S)	3	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
d7-NMeFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C2-PFTA (S)	32	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
d9-NEtFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
d5-NEtFOSA (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C5-PFHxA (S)	90	%	25-150		1	12/30/22 09:11	01/06/23 12:52		

2540D Total Suspended Solids

Analytical Method: SM 2540D

Pace Analytical Services - Minneapolis

Total Suspended Solids	107	mg/L	10.0	5.0	1		12/16/22 12:08		
------------------------	-----	------	------	-----	---	--	----------------	--	--

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Effluent 20221213 Lab ID: 10637158007 Collected: 12/13/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:59	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:59	757124-72-4	
6:2 FTS	0.76J	ng/L	1.9	0.69	1	12/30/22 09:11	01/06/23 12:59	27619-97-2	
8:2 FTS	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:59	39108-34-4	
9CI-PF3ONS	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:59	756426-58-1	
ADONA	<0.93	ng/L	1.9	0.93	1	12/30/22 09:11	01/06/23 12:59	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:59	13252-13-6	
NEtFOSAA	<0.83	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:59	2991-50-6	
NEtFOSA	<0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:59	4151-50-2	
NEtFOSE	<0.90	ng/L	2.0	0.90	1	12/30/22 09:11	01/06/23 12:59	1691-99-2	
NMeFOSAA	0.82J	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 12:59	2355-31-9	
NMeFOSA	<0.56	ng/L	2.0	0.56	1	12/30/22 09:11	01/06/23 12:59	31506-32-8	
NMeFOSE	<0.53	ng/L	2.0	0.53	1	12/30/22 09:11	01/06/23 12:59	24448-09-7	
Perfluorobutanesulfonic acid	3.3	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:59	375-73-5	B
Perfluorodecanoic acid	0.85J	ng/L	2.0	0.62	1	12/30/22 09:11	01/06/23 12:59	335-76-2	
Perfluorohexanoic acid	16.7	ng/L	2.0	0.93	1	12/30/22 09:11	01/06/23 12:59	307-24-4	
PFBA	6.1	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:59	375-22-4	
PFDS	<0.65	ng/L	2.0	0.65	1	12/30/22 09:11	01/06/23 12:59	335-77-3	
PFDoS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:59	79780-39-5	
PFHpS	<0.68	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:59	375-92-8	
PFNS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:59	68259-12-1	
PFOSA	<0.73	ng/L	2.0	0.73	1	12/30/22 09:11	01/06/23 12:59	754-91-6	
PFPeA	12.9	ng/L	2.0	0.84	1	12/30/22 09:11	01/06/23 12:59	2706-90-3	
PFPeS	<0.61	ng/L	1.9	0.61	1	12/30/22 09:11	01/06/23 12:59	2706-91-4	
Perfluorododecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:59	307-55-1	
Perfluoroheptanoic acid	1.5J	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:59	375-85-9	
Perfluorohexanesulfonic acid	7.0	ng/L	1.9	0.54	1	12/30/22 09:11	01/06/23 12:59	355-46-4	
Perfluorononanoic acid	<0.81	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 12:59	375-95-1	
Perfluorooctanesulfonic acid	3.6	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:59	1763-23-1	
Perfluorooctanoic acid	6.5	ng/L	2.0	0.88	1	12/30/22 09:11	01/06/23 12:59	335-67-1	
Perfluorotetradecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:59	376-06-7	
Perfluorotridecanoic acid	<0.63	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:59	72629-94-8	
Perfluoroundecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:59	2058-94-8	
Surrogates									
13C4-PFBA (S)	65	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C5-PFPeA (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C3-PFBS (S)	81	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C24:2FTS (S)	86	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C3HFPO-DA (S)	68	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C4-PFHpA (S)	100	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C3-PFHxS (S)	89	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C26:2FTS (S)	109	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C8-PFOA (S)	92	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C8-PFOS (S)	91	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C9-PFNA (S)	104	%	25-150		1	12/30/22 09:11	01/06/23 12:59		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10637158

Sample: Effluent 20221213 **Lab ID: 10637158007** Collected: 12/13/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
Surrogates									
13C6-PFDA (S)	98	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C28:2FTS (S)	94	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d3-MeFOSAA (S)	87	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C7-PFUdA (S)	98	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C8-PFOA (S)	66	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d5-EtFOSAA (S)	87	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C2-PFDoA (S)	90	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d3-NMeFOSA (S)	47	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
d7-NMeFOSE (S)	65	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
13C2-PFTA (S)	65	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d9-NEtFOSE (S)	56	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
d5-NEtFOSA (S)	46	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
13C5-PFHxA (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 12:59		

2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	9.3J	mg/L	10.0	5.0	1		12/20/22 11:15		

Sample: Biosolids A20221214 **Lab ID: 10637158009** Collected: 12/14/22 07:20 Received: 12/15/22 08:50 Matrix: Solid
Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis									
Percent Moisture	69.2	%	0.10	0.10	1		12/20/22 14:36		N2
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.082	ug/kg	0.30	0.082	1	01/10/23 12:08	01/12/23 15:16	763051-92-9	
4:2 FTS	<0.075	ug/kg	0.30	0.075	1	01/10/23 12:08	01/12/23 15:16	757124-72-4	
6:2 FTS	2.1	ug/kg	0.31	0.13	1	01/10/23 12:08	01/12/23 15:16	27619-97-2	
8:2 FTS	1.2	ug/kg	0.31	0.14	1	01/10/23 12:08	01/12/23 15:16	39108-34-4	
9CI-PF3ONS	<0.081	ug/kg	0.30	0.081	1	01/10/23 12:08	01/12/23 15:16	756426-58-1	
ADONA	<0.12	ug/kg	0.31	0.12	1	01/10/23 12:08	01/12/23 15:16	919005-14-4	
HFPO-DA	<0.090	ug/kg	0.32	0.090	1	01/10/23 12:08	01/12/23 15:16	13252-13-6	
NEtFOSAA	9.0	ug/kg	0.32	0.13	1	01/10/23 12:08	01/12/23 15:16	2991-50-6	
NEtFOSA	0.18J	ug/kg	0.32	0.083	1	01/10/23 12:08	01/12/23 15:16	4151-50-2	
NEtFOSE	2.8	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	1691-99-2	
NMeFOSAA	29.8	ug/kg	0.32	0.091	1	01/10/23 12:08	01/12/23 15:16	2355-31-9	
NMeFOSA	0.13J	ug/kg	0.32	0.088	1	01/10/23 12:08	01/12/23 15:16	31506-32-8	
NMeFOSE	5.8	ug/kg	0.32	0.098	1	01/10/23 12:08	01/12/23 15:16	24448-09-7	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Biosolids A20221214 **Lab ID: 10637158009** Collected: 12/14/22 07:20 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
Perfluorobutanesulfonic acid	1.8	ug/kg	0.29	0.085	1	01/10/23 12:08	01/12/23 15:16	375-73-5	
Perfluorodecanoic acid	11.8	ug/kg	0.32	0.074	1	01/10/23 12:08	01/12/23 15:16	335-76-2	
Perfluorohexanoic acid	37.1	ug/kg	1.6	0.44	5	01/10/23 12:08	01/13/23 16:43	307-24-4	
PFBA	9.8	ug/kg	0.32	0.092	1	01/10/23 12:08	01/12/23 15:16	375-22-4	
PFDS	1.7	ug/kg	0.31	0.091	1	01/10/23 12:08	01/12/23 15:16	335-77-3	
PFDoS	<0.084	ug/kg	0.31	0.084	1	01/10/23 12:08	01/12/23 15:16	79780-39-5	
PFHpS	0.39	ug/kg	0.31	0.090	1	01/10/23 12:08	01/12/23 15:16	375-92-8	
PFNS	<0.11	ug/kg	0.31	0.11	1	01/10/23 12:08	01/12/23 15:16	68259-12-1	
PFOSA	1.6	ug/kg	0.32	0.095	1	01/10/23 12:08	01/12/23 15:16	754-91-6	
PFPeA	15.0	ug/kg	0.32	0.092	1	01/10/23 12:08	01/12/23 15:16	2706-90-3	
PFPeS	0.11J	ug/kg	0.30	0.078	1	01/10/23 12:08	01/12/23 15:16	2706-91-4	
Perfluorododecanoic acid	4.0	ug/kg	0.32	0.11	1	01/10/23 12:08	01/12/23 15:16	307-55-1	
Perfluoroheptanoic acid	2.9	ug/kg	0.32	0.11	1	01/10/23 12:08	01/12/23 15:16	375-85-9	
Perfluorohexanesulfonic acid	1.0	ug/kg	0.29	0.071	1	01/10/23 12:08	01/12/23 15:16	355-46-4	
Perfluorononanoic acid	1.4	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	375-95-1	
Perfluorooctanesulfonic acid	14.7	ug/kg	1.5	0.48	5	01/10/23 12:08	01/13/23 16:43	1763-23-1	
Perfluorooctanoic acid	25.8	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	335-67-1	
Perfluorotetradecanoic acid	1.1	ug/kg	0.32	0.11	1	01/10/23 12:08	01/12/23 15:16	376-06-7	
Perfluorotridecanoic acid	1.6	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	72629-94-8	
Perfluoroundecanoic acid	1.5	ug/kg	0.32	0.098	1	01/10/23 12:08	01/12/23 15:16	2058-94-8	
Surrogates									
13C2-PFDoA (S)	13	%	25-150		1	01/10/23 12:08	01/12/23 15:16		S0
13C2-PFTA (S)	27	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C24:2FTS (S)	151	%	25-150		1	01/10/23 12:08	01/12/23 15:16		S0
13C26:2FTS (S)	140	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C28:2FTS (S)	111	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C2PFHxDA (S)	14	%	25-150		1	01/10/23 12:08	01/12/23 15:16		S0
13C3-PFBS (S)	60	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C3-PFHxS (S)	54	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C3HFPO-DA (S)	51	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C4-PFBA (S)	55	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C4-PFHpA (S)	53	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C5-PFHxA (S)	85	%	25-150		5	01/10/23 12:08	01/13/23 16:43		
13C5-PFPeA (S)	57	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C6-PFDA (S)	42	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C7-PFUdA (S)	35	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C8-PFOA (S)	50	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C8-PFOS (S)	58	%	25-150		5	01/10/23 12:08	01/13/23 16:43		
13C8-PFOSA (S)	33	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C9-PFNA (S)	48	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
d3-MeFOSAA (S)	35	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
d3-NMeFOSA (S)	13	%	10-150		1	01/10/23 12:08	01/12/23 15:16		
d5-EtFOSAA (S)	29	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
d5-NEtFOSA (S)	11	%	10-150		1	01/10/23 12:08	01/12/23 15:16		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Biosolids A20221214 **Lab ID: 10637158009** Collected: 12/14/22 07:20 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
Surrogates									
d7-NMeFOSE (S)	25	%	10-150		1	01/10/23 12:08	01/12/23 15:16		
d9-NEtFOSE (S)	15	%	10-150		1	01/10/23 12:08	01/12/23 15:16		

Sample: Biosolids B20221214 **Lab ID: 10637158010** Collected: 12/14/22 07:45 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	93.6	%	0.10	0.10	1		12/22/22 14:01		N2
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.39	ug/kg	1.5	0.39	1	01/10/23 12:08	01/12/23 15:36	763051-92-9	
4:2 FTS	<0.36	ug/kg	1.5	0.36	1	01/10/23 12:08	01/12/23 15:36	757124-72-4	
6:2 FTS	<0.64	ug/kg	1.5	0.64	1	01/10/23 12:08	01/12/23 15:36	27619-97-2	
8:2 FTS	<0.68	ug/kg	1.5	0.68	1	01/10/23 12:08	01/12/23 15:36	39108-34-4	
9CI-PF3ONS	<0.39	ug/kg	1.4	0.39	1	01/10/23 12:08	01/12/23 15:36	756426-58-1	
ADONA	<0.56	ug/kg	1.5	0.56	1	01/10/23 12:08	01/12/23 15:36	919005-14-4	
HFPO-DA	<0.43	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	13252-13-6	
NEtFOSAA	4.9	ug/kg	1.5	0.62	1	01/10/23 12:08	01/12/23 15:36	2991-50-6	
NEtFOSA	<0.40	ug/kg	1.5	0.40	1	01/10/23 12:08	01/12/23 15:36	4151-50-2	
NEtFOSE	1.3J	ug/kg	1.5	0.50	1	01/10/23 12:08	01/12/23 15:36	1691-99-2	
NMeFOSAA	8.6	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	2355-31-9	
NMeFOSA	<0.42	ug/kg	1.5	0.42	1	01/10/23 12:08	01/12/23 15:36	31506-32-8	
NMeFOSE	4.5	ug/kg	1.5	0.47	1	01/10/23 12:08	01/12/23 15:36	24448-09-7	
Perfluorobutanesulfonic acid	1.2J	ug/kg	1.4	0.41	1	01/10/23 12:08	01/12/23 15:36	375-73-5	
Perfluorodecanoic acid	2.8	ug/kg	1.5	0.35	1	01/10/23 12:08	01/12/23 15:36	335-76-2	
Perfluorohexanoic acid	1.3J	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	307-24-4	
PFBA	<0.44	ug/kg	1.5	0.44	1	01/10/23 12:08	01/12/23 15:36	375-22-4	
PFDS	0.70J	ug/kg	1.5	0.44	1	01/10/23 12:08	01/12/23 15:36	335-77-3	
PFDoS	<0.40	ug/kg	1.5	0.40	1	01/10/23 12:08	01/12/23 15:36	79780-39-5	
PFHpS	<0.43	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	375-92-8	
PFNS	<0.54	ug/kg	1.5	0.54	1	01/10/23 12:08	01/12/23 15:36	68259-12-1	
PFOSA	<0.45	ug/kg	1.5	0.45	1	01/10/23 12:08	01/12/23 15:36	754-91-6	
PFPeA	<0.44	ug/kg	1.5	0.44	1	01/10/23 12:08	01/12/23 15:36	2706-90-3	
PFPeS	<0.37	ug/kg	1.5	0.37	1	01/10/23 12:08	01/12/23 15:36	2706-91-4	
Perfluorododecanoic acid	1.8	ug/kg	1.5	0.51	1	01/10/23 12:08	01/12/23 15:36	307-55-1	
Perfluoroheptanoic acid	<0.54	ug/kg	1.5	0.54	1	01/10/23 12:08	01/12/23 15:36	375-85-9	
Perfluorohexanesulfonic acid	0.52J	ug/kg	1.4	0.34	1	01/10/23 12:08	01/12/23 15:36	355-46-4	
Perfluorononanoic acid	<0.48	ug/kg	1.5	0.48	1	01/10/23 12:08	01/12/23 15:36	375-95-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Biosolids B20221214 **Lab ID: 10637158010** Collected: 12/14/22 07:45 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
Perfluorooctanesulfonic acid	8.5	ug/kg	1.4	0.46	1	01/10/23 12:08	01/12/23 15:36	1763-23-1	
Perfluorooctanoic acid	1.2J	ug/kg	1.5	0.48	1	01/10/23 12:08	01/12/23 15:36	335-67-1	
Perfluorotetradecanoic acid	0.56J	ug/kg	1.5	0.53	1	01/10/23 12:08	01/12/23 15:36	376-06-7	
Perfluorotridecanoic acid	<0.49	ug/kg	1.5	0.49	1	01/10/23 12:08	01/12/23 15:36	72629-94-8	
Perfluoroundecanoic acid	0.81J	ug/kg	1.5	0.47	1	01/10/23 12:08	01/12/23 15:36	2058-94-8	
Surrogates									
13C2-PFDoA (S)	32	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C2-PFTA (S)	29	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C24:2FTS (S)	161	%	25-150		1	01/10/23 12:08	01/12/23 15:36		S0
13C26:2FTS (S)	138	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C28:2FTS (S)	114	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C2PFHxDA (S)	21	%	25-150		1	01/10/23 12:08	01/12/23 15:36		S0
13C3-PFBS (S)	70	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C3-PFHxS (S)	67	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C3HFPO-DA (S)	62	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C4-PFBA (S)	47	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C4-PFHpA (S)	61	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C5-PFHxA (S)	68	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C5-PFPeA (S)	48	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C6-PFDA (S)	38	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C7-PFUdA (S)	30	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C8-PFOA (S)	60	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C8-PFOS (S)	32	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C8-PFOA (S)	33	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C9-PFNA (S)	60	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
d3-MeFOSAA (S)	27	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
d3-NMeFOSA (S)	9	%	10-150		1	01/10/23 12:08	01/12/23 15:36		S0
d5-EtFOSAA (S)	33	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
d5-NEtFOSA (S)	6	%	10-150		1	01/10/23 12:08	01/12/23 15:36		S0
d7-NMeFOSE (S)	25	%	10-150		1	01/10/23 12:08	01/12/23 15:36		
d9-NEtFOSE (S)	23	%	10-150		1	01/10/23 12:08	01/12/23 15:36		

Sample: EB01 202221214 **Lab ID: 10637158011** Collected: 12/14/22 07:30 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.55	ng/L	1.9	0.55	1	12/30/22 09:11	01/06/23 13:13	763051-92-9	
4:2 FTS	<0.46	ng/L	1.8	0.46	1	12/30/22 09:11	01/06/23 13:13	757124-72-4	
6:2 FTS	<0.66	ng/L	1.9	0.66	1	12/30/22 09:11	01/06/23 13:13	27619-97-2	
8:2 FTS	<0.50	ng/L	1.9	0.50	1	12/30/22 09:11	01/06/23 13:13	39108-34-4	
9CI-PF3ONS	<0.46	ng/L	1.8	0.46	1	12/30/22 09:11	01/06/23 13:13	756426-58-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: **EB01 202221214** Lab ID: **10637158011** Collected: 12/14/22 07:30 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
ADONA	<0.90	ng/L	1.9	0.90	1	12/30/22 09:11	01/06/23 13:13	919005-14-4	
HFPO-DA	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 13:13	13252-13-6	
NEtFOSAA	4.1	ng/L	2.0	0.80	1	12/30/22 09:11	01/06/23 13:13	2991-50-6	
NEtFOSA	<0.57	ng/L	2.0	0.57	1	12/30/22 09:11	01/06/23 13:13	4151-50-2	
NEtFOSE	<0.88	ng/L	2.0	0.88	1	12/30/22 09:11	01/06/23 13:13	1691-99-2	
NMeFOSAA	<0.68	ng/L	2.0	0.68	1	12/30/22 09:11	01/06/23 13:13	2355-31-9	
NMeFOSA	<0.54	ng/L	2.0	0.54	1	12/30/22 09:11	01/06/23 13:13	31506-32-8	
NMeFOSE	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 13:13	24448-09-7	
Perfluorobutanesulfonic acid	<0.48	ng/L	1.7	0.48	1	12/30/22 09:11	01/06/23 13:13	375-73-5	
Perfluorodecanoic acid	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 13:13	335-76-2	
Perfluorohexanoic acid	<0.90	ng/L	2.0	0.90	1	12/30/22 09:11	01/06/23 13:13	307-24-4	
PFBA	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 13:13	375-22-4	
PFDS	<0.63	ng/L	1.9	0.63	1	12/30/22 09:11	01/06/23 13:13	335-77-3	
PFDoS	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 13:13	79780-39-5	
PFHpS	<0.66	ng/L	1.9	0.66	1	12/30/22 09:11	01/06/23 13:13	375-92-8	
PFNS	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 13:13	68259-12-1	
PFOSA	<0.71	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 13:13	754-91-6	
PFPeA	<0.81	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 13:13	2706-90-3	
PFPeS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 13:13	2706-91-4	
Perfluorododecanoic acid	<0.47	ng/L	2.0	0.47	1	12/30/22 09:11	01/06/23 13:13	307-55-1	
Perfluoroheptanoic acid	<0.68	ng/L	2.0	0.68	1	12/30/22 09:11	01/06/23 13:13	375-85-9	
Perfluorohexanesulfonic acid	<0.52	ng/L	1.8	0.52	1	12/30/22 09:11	01/06/23 13:13	355-46-4	
Perfluorononanoic acid	<0.78	ng/L	2.0	0.78	1	12/30/22 09:11	01/06/23 13:13	375-95-1	
Perfluorooctanesulfonic acid	<0.66	ng/L	1.8	0.66	1	12/30/22 09:11	01/06/23 13:13	1763-23-1	
Perfluorooctanoic acid	<0.85	ng/L	2.0	0.85	1	12/30/22 09:11	01/06/23 13:13	335-67-1	
Perfluorotetradecanoic acid	<0.59	ng/L	2.0	0.59	1	12/30/22 09:11	01/06/23 13:13	376-06-7	
Perfluorotridecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 13:13	72629-94-8	
Perfluoroundecanoic acid	<0.48	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 13:13	2058-94-8	
Surrogates									
13C4-PFBA (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C5-PFPeA (S)	89	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C3-PFBS (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C24:2FTS (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C3HFPO-DA (S)	83	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C4-PFHpA (S)	96	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C3-PFHxS (S)	92	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C26:2FTS (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C8-PFOA (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C8-PFOS (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C9-PFNA (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C6-PFDA (S)	96	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C28:2FTS (S)	69	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
d3-MeFOSAA (S)	71	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C7-PFUdA (S)	92	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C8-PFOSA (S)	70	%	25-150		1	12/30/22 09:11	01/06/23 13:13		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: EB01 202221214 **Lab ID: 10637158011** Collected: 12/14/22 07:30 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

d5-EtFOSAA (S)	75	%.	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C2-PFD _o A (S)	98	%.	25-150		1	12/30/22 09:11	01/06/23 13:13		
d3-NMeFOSA (S)	62	%.	10-150		1	12/30/22 09:11	01/06/23 13:13		
d7-NMeFOSE (S)	61	%.	10-150		1	12/30/22 09:11	01/06/23 13:13		
13C2-PFTA (S)	96	%.	25-150		1	12/30/22 09:11	01/06/23 13:13		
d9-NEtFOSE (S)	64	%.	10-150		1	12/30/22 09:11	01/06/23 13:13		
d5-NEtFOSA (S)	58	%.	10-150		1	12/30/22 09:11	01/06/23 13:13		
13C5-PFH _x A (S)	96	%.	25-150		1	12/30/22 09:11	01/06/23 13:13		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

QC Batch: 859361

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10637158009

SAMPLE DUPLICATE: 4541301

Parameter	Units	10637002076 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.3	10.0	2	30	N2

SAMPLE DUPLICATE: 4541302

Parameter	Units	10637002086 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.0	9.9	1	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

QC Batch: 859891

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10637158010

SAMPLE DUPLICATE: 4543907

Parameter	Units	40256029005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	33.8	37.2	9	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

QC Batch: 860677

Analysis Method: ENV-SOP-MIN4-0178

QC Batch Method: ENV-SOP-MIN4-0178

Analysis Description: WI ID NPW

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10637158001, 10637158002, 10637158003, 10637158004, 10637158005, 10637158006, 10637158007, 10637158011

METHOD BLANK: 4547124

Matrix: Water

Associated Lab Samples: 10637158001, 10637158002, 10637158003, 10637158004, 10637158005, 10637158006, 10637158007, 10637158011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11Cl-PF3OUdS	ng/L	<0.54	1.8	01/06/23 11:33	
4:2 FTS	ng/L	<0.45	1.8	01/06/23 11:33	
6:2 FTS	ng/L	<0.66	1.9	01/06/23 11:33	
8:2 FTS	ng/L	<0.49	1.9	01/06/23 11:33	
9Cl-PF3ONS	ng/L	<0.46	1.8	01/06/23 11:33	
ADONA	ng/L	<0.89	1.8	01/06/23 11:33	
HFPO-DA	ng/L	<0.48	1.9	01/06/23 11:33	
NEtFOSA	ng/L	<0.56	1.9	01/06/23 11:33	
NEtFOSAA	ng/L	<0.79	1.9	01/06/23 11:33	
NEtFOSE	ng/L	<0.87	1.9	01/06/23 11:33	
NMeFOSA	ng/L	<0.54	1.9	01/06/23 11:33	
NMeFOSAA	ng/L	<0.68	1.9	01/06/23 11:33	
NMeFOSE	ng/L	<0.51	1.9	01/06/23 11:33	
Perfluorobutanesulfonic acid	ng/L	0.62J	1.7	01/06/23 11:33	
Perfluorodecanoic acid	ng/L	<0.59	1.9	01/06/23 11:33	
Perfluorododecanoic acid	ng/L	<0.47	1.9	01/06/23 11:33	
Perfluoroheptanoic acid	ng/L	<0.67	1.9	01/06/23 11:33	
Perfluorohexanesulfonic acid	ng/L	<0.52	1.8	01/06/23 11:33	
Perfluorohexanoic acid	ng/L	<0.89	1.9	01/06/23 11:33	
Perfluorononanoic acid	ng/L	<0.77	1.9	01/06/23 11:33	
Perfluorooctanesulfonic acid	ng/L	<0.65	1.8	01/06/23 11:33	
Perfluorooctanoic acid	ng/L	<0.84	1.9	01/06/23 11:33	
Perfluorotetradecanoic acid	ng/L	<0.58	1.9	01/06/23 11:33	
Perfluorotridecanoic acid	ng/L	<0.61	1.9	01/06/23 11:33	
Perfluoroundecanoic acid	ng/L	<0.47	1.9	01/06/23 11:33	
PFBA	ng/L	<0.49	1.9	01/06/23 11:33	
PFDoS	ng/L	<0.58	1.9	01/06/23 11:33	
PFDS	ng/L	<0.62	1.9	01/06/23 11:33	
PFHpS	ng/L	<0.65	1.9	01/06/23 11:33	
PFNS	ng/L	<0.57	1.9	01/06/23 11:33	
PFOSA	ng/L	<0.70	1.9	01/06/23 11:33	
PFPeA	ng/L	<0.80	1.9	01/06/23 11:33	
PFPeS	ng/L	<0.59	1.8	01/06/23 11:33	
13C2-PFDoA (S)	%	88	25-150	01/06/23 11:33	
13C2-PFTA (S)	%	80	25-150	01/06/23 11:33	
13C24:2FTS (S)	%	85	25-150	01/06/23 11:33	
13C26:2FTS (S)	%	101	25-150	01/06/23 11:33	
13C28:2FTS (S)	%	98	25-150	01/06/23 11:33	
13C3-PFBS (S)	%	95	25-150	01/06/23 11:33	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10637158

METHOD BLANK: 4547124

Matrix: Water

Associated Lab Samples: 10637158001, 10637158002, 10637158003, 10637158004, 10637158005, 10637158006, 10637158007, 10637158011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C3-PFHxS (S)	%	98	25-150	01/06/23 11:33	
13C3HFPO-DA (S)	%	83	25-150	01/06/23 11:33	
13C4-PFBA (S)	%	89	25-150	01/06/23 11:33	
13C4-PFHxA (S)	%	100	25-150	01/06/23 11:33	
13C5-PFHxA (S)	%	99	25-150	01/06/23 11:33	
13C5-PFPeA (S)	%	92	25-150	01/06/23 11:33	
13C6-PFDA (S)	%	91	25-150	01/06/23 11:33	
13C7-PFUdA (S)	%	86	25-150	01/06/23 11:33	
13C8-PFOA (S)	%	104	25-150	01/06/23 11:33	
13C8-PFOS (S)	%	93	25-150	01/06/23 11:33	
13C8-PFOSA (S)	%	70	25-150	01/06/23 11:33	
13C9-PFNA (S)	%	97	25-150	01/06/23 11:33	
d3-MeFOSAA (S)	%	72	25-150	01/06/23 11:33	
d3-NMeFOSA (S)	%	53	20-150	01/06/23 11:33	
d5-EtFOSAA (S)	%	66	25-150	01/06/23 11:33	
d5-NEtFOSA (S)	%	55	20-150	01/06/23 11:33	
d7-NMeFOSE (S)	%	66	20-150	01/06/23 11:33	
d9-NEtFOSE (S)	%	62	20-150	01/06/23 11:33	

LABORATORY CONTROL SAMPLE & LCSD: 4547125

4547126

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
11Cl-PF3OUdS	ng/L	3.9	2.8	2.8	72	76	50-150	1	30	
4:2 FTS	ng/L	3.9	3.6	3.4	92	94	50-150	5	30	
6:2 FTS	ng/L	3.9	3.5	3.2	89	88	50-150	8	30	
8:2 FTS	ng/L	4	3.1	3.5	77	95	50-150	14	30	
9Cl-PF3ONS	ng/L	3.9	3.4	2.9	87	79	50-150	17	30	
ADONA	ng/L	3.9	3.2	3.0	82	81	50-150	8	30	
HFPO-DA	ng/L	4.1	3.6	3.5	86	90	50-150	2	30	
NEtFOSA	ng/L	4.1	3.8	3.2	91	82	50-150	16	30	
NEtFOSAA	ng/L	4.1	3.5	3.6	84	92	50-150	3	30	
NEtFOSE	ng/L	4.1	3.8	3.4	92	87	50-150	13	30	
NMeFOSA	ng/L	4.1	3.6	3.0	87	78	50-150	17	30	
NMeFOSAA	ng/L	4.1	3.3	3.1	81	79	50-150	9	30	
NMeFOSE	ng/L	4.1	3.6	3.4	86	87	50-150	6	30	
Perfluorobutanesulfonic acid	ng/L	3.7	4.2	3.9	115	113	50-150	8	30	
Perfluorodecanoic acid	ng/L	4.1	3.4	3.6	83	94	50-150	5	30	
Perfluorododecanoic acid	ng/L	4.1	3.9	4.2	95	109	50-150	7	30	
Perfluoroheptanoic acid	ng/L	4.1	3.5	3.3	84	85	50-150	6	30	
Perfluorohexanesulfonic acid	ng/L	3.8	3.5	3.4	92	96	50-150	2	30	
Perfluorohexanoic acid	ng/L	4.1	3.6	3.4	87	87	50-150	7	30	
Perfluorononanoic acid	ng/L	4.1	3.5	3.7	84	96	50-150	6	30	
Perfluorooctanesulfonic acid	ng/L	3.9	3.9	3.1	100	87	50-150	21	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10637158

LABORATORY CONTROL SAMPLE & LCSD: 4547125		4547126								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Perfluorooctanoic acid	ng/L	4.1	4.0	3.5	96	91	50-150	12	30	
Perfluorotetradecanoic acid	ng/L	4.1	3.7	3.5	88	90	50-150	5	30	
Perfluorotridecanoic acid	ng/L	4.1	3.5	3.4	85	87	50-150	4	30	
Perfluoroundecanoic acid	ng/L	4.1	3.9	3.8	93	98	50-150	2	30	
PFBA	ng/L	4.1	3.7	3.5	90	90	50-150	7	30	
PFDoS	ng/L	4	3.3	2.8	81	75	50-150	14	30	
PFDS	ng/L	4	3.1	3.1	78	82	50-150	2	30	
PFHpS	ng/L	4	3.6	3.4	90	91	50-150	6	30	
PFNS	ng/L	4	4.0	3.1	100	83	50-150	25	30	
PFOSA	ng/L	4.1	3.8	3.4	91	88	50-150	9	30	
PFPeA	ng/L	4.1	3.6	3.4	87	89	50-150	5	30	
PFPeS	ng/L	3.9	3.8	3.6	98	99	50-150	6	30	
13C2-PFDoA (S)	%				94	87	25-150			
13C2-PFTA (S)	%				87	83	25-150			
13C24:2FTS (S)	%				91	88	25-150			
13C26:2FTS (S)	%				103	97	25-150			
13C28:2FTS (S)	%				111	101	25-150			
13C2PFHxDA (S)	%				81	78	25-150			
13C3-PFBS (S)	%				99	94	25-150			
13C3-PFHxS (S)	%				103	96	25-150			
13C3HFPO-DA (S)	%				84	82	25-150			
13C4-PFBA (S)	%				94	90	25-150			
13C4-PFHpA (S)	%				103	99	25-150			
13C5-PFHxA (S)	%				103	99	25-150			
13C5-PFPeA (S)	%				96	92	25-150			
13C6-PFDA (S)	%				101	98	25-150			
13C7-PFUDa (S)	%				98	86	25-150			
13C8-PFOA (S)	%				109	105	25-150			
13C8-PFOS (S)	%				102	100	25-150			
13C8-PFOSA (S)	%				78	76	25-150			
13C9-PFNA (S)	%				107	96	25-150			
d3-MeFOSAA (S)	%				78	76	25-150			
d3-NMeFOSA (S)	%				69	65	20-150			
d5-EtFOSAA (S)	%				75	72	25-150			
d5-NEtFOSA (S)	%				70	62	20-150			
d7-NMeFOSE (S)	%				75	68	20-150			
d9-NEtFOSE (S)	%				67	66	20-150			

MATRIX SPIKE SAMPLE: 4547280		10637158007		MS		MS		% Rec		Qualifiers
Parameter	Units	Result	Spike Conc.	Result	% Rec	Limit	Limit	Limit	Limit	Qualifiers
11CI-PF3OUdS	ng/L	<0.57	3.9	2.7	69	50-150				
4:2 FTS	ng/L	<0.47	3.9	3.7	94	50-150				
6:2 FTS	ng/L	0.76J	4	4.7	99	50-150				
8:2 FTS	ng/L	<0.51	4	3.7	93	50-150				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10637158

MATRIX SPIKE SAMPLE: 4547280		10637158007	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
9CI-PF3ONS	ng/L	<0.48	3.9	3.4	88	50-150	
ADONA	ng/L	<0.93	3.9	3.6	91	50-150	
HFPO-DA	ng/L	<0.50	4.2	3.7	90	50-150	
NEtFOSA	ng/L	<0.58	4.2	3.2	77	50-150	
NEtFOSAA	ng/L	<0.83	4.2	3.7	79	50-150	
NEtFOSE	ng/L	<0.90	4.2	3.2	78	50-150	
NMeFOSA	ng/L	<0.56	4.2	3.2	76	50-150	
NMeFOSAA	ng/L	0.82J	4.2	4.5	89	50-150	
NMeFOSE	ng/L	<0.53	4.2	3.4	82	50-150	
Perfluorobutanesulfonic acid	ng/L	3.3	3.7	5.3	54	50-150	
Perfluorodecanoic acid	ng/L	0.85J	4.2	4.9	97	50-150	
Perfluorododecanoic acid	ng/L	<0.49	4.2	3.8	92	50-150	
Perfluoroheptanoic acid	ng/L	1.5J	4.2	5.6	98	50-150	
Perfluorohexanesulfonic acid	ng/L	7.0	3.8	10.1	80	50-150	
Perfluorohexanoic acid	ng/L	16.7	4.2	20.2	85	50-150	
Perfluorononanoic acid	ng/L	<0.81	4.2	4.0	84	50-150	
Perfluorooctanesulfonic acid	ng/L	3.6	3.9	6.5	74	50-150	
Perfluorooctanoic acid	ng/L	6.5	4.2	10.1	86	50-150	
Perfluorotetradecanoic acid	ng/L	<0.61	4.2	3.4	83	50-150	
Perfluorotridecanoic acid	ng/L	<0.63	4.2	2.9	70	50-150	
Perfluoroundecanoic acid	ng/L	<0.49	4.2	3.9	93	50-150	
PFBA	ng/L	6.1	4.2	8.5	57	50-150	
PFDoS	ng/L	<0.60	4	2.1	51	50-150	
PFDS	ng/L	<0.65	4	3.5	88	50-150	
PFHpS	ng/L	<0.68	4	3.1	78	50-150	
PFNS	ng/L	<0.60	4	3.4	85	50-150	
PFOSA	ng/L	<0.73	4.2	3.9	95	50-150	
PFPeA	ng/L	12.9	4.2	16.6	89	50-150	
PFPeS	ng/L	<0.61	3.9	4.3	110	50-150	
13C2-PFDoA (S)	%				93	25-150	
13C2-PFTA (S)	%				64	25-150	
13C24:2FTS (S)	%				76	25-150	
13C26:2FTS (S)	%				100	25-150	
13C28:2FTS (S)	%				81	25-150	
13C2PFHxDA (S)	%				43	25-150	
13C3-PFBS (S)	%				83	25-150	
13C3-PFHxS (S)	%				94	25-150	
13C3HFPO-DA (S)	%				72	25-150	
13C4-PFBA (S)	%				67	25-150	
13C4-PFHpA (S)	%				100	25-150	
13C5-PFHxA (S)	%				98	25-150	
13C5-PFPeA (S)	%				87	25-150	
13C6-PFDA (S)	%				101	25-150	
13C7-PFUdA (S)	%				92	25-150	
13C8-PFOA (S)	%				89	25-150	
13C8-PFOS (S)	%				102	25-150	
13C8-PFOSA (S)	%				66	25-150	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10637158

MATRIX SPIKE SAMPLE: 4547280		10637158007	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
13C9-PFNA (S)	%				102	25-150	
d3-MeFOSAA (S)	%				80	25-150	
d3-NMeFOSA (S)	%				33	10-150	
d5-EtFOSAA (S)	%				83	25-150	
d5-NEtFOSA (S)	%				25	10-150	
d7-NMeFOSE (S)	%				50	10-150	
d9-NEtFOSE (S)	%				52	10-150	

SAMPLE DUPLICATE: 4547279

Parameter	Units	10637158005	Dup	RPD	Max	Qualifiers
		Result	Result		RPD	
11CI-PF3OUdS	ng/L	<0.56	<0.59		30	
4:2 FTS	ng/L	<0.47	<0.49		30	
6:2 FTS	ng/L	2.0	1.9J		30	
8:2 FTS	ng/L	<0.51	<0.53		30	
9CI-PF3ONS	ng/L	<0.47	<0.50		30	
ADONA	ng/L	2.3	2.4	5	30	
HFPO-DA	ng/L	<0.50	<0.52		30	
NEtFOSA	ng/L	<0.58	<0.61		30	
NEtFOSAA	ng/L	0.91J	0.90J		30	
NEtFOSE	ng/L	<0.89	<0.94		30	
NMeFOSA	ng/L	<0.55	<0.59		30	
NMeFOSAA	ng/L	<0.70	<0.74		30	
NMeFOSE	ng/L	<0.52	<0.55		30	
Perfluorobutanesulfonic acid	ng/L	3.2	3.6	9	30	
Perfluorodecanoic acid	ng/L	<0.61	<0.65		30	
Perfluorododecanoic acid	ng/L	<0.48	<0.51		30	
Perfluoroheptanoic acid	ng/L	1.7J	1.8J		30	
Perfluorohexanesulfonic acid	ng/L	13.9	14.5	4	30	
Perfluorohexanoic acid	ng/L	8.5	9.5	12	30	
Perfluorononanoic acid	ng/L	<0.80	<0.84		30	
Perfluorooctanesulfonic acid	ng/L	5.1	4.4	15	30	
Perfluorooctanoic acid	ng/L	6.3	6.1	3	30	
Perfluorotetradecanoic acid	ng/L	<0.60	<0.64		30	
Perfluorotridecanoic acid	ng/L	<0.63	<0.66		30	
Perfluoroundecanoic acid	ng/L	<0.49	<0.52		30	
PFBA	ng/L	8.5	14.7	53	30	D6
PFDoS	ng/L	<0.59	<0.63		30	
PFDS	ng/L	<0.64	3.9		30	
PFHpS	ng/L	<0.67	<0.71		30	
PFNS	ng/L	<0.59	<0.62		30	
PFOSA	ng/L	<0.72	<0.76		30	
PFPeA	ng/L	109	92.2	16	30	
PFPeS	ng/L	1.2J	1.2J		30	
13C2-PFDoA (S)	%	23	27			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

SAMPLE DUPLICATE: 4547279

Parameter	Units	10637158005 Result	Dup Result	RPD	Max RPD	Qualifiers
13C2-PFTA (S)	%.	28	24			S0
13C24:2FTS (S)	%.	130	119			
13C26:2FTS (S)	%.	151	156			S0
13C28:2FTS (S)	%.	84	87			
13C2PFHxDA (S)	%.		20			S0
13C3-PFBS (S)	%.	74	72			
13C3-PFHxS (S)	%.	82	74			
13C3HFPO-DA (S)	%.	53	52			
13C4-PFBA (S)	%.	43	54			
13C4-PFHpA (S)	%.	82	80			
13C5-PFHxA (S)	%.	86	82			
13C5-PFPeA (S)	%.	82	80			
13C6-PFDA (S)	%.	54	55			
13C7-PFUdA (S)	%.	35	39			
13C8-PFOA (S)	%.	75	75			
13C8-PFOS (S)	%.	94	100			
13C8-PFOSA (S)	%.	6	8			S0
13C9-PFNA (S)	%.	67	69			
d3-MeFOSAA (S)	%.	11	15			S0
d3-NMeFOSA (S)	%.	3	7			S0
d5-EtFOSAA (S)	%.	11	14			S0
d5-NEtFOSA (S)	%.	2	2			S0
d7-NMeFOSE (S)	%.	2	5			S0
d9-NEtFOSE (S)	%.	1	1			S0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

QC Batch: 861904

Analysis Method: ENV-SOP-MIN4-0178

QC Batch Method: ENV-SOP-MIN4-0178

Analysis Description: WI ID SL

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10637158009, 10637158010

METHOD BLANK: 4552850

Matrix: Solid

Associated Lab Samples: 10637158009, 10637158010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11CI-PF3OUdS	ug/kg	<0.025	0.094	01/12/23 12:56	
4:2 FTS	ug/kg	<0.023	0.094	01/12/23 12:56	
6:2 FTS	ug/kg	<0.041	0.095	01/12/23 12:56	
8:2 FTS	ug/kg	<0.044	0.097	01/12/23 12:56	
9CI-PF3ONS	ug/kg	<0.025	0.093	01/12/23 12:56	
ADONA	ug/kg	<0.036	0.095	01/12/23 12:56	
HFPO-DA	ug/kg	<0.028	0.10	01/12/23 12:56	
NEtFOSA	ug/kg	<0.026	0.10	01/12/23 12:56	
NEtFOSAA	ug/kg	<0.040	0.10	01/12/23 12:56	
NEtFOSE	ug/kg	<0.032	0.10	01/12/23 12:56	
NMeFOSA	ug/kg	<0.027	0.10	01/12/23 12:56	
NMeFOSAA	ug/kg	<0.028	0.10	01/12/23 12:56	
NMeFOSE	ug/kg	<0.030	0.10	01/12/23 12:56	
Perfluorobutanesulfonic acid	ug/kg	<0.026	0.089	01/12/23 12:56	
Perfluorodecanoic acid	ug/kg	<0.023	0.10	01/12/23 12:56	
Perfluorododecanoic acid	ug/kg	<0.033	0.10	01/12/23 12:56	
Perfluoroheptanoic acid	ug/kg	<0.035	0.10	01/12/23 12:56	
Perfluorohexanesulfonic acid	ug/kg	<0.022	0.091	01/12/23 12:56	
Perfluorohexanoic acid	ug/kg	<0.027	0.10	01/12/23 12:56	
Perfluorononanoic acid	ug/kg	<0.031	0.10	01/12/23 12:56	
Perfluorooctanesulfonic acid	ug/kg	<0.030	0.093	01/12/23 12:56	
Perfluorooctanoic acid	ug/kg	<0.031	0.10	01/12/23 12:56	
Perfluorotetradecanoic acid	ug/kg	<0.034	0.10	01/12/23 12:56	
Perfluorotridecanoic acid	ug/kg	<0.032	0.10	01/12/23 12:56	
Perfluoroundecanoic acid	ug/kg	<0.030	0.10	01/12/23 12:56	
PFBA	ug/kg	<0.028	0.10	01/12/23 12:56	
PFDoS	ug/kg	<0.026	0.097	01/12/23 12:56	
PFDS	ug/kg	<0.028	0.097	01/12/23 12:56	
PFHpS	ug/kg	<0.028	0.095	01/12/23 12:56	
PFNS	ug/kg	<0.035	0.096	01/12/23 12:56	
PFOSA	ug/kg	<0.029	0.10	01/12/23 12:56	
PFPeA	ug/kg	<0.028	0.10	01/12/23 12:56	
PFPeS	ug/kg	<0.024	0.094	01/12/23 12:56	
13C2-PFDoA (S)	%	98	25-150	01/12/23 12:56	
13C2-PFTA (S)	%	99	25-150	01/12/23 12:56	
13C24:2FTS (S)	%	97	25-150	01/12/23 12:56	
13C26:2FTS (S)	%	95	25-150	01/12/23 12:56	
13C28:2FTS (S)	%	85	25-150	01/12/23 12:56	
13C2PFHxDA (S)	%	90	25-150	01/12/23 12:56	
13C3-PFBS (S)	%	96	25-150	01/12/23 12:56	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10637158

METHOD BLANK: 4552850 Matrix: Solid

Associated Lab Samples: 10637158009, 10637158010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C3-PFHxS (S)	%	98	25-150	01/12/23 12:56	
13C3HFPO-DA (S)	%	97	25-150	01/12/23 12:56	
13C4-PFBA (S)	%	94	25-150	01/12/23 12:56	
13C4-PFHpA (S)	%	93	25-150	01/12/23 12:56	
13C5-PFHxA (S)	%	97	25-150	01/12/23 12:56	
13C5-PFPeA (S)	%	94	25-150	01/12/23 12:56	
13C6-PFDA (S)	%	101	25-150	01/12/23 12:56	
13C7-PFUdA (S)	%	100	25-150	01/12/23 12:56	
13C8-PFOA (S)	%	95	25-150	01/12/23 12:56	
13C8-PFOS (S)	%	106	25-150	01/12/23 12:56	
13C8-PFOSA (S)	%	92	25-150	01/12/23 12:56	
13C9-PFNA (S)	%	97	25-150	01/12/23 12:56	
d3-MeFOSAA (S)	%	101	25-150	01/12/23 12:56	
d3-NMeFOSA (S)	%	83	20-150	01/12/23 12:56	
d5-EtFOSAA (S)	%	91	25-150	01/12/23 12:56	
d5-NEtFOSA (S)	%	91	20-150	01/12/23 12:56	
d7-NMeFOSE (S)	%	84	20-150	01/12/23 12:56	
d9-NEtFOSE (S)	%	84	20-150	01/12/23 12:56	

LABORATORY CONTROL SAMPLE: 4552851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11CI-PF3OUdS	ug/kg	0.19	0.18	95	50-150	
4:2 FTS	ug/kg	0.19	0.19	100	50-150	
6:2 FTS	ug/kg	0.19	0.17	90	50-150	
8:2 FTS	ug/kg	0.19	0.16	83	50-150	
9CI-PF3ONS	ug/kg	0.19	0.16	87	50-150	
ADONA	ug/kg	0.19	0.18	98	50-150	
HFPO-DA	ug/kg	0.2	0.19	97	50-150	
NEtFOSA	ug/kg	0.2	0.18	89	50-150	
NEtFOSAA	ug/kg	0.2	0.19	96	50-150	
NEtFOSE	ug/kg	0.2	0.18	88	50-150	
NMeFOSA	ug/kg	0.2	0.17	83	50-150	
NMeFOSAA	ug/kg	0.2	0.20	101	50-150	
NMeFOSE	ug/kg	0.2	0.19	96	50-150	
Perfluorobutanesulfonic acid	ug/kg	0.18	0.17	94	50-150	
Perfluorodecanoic acid	ug/kg	0.2	0.17	86	50-150	
Perfluorododecanoic acid	ug/kg	0.2	0.19	93	50-150	
Perfluoroheptanoic acid	ug/kg	0.2	0.21	105	50-150	
Perfluorohexanesulfonic acid	ug/kg	0.18	0.16	90	50-150	
Perfluorohexanoic acid	ug/kg	0.2	0.19	94	50-150	
Perfluorononanoic acid	ug/kg	0.2	0.18	89	50-150	
Perfluorooctanesulfonic acid	ug/kg	0.19	0.15	82	50-150	
Perfluorooctanoic acid	ug/kg	0.2	0.20	100	50-150	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS
Pace Project No.: 10637158

LABORATORY CONTROL SAMPLE: 4552851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Perfluorotetradecanoic acid	ug/kg	0.2	0.19	95	50-150	
Perfluorotridecanoic acid	ug/kg	0.2	0.19	94	50-150	
Perfluoroundecanoic acid	ug/kg	0.2	0.18	92	50-150	
PFBA	ug/kg	0.2	0.19	94	50-150	
PFDoS	ug/kg	0.19	0.16	83	50-150	
PFDS	ug/kg	0.19	0.15	76	50-150	
PFHpS	ug/kg	0.19	0.18	95	50-150	
PFNS	ug/kg	0.19	0.15	80	50-150	
PFOSA	ug/kg	0.2	0.18	92	50-150	
PFPeA	ug/kg	0.2	0.19	97	50-150	
PFPeS	ug/kg	0.19	0.17	89	50-150	
13C2-PFDoA (S)	%			100	25-150	
13C2-PFTA (S)	%			92	25-150	
13C24:2FTS (S)	%			94	25-150	
13C26:2FTS (S)	%			103	25-150	
13C28:2FTS (S)	%			103	25-150	
13C2PFHxDA (S)	%			93	25-150	
13C3-PFBS (S)	%			96	25-150	
13C3-PFHxS (S)	%			98	25-150	
13C3HFPO-DA (S)	%			94	25-150	
13C4-PFBA (S)	%			97	25-150	
13C4-PFHpA (S)	%			91	25-150	
13C5-PFHxA (S)	%			99	25-150	
13C5-PFPeA (S)	%			97	25-150	
13C6-PFDA (S)	%			110	25-150	
13C7-PFUdA (S)	%			101	25-150	
13C8-PFOA (S)	%			97	25-150	
13C8-PFOS (S)	%			108	25-150	
13C8-PFOSA (S)	%			96	25-150	
13C9-PFNA (S)	%			101	25-150	
d3-MeFOSAA (S)	%			102	25-150	
d3-NMeFOSA (S)	%			88	20-150	
d5-EtFOSAA (S)	%			97	25-150	
d5-NEtFOSA (S)	%			90	20-150	
d7-NMeFOSE (S)	%			79	20-150	
d9-NEtFOSE (S)	%			88	20-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4553127 4553128

Parameter	Units	10637861021		4553128		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
11Cl-PF3OUdS	ug/kg	<0.026	0.2	0.2	0.24	0.23	122	117	50-150	4	30
4:2 FTS	ug/kg	<0.024	0.2	0.2	0.20	0.20	103	105	50-150	2	30
6:2 FTS	ug/kg	<0.042	0.2	0.2	0.21	0.20	108	102	50-150	6	30
8:2 FTS	ug/kg	<0.045	0.2	0.2	0.19	0.20	97	103	50-150	6	30

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4553127 4553128												
Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		10637861021 Result	Spike Conc.	Spike Conc.	MS Result							
9CI-PF3ONS	ug/kg	<0.026	0.2	0.2	0.20	0.18	106	96	50-150	10	30	
ADONA	ug/kg	<0.037	0.2	0.2	0.20	0.21	104	106	50-150	2	30	
HFPO-DA	ug/kg	<0.028	0.21	0.21	0.21	0.21	99	102	50-150	3	30	
NEtFOSA	ug/kg	<0.026	0.21	0.21	0.19	0.20	95	99	50-150	5	30	
NEtFOSAA	ug/kg	<0.041	0.21	0.21	0.17	0.19	83	92	50-150	10	30	
NEtFOSE	ug/kg	<0.033	0.21	0.21	0.20	0.20	95	97	50-150	3	30	
NMeFOSA	ug/kg	<0.028	0.21	0.21	0.22	0.20	105	96	50-150	9	30	
NMeFOSAA	ug/kg	<0.029	0.21	0.21	0.22	0.22	108	106	50-150	1	30	
NMeFOSE	ug/kg	<0.031	0.21	0.21	0.19	0.21	94	104	50-150	10	30	
Perfluorobutanesulfonic acid	ug/kg	<0.027	0.19	0.19	0.16	0.18	88	98	50-150	10	30	
Perfluorodecanoic acid	ug/kg	<0.023	0.21	0.21	0.21	0.20	103	99	50-150	4	30	
Perfluorododecanoic acid	ug/kg	<0.034	0.21	0.21	0.21	0.22	100	104	50-150	5	30	
Perfluoroheptanoic acid	ug/kg	<0.035	0.21	0.21	0.23	0.23	107	109	50-150	1	30	
Perfluorohexanesulfonic acid	ug/kg	0.29	0.19	0.19	0.47	0.49	96	108	50-150	5	30	
Perfluorohexanoic acid	ug/kg	<0.028	0.21	0.21	0.22	0.23	102	106	50-150	4	30	
Perfluorononanoic acid	ug/kg	<0.032	0.21	0.21	0.20	0.21	95	102	50-150	7	30	
Perfluorooctanesulfonic acid	ug/kg	0.19	0.2	0.2	0.39	0.33	103	76	50-150	14	30	
Perfluorooctanoic acid	ug/kg	0.037J	0.21	0.21	0.24	0.22	98	89	50-150	8	30	
Perfluorotetradecanoic acid	ug/kg	<0.035	0.21	0.21	0.21	0.21	102	99	50-150	2	30	
Perfluorotridecanoic acid	ug/kg	<0.033	0.21	0.21	0.20	0.21	99	101	50-150	2	30	
Perfluoroundecanoic acid	ug/kg	<0.031	0.21	0.21	0.22	0.22	106	104	50-150	1	30	
PFBA	ug/kg	<0.029	0.21	0.21	0.23	0.24	102	104	50-150	2	30	
PFDoS	ug/kg	<0.027	0.2	0.2	0.20	0.17	100	87	50-150	14	30	
PFDS	ug/kg	<0.029	0.2	0.2	0.21	0.18	105	89	50-150	16	30	
PFHpS	ug/kg	<0.028	0.2	0.2	0.22	0.18	110	92	50-150	18	30	
PFNS	ug/kg	<0.035	0.2	0.2	0.23	0.19	114	98	50-150	15	30	
PFOSA	ug/kg	<0.030	0.21	0.21	0.21	0.22	100	106	50-150	7	30	
PFPeA	ug/kg	<0.029	0.21	0.21	0.21	0.22	100	106	50-150	5	30	
PFPeS	ug/kg	<0.025	0.2	0.2	0.20	0.19	99	96	50-150	3	30	
13C2-PFDoA (S)	%						87	90	25-150			
13C2-PFTA (S)	%						82	88	25-150			
13C24:2FTS (S)	%						79	86	25-150			
13C26:2FTS (S)	%						85	92	25-150			
13C28:2FTS (S)	%						87	89	25-150			
13C2PFHxDA (S)	%						82	85	25-150			
13C3-PFBS (S)	%						92	92	25-150			
13C3-PFHxS (S)	%						85	90	25-150			
13C3HFPO-DA (S)	%						79	85	25-150			
13C4-PFBA (S)	%						78	83	25-150			
13C4-PFHpA (S)	%						79	80	25-150			
13C5-PFHxA (S)	%						80	83	25-150			
13C5-PFPeA (S)	%						78	83	25-150			
13C6-PFDA (S)	%						86	94	25-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4553127												4553128	
Parameter	Units	10637861021		MS	MSD	MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
13C7-PFUdA (S)	%						83	89		25-150			
13C8-PFOA (S)	%						82	90		25-150			
13C8-PFOS (S)	%						81	100		25-150			
13C8-PFOSA (S)	%						78	80		25-150			
13C9-PFNA (S)	%						86	86		25-150			
d3-MeFOSAA (S)	%						78	84		25-150			
d3-NMeFOSA (S)	%						66	77		10-150			
d5-EtFOSAA (S)	%						84	93		25-150			
d5-NEtFOSA (S)	%						73	88		10-150			
d7-NMeFOSE (S)	%						76	76		10-150			
d9-NEtFOSE (S)	%						80	87		10-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

QC Batch: 858901 Analysis Method: SM 2540D
 QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
 Laboratory: Pace Analytical Services - Minneapolis
 Associated Lab Samples: 10637158001, 10637158002, 10637158003, 10637158004, 10637158005, 10637158006

METHOD BLANK: 4538965 Matrix: Water
 Associated Lab Samples: 10637158001, 10637158002, 10637158003, 10637158004, 10637158005, 10637158006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	12/16/22 12:07	

LABORATORY CONTROL SAMPLE: 4538966

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	80.2	80	80-120	

SAMPLE DUPLICATE: 4538967

Parameter	Units	10637158001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	282	260	8	5	D6

SAMPLE DUPLICATE: 4538968

Parameter	Units	10637158002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	149	152	2	5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: MMSD PFAS

Pace Project No.: 10637158

QC Batch: 859446	Analysis Method: SM 2540D
QC Batch Method: SM 2540D	Analysis Description: 2540D Total Suspended Solids
	Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10637158007

METHOD BLANK: 4541483 Matrix: Water

Associated Lab Samples: 10637158007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<5.0	10.0	12/20/22 11:14	

LABORATORY CONTROL SAMPLE: 4541484

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	113	113	80-120	

SAMPLE DUPLICATE: 4541485

Parameter	Units	10636929001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	11.5	12.0	4	5	

SAMPLE DUPLICATE: 4541486

Parameter	Units	10637190001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	54.5	55.8	2	5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: MMSD PFAS

Pace Project No.: 10637158

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

S0 Surrogate recovery outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MMSD PFAS

Pace Project No.: 10637158

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10637158009	Biosolids A20221214	ASTM D2974	859361		
10637158010	Biosolids B20221214	ASTM D2974	859891		
10637158001	Influent 02 20221212	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158002	Influent 07 20221212	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158003	Influent 08 20221212	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158004	Influent 11 20221212	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158005	Influent 18 20221212	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158006	Influent Comp 20221212	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158007	Effluent 20221213	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158011	EB01 20221214	ENV-SOP-MIN4-0178	860677	ENV-SOP-MIN4-0178	861846
10637158009	Biosolids A20221214	ENV-SOP-MIN4-0178	861904	ENV-SOP-MIN4-0178	862735
10637158010	Biosolids B20221214	ENV-SOP-MIN4-0178	861904	ENV-SOP-MIN4-0178	862735
10637158001	Influent 02 20221212	SM 2540D	858901		
10637158002	Influent 07 20221212	SM 2540D	858901		
10637158003	Influent 08 20221212	SM 2540D	858901		
10637158004	Influent 11 20221212	SM 2540D	858901		
10637158005	Influent 18 20221212	SM 2540D	858901		
10637158006	Influent Comp 20221212	SM 2540D	858901		
10637158007	Effluent 20221213	SM 2540D	859446		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or

WO#: 10637158

ALL SHADE



10637158

Company: **TRC**

Billing Information:

Address: **708 Heartland Trail, Suite 3000
Madison WI 53717**

Bill to MMSD

Report To: **Mike Ursin**

Email To: **mursin@trccompanies.com**

Copy To: **Lydia Auner, Jeff Ramey**

Site Collection Info/Address: **1610 Moorland Rd**

Customer Project Name/Number: **MMSD PFAS**

State: **WI** County/City: **Madison** Time Zone Collected: [] PT [] MT [X] CT [] ET

Phone:
Email:

Site/Facility ID #:

Compliance Monitoring?
[] Yes [X] No

Collected By (print): **Jennifer Faust**

Purchase Order #: **2200666**
Quote #:

DW PWS ID #:
DW Location Code:

Collected By (signature): **Jennifer Faust**

Turnaround Date Required: **Standard TAT**

Immediately Packed on Ice:
[X] Yes [] No

Sample Disposal:
[X] Dispose as appropriate [] Return
[] Archive:
[] Hold:

Rush:
[] Same Day [] Next Day
[] 2 Day [] 3 Day [] 4 Day [] 5 Day
(Expedite Charges Apply)

Field Filtered (if applicable):
[] Yes [X] No
Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	PFAS	TSS	Top Assay
			Date	Time	Date	Time					
Influent 02 ^{2022/12/2}	WW	C	12/12/22	0:00	12/12/22	23:59	4	X	X	X	
Influent 07 ^{2022/12/2}	WW	C	12/12/22	0:00	12/12/22	23:59	4	X	X	X	
Influent 08 ^{2022/12/2}	WW	C	12/12/22	0:00	12/12/22	23:59	4	X	X	X	
Influent 11 ^{2022/12/2}	WW	C	12/12/22	0:00	12/12/22	23:59	4	X	X	X	
Influent 18 ^{2022/12/2}	WW	C	12/12/22	0:00	12/12/22	23:59	4	X	X	X	
Influent Comp ^{2022/12/2}	WW	C	12/12/22	0:00	12/12/22	23:59	3	X	X		
Effluent ^{2022/12/3}	WW	C	12/13/22	0:00	12/13/22	23:59	4	X	X	X	
Biosolids A ^{2022/12/4}	SL	G	12/14/22	7:20				X		X	
Biosolids B ^{2022/12/4}	SL	G	12/14/22	7:45				X		X	
EB01 ^{2022/12/4}	WW	G	12/14/22	7:30				X			

Lab Profile/Line: **43476**

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signature Present Y N NA

Bottles Intact Y N NA

Correct Bottles Y N NA

Sufficient Volume Y N NA

Samples Received on Ice Y N NA

VOA - Headspace Acceptable Y N NA

USDA Regulated Soils Y N NA

Samples in Holding Time Y N NA

Residual Chlorine Present Y N NA

Cl Strips: _____

Sample pH Acceptable Y N NA

pH Strips: _____

Sulfide Present Y N NA

Lead Acetate Strips: _____

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
for influent samples follow EA-19-0001 (WI PFAS method expectations) section VI.3 procedure for particulates in aqueous samples + confirmation if necessary based on visual appearance

Type of Ice Used: **Wet** Blue Dry None

Packing Material Used: **Plastic Bags**

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: **2870162**

Samples received via: **FEDEX** UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: **Y** N NA

Therm ID#: **T3**

Cooler 1 Temp Upon Receipt: **5.82** °C

Cooler 1 Therm Corr. Factor: **±0.1** °C

Cooler 1 Corrected Temp: **5.9, 2.2** °C

Comments:

Relinquished by/Company: (Signature)
Jennifer Faust

Date/Time: **12/14/22 7:50**

Received by/Company: (Signature)
N Pace

Date/Time: **12/15/22 8:50**

Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Effective Date: 11/16/2022

Sample Condition Upon Receipt **Client Name: TRC**

Project #: **WO#: 10637158**
 PM: KNH Due Date: 01/09/23
 CLIENT: TRC-WI

Courier: FedEx UPS USPS Client
 Pace SpeedDee Commercial

Tracking Number: 59237143(0992/1006) See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Packing Material: Bubble Wrap Bubble Bags None Other
 Thermometer: T1 (0461) T2 (1336) T3 (0459) T4 (0254) T5 (0178)
 T6 (0235) T7 (0042) T8 (0775) T9(0727) 01339252/1710
 Biological Tissue Frozen? Yes No N/A
 Temp Blank? Yes No
 Type of Ice: Wet Blue Dry None
 Melted

Did Samples Originate in West Virginia? Yes No Were All Container Temps Taken? Yes No N/A
 Temp should be above freezing to 6°C Cooler temp Read w/Temp Blank: 5.8, 2.1 °C
 Average Corrected Temp (no temp blank only): _____ °C
 Correction Factor: 1.0 Cooler Temp Corrected w/temp blank: 5.9, 2.2 °C
 See Exceptions ENV-FRM-MIN4-0142 1 Container

USDA Regulated Soil: N/A water sample/other: _____ Date/Initials of Person Examining Contents: 12/15/22 MW
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 <input type="checkbox"/> No
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E.coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrom <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Matrix: <input checked="" type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH >10 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Positive for Residual Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	pH Paper Lot # Residual Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. <input type="checkbox"/> See Exceptions ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION
 Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____
 Project Manager Review: Kirsten Hojberg Date: 12/16/2022
 Field Data Required? Yes No

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).
 Labeled By: MW Line: 3



LELAP Certificate Number: 01955
A2LA Accredited (DoD ELAP-QSM 5.4) Certificate Number: 6429.01

ANALYTICAL RESULTS

PERFORMED BY

Pace Analytical Gulf Coast
7979 Innovation Park Dr.
Baton Rouge, LA 70820
(225) 769-4900

Report Date 04/13/2023

Report # 222121745



Project 10637158 MMSD PFAS

Samples Collected 12/12/22 - 12/14/22

Deliver To	Additional Recipients
Kirsten Hogberg Pace Analytical Services, Inc. 1700 Elm St. Suite 200 Minneapolis, MN 55414 (612) 607-1700	NONE



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics - The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature
Pace Gulf Coast Report 222121745

Certifications

Certification	Certification Number
A2LA Accredited (DoD ELAP-QSM 5.4)	6429.01
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: Pace Analytical Services **Report:** 222121745

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report is being revised and reissued to correct the analyte list and correct reported surrogates

This report supersedes and replaces any prior reports issued under this workorder

SEMI-VOLATILES MASS SPECTROMETRY

Samples 22212174501 (INFLUENT 02 20221212), 22212174502 (INFLUENT 07 20221212), 22212174503 (INFLUENT 08 20221212), 22212174504 (INFLUENT 11 20221212), 22212174505 (INFLUENT 18 20221212) and 22212174506 (EFFLUENT 20221213) were re-extracted outside holding time for 6:2FTS and PFOS contamination method blank and LCS. In addition, sample 22212174506 (EFFLUENT 20221213) was re-extracted for extracted internal standard failure. Both data sets are being reported

In the PFAS Top Assay QSM B15 (Post) extraction of prep batch 757943, there was 6:2FTS and 8:2FTS in the method blank, LCS and LCSD. This is due to laboratory contamination

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2437108 (MB for HBN 757049 [LCMS/7310]) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA, d7-NMeFOSE andd9-NEtFOSE is outside the control limits for sample 2450045 (MB for HBN 759538 [LCMS/7578]) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 2450048 (VESBK for HBN 759538 [LCMS/757]) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA andd-NMeFOSA is outside the control limits for sample 22212174506 (EFFLUENT 20221213) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2440173 (MB for HBN 757753 [LCMS/7406]) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA, d7-NMeFOSE, M2PFHxDA, M2PFTA andM8FOSA is outside the control limits for sample 22212174507 (BIOSOLIDS A20221214) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA, d7-NMeFOSE, M2PFHxDA andM8FOSA is outside the control limits for sample 22212174508 (BIOSOLIDS B20221214) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA, d-NMeFOSA andd9-NEtFOSE is outside the control limits for sample 2441231 (MB for HBN 757943 [LCMS/7435]) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard MPFOA andMPFBA is outside the control limits for sample 22212174507 (BIOSOLIDS A20221214) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard MPFOA, d-NEtFOSA andMPFBA is outside the control limits for sample 22212174508 (BIOSOLIDS B20221214) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the surrogate MPFOA is outside the control limits for sample 2450048 (VESBK for HBN 759538 [LCMS/757]) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the surrogate MPFOA is outside the control limits for sample 22212174501 (INFLUENT 02 20221212) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the surrogate MPFOA is outside the control limits for sample 22212174502 (INFLUENT 07 20221212) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the surrogate MPFOA is outside the control limits for sample 22212174503 (INFLUENT 08 20221212) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the surrogate MPFOA is outside the control limits for sample 22212174504 (INFLUENT 11 20221212) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the surrogate MPFOA is outside the control limits for sample 22212174505 (INFLUENT 18 20221212) .

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the surrogate MPFOA is outside the control limits for sample 22212174506 (EFFLUENT 20221213) .

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard M2 4:2 FTS is above the upper control limits for sample 22212174502 (INFLUENT 07 20221212) . There are no target hits for the associated compounds.

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard M2 4:2 FTS is above the upper control limits for sample 22212174505 (INFLUENT 18 20221212) . There are no target hits for the associated compounds.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2450046 (LCS for HBN 759538 [LCMS/7578]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2450047 (LCSD for HBN 759538 [LCMS/7578]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2450047 (LCSD for HBN 759538 [LCMS/7578]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2440174 (LCS for HBN 757753 [LCMS/7406]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Pre) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2440174 (LCS for HBN 757753 [LCMS/7406]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NEtFOSA is outside the control limits for sample 2441233 (LCSD for HBN 757943 [LCMS/7435]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Post) analysis, the recovery for the extracted internal standard d-NMeFOSA is outside the control limits for sample 2441233 (LCSD for HBN 757943 [LCMS/7435]) . The recovery of the associated compounds is within control limits.

In the PFAS Top Assay QSM B15 (Pre) analysis for prep batch 757049, the LCS and/or LCSD recoveries are outside control limits for PFODA.

In the PFAS Top Assay QSM B15 (Post) analysis for prep batch 759538, the LCS and/or LCSD recoveries are outside control limits for PFODA.

In the PFAS Top Assay QSM B15 (Post) analysis for prep batch 759538, the LCS/LCSD RPD is above the control limit for PFODA.



Report#: 222121745
Project ID: 10637158 MMSD PFAS

Report Date: 04/13/2023

Sample Summary

Lab ID	Client ID	Matrix	Collect Date	Receive Date
22212174501	INFLUENT 02 20221212	Water	12/12/22 23:59	12/17/22 09:42
22212174502	INFLUENT 07 20221212	Water	12/12/22 23:59	12/17/22 09:42
22212174503	INFLUENT 08 20221212	Water	12/12/22 23:59	12/17/22 09:42
22212174504	INFLUENT 11 20221212	Water	12/12/22 23:59	12/17/22 09:42
22212174505	INFLUENT 18 20221212	Water	12/12/22 23:59	12/17/22 09:42
22212174506	EFFLUENT 20221213	Water	12/13/22 23:59	12/17/22 09:42
22212174507	BIOSOLIDS A20221214	Solid	12/14/22 07:20	12/17/22 09:42
22212174508	BIOSOLIDS B20221214	Solid	12/14/22 07:45	12/17/22 09:42

Detect Summary

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Post)							
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist	
22212174501	INFLUENT 02 20221212	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ng/L	15.3	1	NA	
22212174501	INFLUENT 02 20221212	Perfluorobutanoic acid (PFBA)	ng/L	11.9	1	NA	
22212174501	INFLUENT 02 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	6.68J	1	NA	
22212174501	INFLUENT 02 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	5.96J	1	NA	
22212174501	INFLUENT 02 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	7.07J	1	NA	
22212174501	INFLUENT 02 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	16.1	1	NA	
22212174501	INFLUENT 02 20221212	Perfluorooctanoic acid (PFOA)	ng/L	2.75J	1	NA	
22212174501	INFLUENT 02 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	12.3	1	NA	
22212174502	INFLUENT 07 20221212	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ng/L	16.9	1	NA	
22212174502	INFLUENT 07 20221212	Perfluorobutanoic acid (PFBA)	ng/L	25.9	1	NA	
22212174502	INFLUENT 07 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	16.4	1	NA	
22212174502	INFLUENT 07 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	14.9	1	NA	
22212174502	INFLUENT 07 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	15.5	1	NA	
22212174502	INFLUENT 07 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	9.63J	1	NA	
22212174502	INFLUENT 07 20221212	Perfluorooctanoic acid (PFOA)	ng/L	6.70J	1	NA	
22212174502	INFLUENT 07 20221212	Perfluoropentanesulfonic acid (PFPeS)	ng/L	3.36J	1	NA	
22212174502	INFLUENT 07 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	15.2	1	NA	
22212174503	INFLUENT 08 20221212	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ng/L	15.0	1	NA	
22212174503	INFLUENT 08 20221212	Perfluorobutanoic acid (PFBA)	ng/L	10.7	1	NA	
22212174503	INFLUENT 08 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	6.71J	1	NA	
22212174503	INFLUENT 08 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	9.00J	1	NA	
22212174503	INFLUENT 08 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	7.93J	1	NA	
22212174503	INFLUENT 08 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	15.3	1	NA	
22212174503	INFLUENT 08 20221212	Perfluorooctanoic acid (PFOA)	ng/L	2.70J	1	NA	
22212174503	INFLUENT 08 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	18.1	1	NA	
22212174504	INFLUENT 11 20221212	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ng/L	17.3	1	NA	
22212174504	INFLUENT 11 20221212	Perfluorobutanesulfonic acid (PFBS)	ng/L	1.95J	1	NA	
22212174504	INFLUENT 11 20221212	Perfluorobutanoic acid (PFBA)	ng/L	11.7	1	NA	
22212174504	INFLUENT 11 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	7.85J	1	NA	
22212174504	INFLUENT 11 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	7.96J	1	NA	
22212174504	INFLUENT 11 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	14.4	1	NA	
22212174504	INFLUENT 11 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	6.36J	1	NA	
22212174504	INFLUENT 11 20221212	Perfluorooctanoic acid (PFOA)	ng/L	2.96J	1	NA	
22212174504	INFLUENT 11 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	11.0	1	NA	
22212174505	INFLUENT 18 20221212	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ng/L	19.9	1	NA	
22212174505	INFLUENT 18 20221212	Perfluorobutanoic acid (PFBA)	ng/L	22.8	1	NA	
22212174505	INFLUENT 18 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	19.4	1	NA	
22212174505	INFLUENT 18 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	11.2	1	NA	
22212174505	INFLUENT 18 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	14.5	1	NA	

Detect Summary (Continued)

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Post)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22212174505	INFLUENT 18 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	21.2	1	NA
22212174505	INFLUENT 18 20221212	Perfluorooctanoic acid (PFOA)	ng/L	7.12J	1	NA
22212174505	INFLUENT 18 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	12.0	1	NA
22212174506	EFFLUENT 20221213	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ng/L	20.8	1	NA
22212174506	EFFLUENT 20221213	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ng/L	2.99J	1	NA
22212174506	EFFLUENT 20221213	NMeFOSAA	ng/L	4.30J	1	NA
22212174506	EFFLUENT 20221213	Perfluorobutanesulfonic acid (PFBS)	ng/L	3.30J	1	NA
22212174506	EFFLUENT 20221213	Perfluorobutanesulfonic acid (PFBS)	ng/L	7.27J	1	NA
22212174506	EFFLUENT 20221213	Perfluorobutanoic acid (PFBA)	ng/L	16.5	1	NA
22212174506	EFFLUENT 20221213	Perfluorobutanoic acid (PFBA)	ng/L	20.1	1	NA
22212174506	EFFLUENT 20221213	Perfluoroheptanesulfonic acid (PFHpS)	ng/L	8.72J	1	NA
22212174506	EFFLUENT 20221213	Perfluoroheptanoic acid (PFHpA)	ng/L	3.67J	1	NA
22212174506	EFFLUENT 20221213	Perfluoroheptanoic acid (PFHpA)	ng/L	3.28J	1	NA
22212174506	EFFLUENT 20221213	Perfluorohexanesulfonic acid (PFHxS)	ng/L	10.2	1	NA
22212174506	EFFLUENT 20221213	Perfluorohexanesulfonic acid (PFHxS)	ng/L	6.04J	1	NA
22212174506	EFFLUENT 20221213	Perfluorohexanoic acid (PFHxA)	ng/L	19.7	1	NA
22212174506	EFFLUENT 20221213	Perfluorohexanoic acid (PFHxA)	ng/L	14.8	1	NA
22212174506	EFFLUENT 20221213	Perfluorononanesulfonic acid (PFNS)	ng/L	5.66J	1	NA
22212174506	EFFLUENT 20221213	Perfluorononanoic acid (PFNA)	ng/L	2.47J	1	NA
22212174506	EFFLUENT 20221213	Perfluorooctanesulfonic acid (PFOS)	ng/L	8.90J	1	NA
22212174506	EFFLUENT 20221213	Perfluorooctanesulfonic acid (PFOS)	ng/L	28.5	1	NA
22212174506	EFFLUENT 20221213	Perfluorooctanoic acid (PFOA)	ng/L	5.21J	1	NA
22212174506	EFFLUENT 20221213	Perfluorooctanoic acid (PFOA)	ng/L	10.5	1	NA
22212174506	EFFLUENT 20221213	Perfluoropentanoic acid (PFPeA)	ng/L	15.9	1	NA
22212174507	BIOSOLIDS A20221214	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ug/Kg	2.81	1	65.76
22212174507	BIOSOLIDS A20221214	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ug/Kg	0.694J	1	65.76
22212174507	BIOSOLIDS A20221214	NEtFOSE	ug/Kg	0.135J	1	65.76
22212174507	BIOSOLIDS A20221214	NMeFOSAA	ug/Kg	0.075J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorobutanesulfonic acid (PFBS)	ug/Kg	2.33J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorobutanoic acid (PFBA)	ug/Kg	33.1	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorodecane sulfonic acid (PFDS)	ug/Kg	0.857J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorodecanoic acid (PFDA)	ug/Kg	4.09	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorododecanoic acid (PFDoA)	ug/Kg	1.93J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoroheptanesulfonic acid (PFHpS)	ug/Kg	0.082J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoroheptanoic acid (PFHpA)	ug/Kg	8.07	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.805J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorohexanoic acid (PFHxA)	ug/Kg	17.7	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorononanoic acid (PFNA)	ug/Kg	2.73J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorooctane Sulfonamide (FOSA)	ug/Kg	0.151J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	9.56	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorooctanoic acid (PFOA)	ug/Kg	9.25	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoropentanoic acid (PFPeA)	ug/Kg	22.1	1	65.76

Detect Summary (Continued)

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Post)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22212174507	BIOSOLIDS A20221214	Perfluorotetradecanoic acid (PFTA)	ug/Kg	0.406J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorotridecanoic acid (PFTrDA)	ug/Kg	0.423J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoroundecanoic acid (PFUnA)	ug/Kg	1.44J	1	65.76
22212174508	BIOSOLIDS B20221214	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ug/Kg	7.54J	1	93.64
22212174508	BIOSOLIDS B20221214	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ug/Kg	1.87J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorobutanesulfonic acid (PFBS)	ug/Kg	0.834J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorobutanoic acid (PFBA)	ug/Kg	34.2	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorodecanoic acid (PFDA)	ug/Kg	1.93J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorododecanoic acid (PFDoA)	ug/Kg	1.04J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluoroheptanoic acid (PFHpA)	ug/Kg	6.01J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.584J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorohexanoic acid (PFHxA)	ug/Kg	11.1J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorononanoic acid (PFNA)	ug/Kg	2.31J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorooctane Sulfonamide (FOSA)	ug/Kg	0.556J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	4.51J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorooctanoic acid (PFOA)	ug/Kg	5.48J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluoropentanoic acid (PFPeA)	ug/Kg	18.4	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluoroundecanoic acid (PFUnA)	ug/Kg	1.20J	1	93.64

PFAS Top Assay QSM B15 (Pre)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22212174501	INFLUENT 02 20221212	Perfluorobutanesulfonic acid (PFBS)	ng/L	2.54J	1	NA
22212174501	INFLUENT 02 20221212	Perfluorobutanoic acid (PFBA)	ng/L	3.88J	1	NA
22212174501	INFLUENT 02 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	5.71J	1	NA
22212174501	INFLUENT 02 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	5.05J	1	NA
22212174501	INFLUENT 02 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	4.09J	1	NA
22212174501	INFLUENT 02 20221212	Perfluorooctanoic acid (PFOA)	ng/L	2.73J	1	NA
22212174501	INFLUENT 02 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	53.3	1	NA
22212174502	INFLUENT 07 20221212	Perfluorobutanesulfonic acid (PFBS)	ng/L	4.14J	1	NA
22212174502	INFLUENT 07 20221212	Perfluorobutanoic acid (PFBA)	ng/L	12.2	1	NA
22212174502	INFLUENT 07 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	11.6	1	NA
22212174502	INFLUENT 07 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	12.0	1	NA
22212174502	INFLUENT 07 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	5.96J	1	NA
22212174502	INFLUENT 07 20221212	Perfluorooctanoic acid (PFOA)	ng/L	6.39J	1	NA
22212174502	INFLUENT 07 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	7.51J	1	NA
22212174503	INFLUENT 08 20221212	Perfluorobutanesulfonic acid (PFBS)	ng/L	1.60J	1	NA
22212174503	INFLUENT 08 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	5.76J	1	NA
22212174503	INFLUENT 08 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	4.86J	1	NA
22212174503	INFLUENT 08 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	5.48J	1	NA
22212174503	INFLUENT 08 20221212	Perfluorooctanoic acid (PFOA)	ng/L	2.56J	1	NA
22212174503	INFLUENT 08 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	56.3	1	NA
22212174504	INFLUENT 11 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	3.44J	1	NA

Detect Summary (Continued)

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Pre)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22212174504	INFLUENT 11 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	3.97J	1	NA
22212174504	INFLUENT 11 20221212	Perfluorooctanoic acid (PFOA)	ng/L	2.52J	1	NA
22212174504	INFLUENT 11 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	69.7	1	NA
22212174505	INFLUENT 18 20221212	Perfluorobutanesulfonic acid (PFBS)	ng/L	3.96J	1	NA
22212174505	INFLUENT 18 20221212	Perfluorobutanoic acid (PFBA)	ng/L	8.77J	1	NA
22212174505	INFLUENT 18 20221212	Perfluorohexanesulfonic acid (PFHxS)	ng/L	14.9	1	NA
22212174505	INFLUENT 18 20221212	Perfluorohexanoic acid (PFHxA)	ng/L	8.01J	1	NA
22212174505	INFLUENT 18 20221212	Perfluorooctanesulfonic acid (PFOS)	ng/L	8.87J	1	NA
22212174505	INFLUENT 18 20221212	Perfluorooctanoic acid (PFOA)	ng/L	6.81J	1	NA
22212174505	INFLUENT 18 20221212	Perfluoropentanoic acid (PFPeA)	ng/L	6.59J	1	NA
22212174506	EFFLUENT 20221213	Perfluorobutanesulfonic acid (PFBS)	ng/L	2.86J	1	NA
22212174506	EFFLUENT 20221213	Perfluorobutanoic acid (PFBA)	ng/L	7.34J	1	NA
22212174506	EFFLUENT 20221213	Perfluorohexanesulfonic acid (PFHxS)	ng/L	7.27J	1	NA
22212174506	EFFLUENT 20221213	Perfluorohexanoic acid (PFHxA)	ng/L	16.4	1	NA
22212174506	EFFLUENT 20221213	Perfluorooctanesulfonic acid (PFOS)	ng/L	4.17J	1	NA
22212174506	EFFLUENT 20221213	Perfluorooctanoic acid (PFOA)	ng/L	7.29J	1	NA
22212174506	EFFLUENT 20221213	Perfluoropentanoic acid (PFPeA)	ng/L	12.3	1	NA
22212174507	BIOSOLIDS A20221214	6:2 Fluorotelomer sulfonic acid (6:2FTS)	ug/Kg	5.67	1	65.76
22212174507	BIOSOLIDS A20221214	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ug/Kg	1.56J	1	65.76
22212174507	BIOSOLIDS A20221214	NEtFOSA	ug/Kg	0.180J	1	65.76
22212174507	BIOSOLIDS A20221214	NEtFOSAA	ug/Kg	6.41	1	65.76
22212174507	BIOSOLIDS A20221214	NEtFOSE	ug/Kg	0.986J	1	65.76
22212174507	BIOSOLIDS A20221214	NMeFOSA	ug/Kg	0.201J	1	65.76
22212174507	BIOSOLIDS A20221214	NMeFOSAA	ug/Kg	25.3	1	65.76
22212174507	BIOSOLIDS A20221214	NMeFOSE	ug/Kg	4.25	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorobutanesulfonic acid (PFBS)	ug/Kg	1.42J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorobutanoic acid (PFBA)	ug/Kg	6.56	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorodecane sulfonic acid (PFDS)	ug/Kg	1.41J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorodecanoic acid (PFDA)	ug/Kg	10.2	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorododecanoic acid (PFDoA)	ug/Kg	2.95	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoroheptanesulfonic acid (PFHpS)	ug/Kg	0.206J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoroheptanoic acid (PFHpA)	ug/Kg	1.74J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.866J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorohexanoic acid (PFHxA)	ug/Kg	28.5	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorononanoic acid (PFNA)	ug/Kg	1.06J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorooctane Sulfonamide (FOSA)	ug/Kg	1.54J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	11.8	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorooctanoic acid (PFOA)	ug/Kg	22.0	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoropentanoic acid (PFPeA)	ug/Kg	12.1	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorotetradecanoic acid (PFTA)	ug/Kg	0.717J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluorotridecanoic acid (PFTTrDA)	ug/Kg	0.440J	1	65.76
22212174507	BIOSOLIDS A20221214	Perfluoroundecanoic acid (PFUnA)	ug/Kg	1.10J	1	65.76

Detect Summary (Continued)

Results and Detection Limits are adjusted for dilution and moisture when applicable

PFAS Top Assay QSM B15 (Pre)						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22212174507	BIOSOLIDS A20221214	PFDoS	ug/Kg	1.25J	1	65.76
22212174508	BIOSOLIDS B20221214	NEtFOSAA	ug/Kg	3.28J	1	93.64
22212174508	BIOSOLIDS B20221214	NEtFOSE	ug/Kg	0.740J	1	93.64
22212174508	BIOSOLIDS B20221214	NMeFOSAA	ug/Kg	7.23J	1	93.64
22212174508	BIOSOLIDS B20221214	NMeFOSE	ug/Kg	3.76J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorodecane sulfonic acid (PFDS)	ug/Kg	7.57J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorodecanoic acid (PFDA)	ug/Kg	2.26J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorododecanoic acid (PFDoA)	ug/Kg	1.30J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorohexanesulfonic acid (PFHxS)	ug/Kg	0.873J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorohexanoic acid (PFHxA)	ug/Kg	0.991J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorononanoic acid (PFNA)	ug/Kg	0.323J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorooctane Sulfonamide (FOSA)	ug/Kg	1.85J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorooctanesulfonic acid (PFOS)	ug/Kg	5.64J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluoropentanoic acid (PFPeA)	ug/Kg	0.411J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluorotetradecanoic acid (PFTA)	ug/Kg	0.413J	1	93.64
22212174508	BIOSOLIDS B20221214	Perfluoroundecanoic acid (PFUnA)	ug/Kg	0.589J	1	93.64
22212174508	BIOSOLIDS B20221214	PFDoS	ug/Kg	2.57J	1	93.64

Sample Results

INFLUENT 02 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174501
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:05	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.54J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.88J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.71J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	5.05J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.09J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.73J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	53.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 02 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174501
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:05	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	519	ng/L	104	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	159	ng/L	63	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	144	ng/L	58	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	261	ng/L	104	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	250	ng/L	100	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	180	ng/L	72	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	156	ng/L	62	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	337	ng/L	135	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	347	ng/L	139	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	237	ng/L	95	50 - 150
67905-19-5-EIS	M2PFHxDA	250	170	ng/L	68	50 - 150
376-06-7-EIS	M2PFFTA	250	218	ng/L	87	50 - 150
13252-13-6-EIS	M3HFPODA	250	212	ng/L	85	50 - 150
375-73-5-EIS	M3PFBS	250	241	ng/L	97	50 - 150
355-46-4-EIS	M3PFHxS	250	244	ng/L	98	50 - 150
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150
307-24-4-EIS	M5PFHxA	250	238	ng/L	95	50 - 150
2706-90-3-EIS	M5PFPeA	250	223	ng/L	89	50 - 150
335-76-2-EIS	M6PFDA	250	260	ng/L	104	50 - 150
2058-94-8-EIS	M7PFUnA	250	258	ng/L	103	50 - 150
754-91-6-EIS	M8FOSA	250	217	ng/L	87	50 - 150
335-67-1-EIS	M8PFOA	250	255	ng/L	102	50 - 150
1763-23-1-EIS	M8PFOS	250	256	ng/L	103	50 - 150
375-95-1-EIS	M9PFNA	250	256	ng/L	102	50 - 150
375-22-4-EIS	MPFBA	250	190	ng/L	76	50 - 150
307-55-1-EIS	MPFDoA	250	219	ng/L	88	50 - 150

Sample Results

INFLUENT 02 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174501
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:29	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	15.3	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	11.9	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.68J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	5.96J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16.1	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.75J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 02 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174501
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:29	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	421	ng/L	84	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	257	ng/L	103	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	219	ng/L	87	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	210	ng/L	84	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	248	ng/L	99	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	254	ng/L	102	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	267	ng/L	107	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	284	ng/L	114	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	279	ng/L	112	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	306	ng/L	122	50 - 150
67905-19-5-EIS	M2PFHxDA	250	297	ng/L	119	50 - 150
376-06-7-EIS	M2PFFTA	250	309	ng/L	124	50 - 150
13252-13-6-EIS	M3HFPODA	250	276	ng/L	110	50 - 150
375-73-5-EIS	M3PFBS	250	266	ng/L	107	50 - 150
355-46-4-EIS	M3PFHxS	250	271	ng/L	108	50 - 150
375-85-9-EIS	M4PFHpA	250	282	ng/L	113	50 - 150
307-24-4-EIS	M5PFHxA	250	282	ng/L	113	50 - 150
2706-90-3-EIS	M5PFPeA	250	272	ng/L	109	50 - 150
335-76-2-EIS	M6PFDA	250	281	ng/L	112	50 - 150
2058-94-8-EIS	M7PFUnA	250	268	ng/L	107	50 - 150
754-91-6-EIS	M8FOSA	250	239	ng/L	96	50 - 150
335-67-1-EIS	M8PFOA	250	281	ng/L	112	50 - 150
1763-23-1-EIS	M8PFOS	250	269	ng/L	108	50 - 150
375-95-1-EIS	M9PFNA	250	281	ng/L	112	50 - 150
375-22-4-EIS	MPFBA	250	256	ng/L	102	50 - 150
307-55-1-EIS	MPFDoA	250	273	ng/L	109	50 - 150

Sample Results

INFLUENT 02 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174501
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:10	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.07J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	218	ng/L	44*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	238	ng/L	95	50 - 150
1763-23-1-EIS	M8PFOS	250	194	ng/L	77	50 - 150

Sample Results

INFLUENT 07 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174502
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:20	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.14J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	12.2	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11.6	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	12.0	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.96J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	6.39J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	7.51J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 07 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174502
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:20	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	455	ng/L	91	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	145	ng/L	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	137	ng/L	55	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	246	ng/L	98	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	238	ng/L	95	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	172	ng/L	69	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	155	ng/L	62	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	379	ng/L	152*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	326	ng/L	130	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	227	ng/L	91	50 - 150
67905-19-5-EIS	M2PFHxDA	250	177	ng/L	71	50 - 150
376-06-7-EIS	M2PFFTA	250	223	ng/L	89	50 - 150
13252-13-6-EIS	M3HFPODA	250	220	ng/L	88	50 - 150
375-73-5-EIS	M3PFBS	250	245	ng/L	98	50 - 150
355-46-4-EIS	M3PFHxS	250	244	ng/L	97	50 - 150
375-85-9-EIS	M4PFHpA	250	269	ng/L	108	50 - 150
307-24-4-EIS	M5PFHxA	250	248	ng/L	99	50 - 150
2706-90-3-EIS	M5PFPeA	250	238	ng/L	95	50 - 150
335-76-2-EIS	M6PFDA	250	273	ng/L	109	50 - 150
2058-94-8-EIS	M7PFUnA	250	277	ng/L	111	50 - 150
754-91-6-EIS	M8FOSA	250	220	ng/L	88	50 - 150
335-67-1-EIS	M8PFOA	250	256	ng/L	102	50 - 150
1763-23-1-EIS	M8PFOS	250	339	ng/L	135	50 - 150
375-95-1-EIS	M9PFNA	250	256	ng/L	102	50 - 150
375-22-4-EIS	MPFBA	250	196	ng/L	79	50 - 150
307-55-1-EIS	MPFDoA	250	223	ng/L	89	50 - 150

Sample Results

INFLUENT 07 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174502
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:44	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	16.9	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	25.9	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16.4	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	14.9	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15.5	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	6.70J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	3.36J	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	15.2	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 07 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174502
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:44	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	423	ng/L	85	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	201	ng/L	81	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	189	ng/L	76	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	186	ng/L	74	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	224	ng/L	90	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	200	ng/L	80	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	229	ng/L	92	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	245	ng/L	98	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	224	ng/L	89	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	282	ng/L	113	50 - 150
67905-19-5-EIS	M2PFHxDA	250	258	ng/L	103	50 - 150
376-06-7-EIS	M2PFFTA	250	280	ng/L	112	50 - 150
13252-13-6-EIS	M3HFPODA	250	222	ng/L	89	50 - 150
375-73-5-EIS	M3PFBS	250	243	ng/L	97	50 - 150
355-46-4-EIS	M3PFHxS	250	244	ng/L	98	50 - 150
375-85-9-EIS	M4PFHpA	250	229	ng/L	91	50 - 150
307-24-4-EIS	M5PFHxA	250	230	ng/L	92	50 - 150
2706-90-3-EIS	M5PFPeA	250	228	ng/L	91	50 - 150
335-76-2-EIS	M6PFDA	250	240	ng/L	96	50 - 150
2058-94-8-EIS	M7PFUnA	250	235	ng/L	94	50 - 150
754-91-6-EIS	M8FOSA	250	198	ng/L	79	50 - 150
335-67-1-EIS	M8PFOA	250	234	ng/L	93	50 - 150
1763-23-1-EIS	M8PFOS	250	248	ng/L	99	50 - 150
375-95-1-EIS	M9PFNA	250	234	ng/L	94	50 - 150
375-22-4-EIS	MPFBA	250	209	ng/L	84	50 - 150
307-55-1-EIS	MPFDoA	250	245	ng/L	98	50 - 150



Sample Results

INFLUENT 07 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174502
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:24	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.63J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	210	ng/L	42*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	217	ng/L	87	50 - 150
1763-23-1-EIS	M8PFOS	250	200	ng/L	80	50 - 150

Sample Results

INFLUENT 08 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174503
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:34	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.60J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.76J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	4.86J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.48J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.56J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	56.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 08 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174503
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:34	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L

CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	463	ng/L	93	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	140	ng/L	56	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	139	ng/L	55	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	250	ng/L	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	224	ng/L	90	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	177	ng/L	71	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	147	ng/L	59	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	343	ng/L	137	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	326	ng/L	130	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	237	ng/L	95	50 - 150
67905-19-5-EIS	M2PFHxDA	250	171	ng/L	68	50 - 150
376-06-7-EIS	M2PFFTA	250	215	ng/L	86	50 - 150
13252-13-6-EIS	M3HFPODA	250	213	ng/L	85	50 - 150
375-73-5-EIS	M3PFBS	250	231	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	237	ng/L	95	50 - 150
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150
307-24-4-EIS	M5PFHxA	250	237	ng/L	95	50 - 150
2706-90-3-EIS	M5PFPeA	250	223	ng/L	89	50 - 150
335-76-2-EIS	M6PFDA	250	269	ng/L	107	50 - 150
2058-94-8-EIS	M7PFUnA	250	254	ng/L	102	50 - 150
754-91-6-EIS	M8FOSA	250	216	ng/L	86	50 - 150
335-67-1-EIS	M8PFOA	250	248	ng/L	99	50 - 150
1763-23-1-EIS	M8PFOS	250	254	ng/L	102	50 - 150
375-95-1-EIS	M9PFNA	250	252	ng/L	101	50 - 150
375-22-4-EIS	MPFBA	250	188	ng/L	75	50 - 150
307-55-1-EIS	MPFDoA	250	228	ng/L	91	50 - 150

Sample Results

INFLUENT 08 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174503
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:59	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	15.0	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	10.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.71J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	9.00J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15.3	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.70J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	18.1	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 08 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174503
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:59	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	483	ng/L	97	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	213	ng/L	85	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	199	ng/L	80	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	209	ng/L	84	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	235	ng/L	94	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	207	ng/L	83	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	257	ng/L	103	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	257	ng/L	103	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	246	ng/L	98	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	298	ng/L	119	50 - 150
67905-19-5-EIS	M2PFHxDA	250	279	ng/L	111	50 - 150
376-06-7-EIS	M2PFFTA	250	279	ng/L	112	50 - 150
13252-13-6-EIS	M3HFPODA	250	243	ng/L	97	50 - 150
375-73-5-EIS	M3PFBS	250	264	ng/L	105	50 - 150
355-46-4-EIS	M3PFHxS	250	269	ng/L	107	50 - 150
375-85-9-EIS	M4PFHpA	250	257	ng/L	103	50 - 150
307-24-4-EIS	M5PFHxA	250	254	ng/L	102	50 - 150
2706-90-3-EIS	M5PFPeA	250	248	ng/L	99	50 - 150
335-76-2-EIS	M6PFDA	250	271	ng/L	108	50 - 150
2058-94-8-EIS	M7PFUnA	250	263	ng/L	105	50 - 150
754-91-6-EIS	M8FOSA	250	215	ng/L	86	50 - 150
335-67-1-EIS	M8PFOA	250	261	ng/L	104	50 - 150
1763-23-1-EIS	M8PFOS	250	260	ng/L	104	50 - 150
375-95-1-EIS	M9PFNA	250	267	ng/L	107	50 - 150
375-22-4-EIS	MPFBA	250	231	ng/L	92	50 - 150
307-55-1-EIS	MPFDoA	250	261	ng/L	104	50 - 150

Sample Results

INFLUENT 08 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174503
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:39	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.93J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	212	ng/L	42*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	207	ng/L	83	50 - 150
1763-23-1-EIS	M8PFOS	250	187	ng/L	75	50 - 150



Sample Results

INFLUENT 11 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174504
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:49	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	3.44J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.97J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.52J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	69.7	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 11 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174504
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:49	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	490	ng/L	98	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	131	ng/L	52	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	124	ng/L	50	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	205	ng/L	82	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	241	ng/L	96	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	172	ng/L	69	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	129	ng/L	52	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	330	ng/L	132	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	363	ng/L	145	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	237	ng/L	95	50 - 150
67905-19-5-EIS	M2PFHxDA	250	160	ng/L	64	50 - 150
376-06-7-EIS	M2PFFTA	250	220	ng/L	88	50 - 150
13252-13-6-EIS	M3HFPODA	250	217	ng/L	87	50 - 150
375-73-5-EIS	M3PFBS	250	233	ng/L	93	50 - 150
355-46-4-EIS	M3PFHxS	250	239	ng/L	96	50 - 150
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150
307-24-4-EIS	M5PFHxA	250	237	ng/L	95	50 - 150
2706-90-3-EIS	M5PFPeA	250	222	ng/L	89	50 - 150
335-76-2-EIS	M6PFDA	250	272	ng/L	109	50 - 150
2058-94-8-EIS	M7PFUnA	250	267	ng/L	107	50 - 150
754-91-6-EIS	M8FOSA	250	210	ng/L	84	50 - 150
335-67-1-EIS	M8PFOA	250	255	ng/L	102	50 - 150
1763-23-1-EIS	M8PFOS	250	248	ng/L	99	50 - 150
375-95-1-EIS	M9PFNA	250	254	ng/L	102	50 - 150
375-22-4-EIS	MPFBA	250	186	ng/L	75	50 - 150
307-55-1-EIS	MPFDoA	250	226	ng/L	90	50 - 150

Sample Results

INFLUENT 11 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174504
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:13	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	17.3	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.95J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	11.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.85J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	7.96J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14.4	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.96J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	11.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 11 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174504
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:13	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	476	ng/L	95	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	176	ng/L	70	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	160	ng/L	64	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	195	ng/L	78	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	239	ng/L	96	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	176	ng/L	70	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	225	ng/L	90	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	269	ng/L	108	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	240	ng/L	96	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	297	ng/L	119	50 - 150
67905-19-5-EIS	M2PFHxDA	250	256	ng/L	102	50 - 150
376-06-7-EIS	M2PFFTA	250	301	ng/L	120	50 - 150
13252-13-6-EIS	M3HFPODA	250	230	ng/L	92	50 - 150
375-73-5-EIS	M3PFBS	250	249	ng/L	100	50 - 150
355-46-4-EIS	M3PFHxS	250	257	ng/L	103	50 - 150
375-85-9-EIS	M4PFHpA	250	252	ng/L	101	50 - 150
307-24-4-EIS	M5PFHxA	250	249	ng/L	99	50 - 150
2706-90-3-EIS	M5PFPeA	250	240	ng/L	96	50 - 150
335-76-2-EIS	M6PFDA	250	272	ng/L	109	50 - 150
2058-94-8-EIS	M7PFUnA	250	268	ng/L	107	50 - 150
754-91-6-EIS	M8FOSA	250	203	ng/L	81	50 - 150
335-67-1-EIS	M8PFOA	250	259	ng/L	104	50 - 150
1763-23-1-EIS	M8PFOS	250	263	ng/L	105	50 - 150
375-95-1-EIS	M9PFNA	250	269	ng/L	108	50 - 150
375-22-4-EIS	MPFBA	250	215	ng/L	86	50 - 150
307-55-1-EIS	MPFDoA	250	273	ng/L	109	50 - 150

Sample Results

INFLUENT 11 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174504
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:54	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.36J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MFOA	500	188	ng/L	38*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	219	ng/L	88	50 - 150
1763-23-1-EIS	M8PFOS	250	186	ng/L	75	50 - 150

Sample Results

INFLUENT 18 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174505
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:04	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.96J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	8.77J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14.9	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	8.01J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.87J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	6.81J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	6.59J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 18 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174505
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:04	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	480	ng/L	96	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	127	ng/L	51	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	134	ng/L	54	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	251	ng/L	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	245	ng/L	98	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	174	ng/L	70	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	147	ng/L	59	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	407	ng/L	163*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	365	ng/L	146	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	261	ng/L	104	50 - 150
67905-19-5-EIS	M2PFHxDA	250	154	ng/L	62	50 - 150
376-06-7-EIS	M2PFFTA	250	197	ng/L	79	50 - 150
13252-13-6-EIS	M3HFPODA	250	231	ng/L	93	50 - 150
375-73-5-EIS	M3PFBS	250	254	ng/L	101	50 - 150
355-46-4-EIS	M3PFHxS	250	252	ng/L	101	50 - 150
375-85-9-EIS	M4PFHpA	250	284	ng/L	114	50 - 150
307-24-4-EIS	M5PFHxA	250	260	ng/L	104	50 - 150
2706-90-3-EIS	M5PFPeA	250	243	ng/L	97	50 - 150
335-76-2-EIS	M6PFDA	250	278	ng/L	111	50 - 150
2058-94-8-EIS	M7PFUnA	250	269	ng/L	108	50 - 150
754-91-6-EIS	M8FOSA	250	221	ng/L	88	50 - 150
335-67-1-EIS	M8PFOA	250	270	ng/L	108	50 - 150
1763-23-1-EIS	M8PFOS	250	271	ng/L	108	50 - 150
375-95-1-EIS	M9PFNA	250	267	ng/L	107	50 - 150
375-22-4-EIS	MPFBA	250	203	ng/L	81	50 - 150
307-55-1-EIS	MPFDoA	250	205	ng/L	82	50 - 150

Sample Results

INFLUENT 18 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174505
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:28	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	19.9	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	22.8	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	19.4	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	11.2	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21.2	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.12J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 18 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174505
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:28	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	487	ng/L	97	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	200	ng/L	80	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	171	ng/L	68	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	216	ng/L	86	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	263	ng/L	105	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	199	ng/L	80	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	238	ng/L	95	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	287	ng/L	115	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	272	ng/L	109	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	330	ng/L	132	50 - 150
67905-19-5-EIS	M2PFHxDA	250	289	ng/L	116	50 - 150
376-06-7-EIS	M2PFATA	250	326	ng/L	130	50 - 150
13252-13-6-EIS	M3HFPODA	250	237	ng/L	95	50 - 150
375-73-5-EIS	M3PFBS	250	270	ng/L	108	50 - 150
355-46-4-EIS	M3PFHxS	250	275	ng/L	110	50 - 150
375-85-9-EIS	M4PFHpA	250	261	ng/L	104	50 - 150
307-24-4-EIS	M5PFHxA	250	257	ng/L	103	50 - 150
2706-90-3-EIS	M5PFPeA	250	244	ng/L	98	50 - 150
335-76-2-EIS	M6PFDA	250	293	ng/L	117	50 - 150
2058-94-8-EIS	M7PFUnA	250	289	ng/L	116	50 - 150
754-91-6-EIS	M8FOSA	250	207	ng/L	83	50 - 150
335-67-1-EIS	M8PFOA	250	272	ng/L	109	50 - 150
1763-23-1-EIS	M8PFOS	250	279	ng/L	112	50 - 150
375-95-1-EIS	M9PFNA	250	279	ng/L	112	50 - 150
375-22-4-EIS	MPFBA	250	223	ng/L	89	50 - 150
307-55-1-EIS	MPFDoA	250	291	ng/L	116	50 - 150

Sample Results

INFLUENT 18 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174505
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 23:08	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14.5	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MFOA	500	198	ng/L	40*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	180	ng/L	72	50 - 150
1763-23-1-EIS	M8PFOS	250	168	ng/L	67	50 - 150

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:19	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.86J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	7.34J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.27J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	16.4	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.17J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.29J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:19	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	438	ng/L	88	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	173	ng/L	69	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	185	ng/L	74	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	228	ng/L	91	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	238	ng/L	95	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	211	ng/L	84	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	186	ng/L	74	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	285	ng/L	114	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	253	ng/L	101	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	254	ng/L	102	50 - 150
67905-19-5-EIS	M2PFHxDA	250	219	ng/L	88	50 - 150
376-06-7-EIS	M2PFFTA	250	189	ng/L	76	50 - 150
13252-13-6-EIS	M3HFPODA	250	232	ng/L	93	50 - 150
375-73-5-EIS	M3PFBS	250	236	ng/L	94	50 - 150
355-46-4-EIS	M3PFHxS	250	237	ng/L	95	50 - 150
375-85-9-EIS	M4PFHpA	250	248	ng/L	99	50 - 150
307-24-4-EIS	M5PFHxA	250	239	ng/L	96	50 - 150
2706-90-3-EIS	M5PFPeA	250	234	ng/L	94	50 - 150
335-76-2-EIS	M6PFDA	250	250	ng/L	100	50 - 150
2058-94-8-EIS	M7PFUnA	250	246	ng/L	98	50 - 150
754-91-6-EIS	M8FOSA	250	227	ng/L	91	50 - 150
335-67-1-EIS	M8PFOA	250	239	ng/L	95	50 - 150
1763-23-1-EIS	M8PFOS	250	240	ng/L	96	50 - 150
375-95-1-EIS	M9PFNA	250	239	ng/L	96	50 - 150
375-22-4-EIS	MPFBA	250	215	ng/L	86	50 - 150
307-55-1-EIS	MPFDoA	250	232	ng/L	93	50 - 150

Sample Results

EFFLUENT 20221213	Collect Date	12/13/2022 23:59	Lab ID	22212174506
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:43	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	20.8	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.99J	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	4.30J	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	7.27J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	16.5	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	8.72J	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.67J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10.2	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	19.7	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	5.66J	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.47J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28.5	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	10.5	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.20U	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:43	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	11.3	ng/L	2*	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	9.59	ng/L	4*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	9.61	ng/L	4*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	6.41	ng/L	3*	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	6.76	ng/L	3*	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	7.18	ng/L	3*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	6.86	ng/L	3*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	10.1	ng/L	4*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	9.03	ng/L	4*	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	11.8	ng/L	5*	50 - 150
67905-19-5-EIS	M2PFHxDA	250	9.76	ng/L	4*	50 - 150
376-06-7-EIS	M2PFFTA	250	7.94	ng/L	3*	50 - 150
13252-13-6-EIS	M3HFPODA	250	9.11	ng/L	4*	50 - 150
375-73-5-EIS	M3PFBS	250	9.88	ng/L	4*	50 - 150
355-46-4-EIS	M3PFHxS	250	9.44	ng/L	4*	50 - 150
375-85-9-EIS	M4PFHpA	250	8.78	ng/L	4*	50 - 150
307-24-4-EIS	M5PFHxA	250	9.12	ng/L	4*	50 - 150
2706-90-3-EIS	M5PFPeA	250	8.88	ng/L	4*	50 - 150
335-76-2-EIS	M6PFDA	250	7.35	ng/L	3*	50 - 150
2058-94-8-EIS	M7PFUnA	250	7.1	ng/L	3*	50 - 150
754-91-6-EIS	M8FOSA	250	6.48	ng/L	3*	50 - 150
335-67-1-EIS	M8PFOA	250	9.11	ng/L	4*	50 - 150
1763-23-1-EIS	M8PFOS	250	9.04	ng/L	4*	50 - 150
375-95-1-EIS	M9PFNA	250	8.14	ng/L	3*	50 - 150
375-22-4-EIS	MPFBA	250	8.52	ng/L	3*	50 - 150
307-55-1-EIS	MPFDoA	250	6.77	ng/L	3*	50 - 150

Sample Results

EFFLUENT 20221213	Collect Date	12/13/2022 23:59	Lab ID	22212174506
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 23:37	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.30J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	20.1	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.28J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.04J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	14.8	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.90J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.21J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	15.9	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 23:37	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	180	ng/L	36*	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	88.6	ng/L	35*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	88.7	ng/L	35*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	139	ng/L	56	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	148	ng/L	59	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	130	ng/L	52	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	125	ng/L	50	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	201	ng/L	80	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	196	ng/L	78	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	176	ng/L	70	50 - 150
67905-19-5-EIS	M2PFHxDA	250	167	ng/L	67	50 - 150
376-06-7-EIS	M2PFFTA	250	166	ng/L	66	50 - 150
13252-13-6-EIS	M3HFPODA	250	236	ng/L	94	50 - 150
375-73-5-EIS	M3PFBS	250	227	ng/L	91	50 - 150
355-46-4-EIS	M3PFHxS	250	215	ng/L	86	50 - 150
375-85-9-EIS	M4PFHpA	250	233	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	232	ng/L	93	50 - 150
2706-90-3-EIS	M5PFPeA	250	223	ng/L	89	50 - 150
335-76-2-EIS	M6PFDA	250	180	ng/L	72	50 - 150
2058-94-8-EIS	M7PFUnA	250	163	ng/L	65	50 - 150
754-91-6-EIS	M8FOSA	250	139	ng/L	55	50 - 150
335-67-1-EIS	M8PFOA	250	226	ng/L	90	50 - 150
1763-23-1-EIS	M8PFOS	250	177	ng/L	71	50 - 150
375-95-1-EIS	M9PFNA	250	198	ng/L	79	50 - 150
375-22-4-EIS	MPFBA	250	224	ng/L	89	50 - 150
307-55-1-EIS	MPFDoA	250	151	ng/L	60	50 - 150

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:36	758104	SLR2	65.76

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.056U	0.056	2.82	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.141U	0.141	2.82	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	5.67	0.169	2.82	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	1.56J	0.085	2.82	ug/Kg
756426-58-1	9Cl-PF3ONS	0.085U	0.085	2.82	ug/Kg
919005-14-4	ADONA	0.028U	0.028	2.82	ug/Kg
4151-50-2	NEtFOSA	0.180J	0.113	2.82	ug/Kg
2991-50-6	NEtFOSAA	6.41	0.085	2.82	ug/Kg
1691-99-2	NEtFOSE	0.986J	0.085	2.82	ug/Kg
31506-32-8	NMeFOSA	0.201J	0.113	2.82	ug/Kg
2355-31-9	NMeFOSAA	25.3	0.056	2.82	ug/Kg
24448-09-7	NMeFOSE	4.25	0.085	2.82	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.395U	0.395	5.64	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.42J	0.056	2.82	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	6.56	0.113	2.82	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	1.41J	0.085	2.82	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	10.2	0.113	2.82	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	2.95	0.056	2.82	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.206J	0.056	2.82	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.74J	0.056	2.82	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.866J	0.085	2.82	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	28.5	0.056	2.82	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.085U	0.085	2.82	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	1.06J	0.056	2.82	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.54J	0.056	2.82	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11.8	0.141	2.82	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	22.0	0.226	2.82	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.056U	0.056	2.82	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.1	0.056	2.82	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.717J	0.056	2.82	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.440J	0.085	2.82	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.10J	0.056	2.82	ug/Kg

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:36	758104	SLR2	65.76

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	1.25J	0.085	2.82	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	96.5	15.9	ug/Kg	17*	50 - 150
335-67-1-SUR	MPFOA	4.83	2.81	ug/Kg	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	96.5	9.67	ug/Kg	10*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	96.5	49.6	ug/Kg	51	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	96.5	55.8	ug/Kg	58	50 - 150
24448-09-7-EIS	d7-NMeFOSE	96.5	26.3	ug/Kg	27*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	96.5	70.2	ug/Kg	73	50 - 150
757124-72-4-EIS	M2 4:2 FTS	96.5	98.6	ug/Kg	102	50 - 150
27619-97-2-EIS	M2 6:2 FTS	96.5	88	ug/Kg	91	50 - 150
39108-34-4-EIS	M2 8:2 FTS	96.5	102	ug/Kg	106	50 - 150
67905-19-5-EIS	M2PFHxDA	96.5	23.5	ug/Kg	24*	50 - 150
376-06-7-EIS	M2PFATA	96.5	32.7	ug/Kg	34*	50 - 150
13252-13-6-EIS	M3HFPODA	96.5	54.2	ug/Kg	56	50 - 150
375-73-5-EIS	M3PFBS	96.5	55.3	ug/Kg	57	50 - 150
355-46-4-EIS	M3PFHxS	96.5	55.2	ug/Kg	57	50 - 150
375-85-9-EIS	M4PFHpA	96.5	58.2	ug/Kg	60	50 - 150
307-24-4-EIS	M5PFHxA	96.5	59.2	ug/Kg	61	50 - 150
2706-90-3-EIS	M5PFPeA	96.5	53.4	ug/Kg	55	50 - 150
335-76-2-EIS	M6PFDA	96.5	63.2	ug/Kg	65	50 - 150
2058-94-8-EIS	M7PFUnA	96.5	60.4	ug/Kg	63	50 - 150
754-91-6-EIS	M8FOSA	96.5	46.9	ug/Kg	49*	50 - 150
335-67-1-EIS	M8PFOA	96.5	61.7	ug/Kg	64	50 - 150
1763-23-1-EIS	M8PFOS	96.5	58.2	ug/Kg	60	50 - 150
375-95-1-EIS	M9PFNA	96.5	63	ug/Kg	65	50 - 150
375-22-4-EIS	MPFBA	96.5	49.6	ug/Kg	51	50 - 150
307-55-1-EIS	MPFDoA	96.5	51.8	ug/Kg	54	50 - 150

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 08:00	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:40	758656	SXA	65.76

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.055U	0.055	2.74	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.137U	0.137	2.74	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	2.81	0.165	2.74	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.694J	0.082	2.74	ug/Kg
756426-58-1	9Cl-PF3ONS	0.082U	0.082	2.74	ug/Kg
919005-14-4	ADONA	0.027U	0.027	2.74	ug/Kg
4151-50-2	NEtFOSA	0.110U	0.110	2.74	ug/Kg
2991-50-6	NEtFOSAA	0.082U	0.082	2.74	ug/Kg
1691-99-2	NEtFOSE	0.135J	0.082	2.74	ug/Kg
31506-32-8	NMeFOSA	0.110U	0.110	2.74	ug/Kg
2355-31-9	NMeFOSAA	0.075J	0.055	2.74	ug/Kg
24448-09-7	NMeFOSE	0.082U	0.082	2.74	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.384U	0.384	5.49	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.33J	0.055	2.74	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	33.1	0.110	2.74	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.857J	0.082	2.74	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	4.09	0.110	2.74	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.93J	0.055	2.74	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.082J	0.055	2.74	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.07	0.055	2.74	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.805J	0.082	2.74	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	17.7	0.055	2.74	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.082U	0.082	2.74	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	2.73J	0.055	2.74	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.151J	0.055	2.74	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.56	0.137	2.74	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	9.25	0.220	2.74	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.055U	0.055	2.74	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	22.1	0.055	2.74	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.406J	0.055	2.74	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.423J	0.082	2.74	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.44J	0.055	2.74	ug/Kg

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 08:00	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:40	758656	SXA	65.76

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.082U	0.082	2.74	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.7	.157	ug/Kg	3*	50 - 150
4151-50-2-EIS	d-NEtFOSA	94	59.8	ug/Kg	64	50 - 150
31506-32-8-EIS	d-NMeFOSA	94	63.4	ug/Kg	67	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	94	69.1	ug/Kg	73	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	94	68.3	ug/Kg	73	50 - 150
24448-09-7-EIS	d7-NMeFOSE	94	50.4	ug/Kg	54	50 - 150
1691-99-2-EIS	d9-NEtFOSE	94	52.7	ug/Kg	56	50 - 150
757124-72-4-EIS	M2 4:2 FTS	94	87.4	ug/Kg	93	50 - 150
27619-97-2-EIS	M2 6:2 FTS	94	81.2	ug/Kg	86	50 - 150
39108-34-4-EIS	M2 8:2 FTS	94	76.1	ug/Kg	81	50 - 150
67905-19-5-EIS	M2PFHxDA	94	99.5	ug/Kg	106	50 - 150
376-06-7-EIS	M2PFFTA	94	71.5	ug/Kg	76	50 - 150
13252-13-6-EIS	M3HFPODA	94	81.5	ug/Kg	87	50 - 150
375-73-5-EIS	M3PFBS	94	80	ug/Kg	85	50 - 150
355-46-4-EIS	M3PFHxS	94	78.8	ug/Kg	84	50 - 150
375-85-9-EIS	M4PFHpA	94	83	ug/Kg	88	50 - 150
307-24-4-EIS	M5PFHxA	94	81.7	ug/Kg	87	50 - 150
2706-90-3-EIS	M5PFPeA	94	76.3	ug/Kg	81	50 - 150
335-76-2-EIS	M6PFDA	94	71.8	ug/Kg	76	50 - 150
2058-94-8-EIS	M7PFUnA	94	64.3	ug/Kg	68	50 - 150
754-91-6-EIS	M8FOSA	94	72.3	ug/Kg	77	50 - 150
335-67-1-EIS	M8PFOA	94	82.6	ug/Kg	88	50 - 150
1763-23-1-EIS	M8PFOS	94	69.2	ug/Kg	74	50 - 150
375-95-1-EIS	M9PFNA	94	77.9	ug/Kg	83	50 - 150
375-22-4-EIS	MPFBA	94	11.7	ug/Kg	12*	50 - 150
307-55-1-EIS	MPFDoA	94	62.1	ug/Kg	66	50 - 150

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:50	758104	SLR2	93.64

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.299U	0.299	15.0	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.748U	0.748	15.0	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	0.897U	0.897	15.0	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.449U	0.449	15.0	ug/Kg
756426-58-1	9Cl-PF3ONS	0.449U	0.449	15.0	ug/Kg
919005-14-4	ADONA	0.150U	0.150	15.0	ug/Kg
4151-50-2	NEtFOSA	0.598U	0.598	15.0	ug/Kg
2991-50-6	NEtFOSAA	3.28J	0.449	15.0	ug/Kg
1691-99-2	NEtFOSE	0.740J	0.449	15.0	ug/Kg
31506-32-8	NMeFOSA	0.598U	0.598	15.0	ug/Kg
2355-31-9	NMeFOSAA	7.23J	0.299	15.0	ug/Kg
24448-09-7	NMeFOSE	3.76J	0.449	15.0	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.09U	2.09	29.9	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.299U	0.299	15.0	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	0.598U	0.598	15.0	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	7.57J	0.449	15.0	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	2.26J	0.598	15.0	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.30J	0.299	15.0	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.299U	0.299	15.0	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.299U	0.299	15.0	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.873J	0.449	15.0	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	0.991J	0.299	15.0	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.449U	0.449	15.0	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.323J	0.299	15.0	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85J	0.299	15.0	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.64J	0.748	15.0	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	1.20U	1.20	15.0	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.299U	0.299	15.0	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.411J	0.299	15.0	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.413J	0.299	15.0	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.449U	0.449	15.0	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.589J	0.299	15.0	ug/Kg

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:50	758104	SLR2	93.64

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	2.57J	0.449	15.0	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	95.1	5.52	ug/Kg	6*	50 - 150
335-67-1-SUR	MPFOA	4.75	2.76	ug/Kg	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.1	5.79	ug/Kg	6*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.1	49.1	ug/Kg	52	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.1	55.5	ug/Kg	58	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.1	24.4	ug/Kg	26*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.1	47.1	ug/Kg	50	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.1	69.4	ug/Kg	73	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.1	64.6	ug/Kg	68	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.1	48.8	ug/Kg	51	50 - 150
67905-19-5-EIS	M2PFHxDA	95.1	42.8	ug/Kg	45*	50 - 150
376-06-7-EIS	M2PFFTA	95.1	53.8	ug/Kg	57	50 - 150
13252-13-6-EIS	M3HFPODA	95.1	56.6	ug/Kg	60	50 - 150
375-73-5-EIS	M3PFBS	95.1	54.4	ug/Kg	57	50 - 150
355-46-4-EIS	M3PFHxS	95.1	52.9	ug/Kg	56	50 - 150
375-85-9-EIS	M4PFHpA	95.1	56.5	ug/Kg	59	50 - 150
307-24-4-EIS	M5PFHxA	95.1	58.8	ug/Kg	62	50 - 150
2706-90-3-EIS	M5PFPeA	95.1	54.3	ug/Kg	57	50 - 150
335-76-2-EIS	M6PFDA	95.1	55.5	ug/Kg	58	50 - 150
2058-94-8-EIS	M7PFUnA	95.1	57.8	ug/Kg	61	50 - 150
754-91-6-EIS	M8FOSA	95.1	42	ug/Kg	44*	50 - 150
335-67-1-EIS	M8PFOA	95.1	57.4	ug/Kg	60	50 - 150
1763-23-1-EIS	M8PFOS	95.1	53.9	ug/Kg	57	50 - 150
375-95-1-EIS	M9PFNA	95.1	56.6	ug/Kg	60	50 - 150
375-22-4-EIS	MPFBA	95.1	52.4	ug/Kg	55	50 - 150
307-55-1-EIS	MPFDoA	95.1	55.8	ug/Kg	59	50 - 150

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/17/23 09:15	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:55	758656	SXA	93.64

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.301U	0.301	15.0	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.752U	0.752	15.0	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	7.54J	0.902	15.0	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	1.87J	0.451	15.0	ug/Kg
756426-58-1	9Cl-PF3ONS	0.451U	0.451	15.0	ug/Kg
919005-14-4	ADONA	0.150U	0.150	15.0	ug/Kg
4151-50-2	NEtFOSA	0.601U	0.601	15.0	ug/Kg
2991-50-6	NEtFOSAA	0.451U	0.451	15.0	ug/Kg
1691-99-2	NEtFOSE	0.451U	0.451	15.0	ug/Kg
31506-32-8	NMeFOSA	0.601U	0.601	15.0	ug/Kg
2355-31-9	NMeFOSAA	0.301U	0.301	15.0	ug/Kg
24448-09-7	NMeFOSE	0.451U	0.451	15.0	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.11U	2.11	30.1	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.834J	0.301	15.0	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	34.2	0.601	15.0	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.451U	0.451	15.0	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	1.93J	0.601	15.0	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.04J	0.301	15.0	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.301U	0.301	15.0	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.01J	0.301	15.0	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.584J	0.451	15.0	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	11.1J	0.301	15.0	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.451U	0.451	15.0	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	2.31J	0.301	15.0	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.556J	0.301	15.0	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.51J	0.752	15.0	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	5.48J	1.20	15.0	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.301U	0.301	15.0	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	18.4	0.301	15.0	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.301U	0.301	15.0	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.451U	0.451	15.0	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.20J	0.301	15.0	ug/Kg

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/17/23 09:15	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:55	758656	SXA	93.64

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.451U	0.451	15.0	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.78	.065	ug/Kg	1*	50 - 150
4151-50-2-EIS	d-NEtFOSA	95.6	43.6	ug/Kg	46*	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.6	59.7	ug/Kg	62	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.6	76.9	ug/Kg	80	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.6	77.4	ug/Kg	81	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.6	48.2	ug/Kg	50	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.6	49.4	ug/Kg	52	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.6	93.5	ug/Kg	98	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.6	88.4	ug/Kg	92	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.6	86.3	ug/Kg	90	50 - 150
67905-19-5-EIS	M2PFHxDA	95.6	98.9	ug/Kg	103	50 - 150
376-06-7-EIS	M2PFFTA	95.6	70.7	ug/Kg	74	50 - 150
13252-13-6-EIS	M3HFPODA	95.6	83.2	ug/Kg	87	50 - 150
375-73-5-EIS	M3PFBS	95.6	84.2	ug/Kg	88	50 - 150
355-46-4-EIS	M3PFHxS	95.6	85.5	ug/Kg	89	50 - 150
375-85-9-EIS	M4PFHpA	95.6	87.1	ug/Kg	91	50 - 150
307-24-4-EIS	M5PFHxA	95.6	86.1	ug/Kg	90	50 - 150
2706-90-3-EIS	M5PFPeA	95.6	79.9	ug/Kg	84	50 - 150
335-76-2-EIS	M6PFDA	95.6	84.7	ug/Kg	89	50 - 150
2058-94-8-EIS	M7PFUnA	95.6	77.4	ug/Kg	81	50 - 150
754-91-6-EIS	M8FOSA	95.6	83.9	ug/Kg	88	50 - 150
335-67-1-EIS	M8PFOA	95.6	88.4	ug/Kg	92	50 - 150
1763-23-1-EIS	M8PFOS	95.6	83	ug/Kg	87	50 - 150
375-95-1-EIS	M9PFNA	95.6	86.7	ug/Kg	91	50 - 150
375-22-4-EIS	MPFBA	95.6	15.5	ug/Kg	16*	50 - 150
307-55-1-EIS	MPFDoA	95.6	62.6	ug/Kg	66	50 - 150

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS757943			LCS757943						
758656		MB757943	2441231			2441233						
Prep Batch		Sample Type	MB			LCS						
757943		Prep Date	01/17/23 09:15			01/17/23 09:15						
Prep Method		Analysis Date	01/25/23 16:54			01/25/23 17:09						
PFAS Top Assay QSM B15 (Post)		Matrix	Solid			Solid						
PFAS Top Assay QSM B15 (Post)		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
11CI-PF3OUdS	763051-92-9	0.020U	0.020	1.89	2.12	112	70 - 130	1.89	2.09	111	2	30
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.050U	0.050	1.87	2.28	122	70 - 130	1.87	2.40	128	5	30
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	1.00	0.060	1.90	3.13	164*	70 - 130	1.90	3.14	165*	1	30
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.294J	0.030	1.92	2.54	132*	70 - 130	1.92	2.62	136*	3	30
9CI-PF3ONS	756426-58-1	0.030U	0.030	1.87	2.15	115	70 - 130	1.87	2.20	118	3	30
ADONA	919005-14-4	0.010U	0.010	1.89	2.19	116	70 - 130	1.89	2.37	125	8	30
NEtFOSA	4151-50-2	0.040U	0.040	2.00	2.02	101	70 - 130	2.00	2.06	103	2	30
NEtFOSAA	2991-50-6	0.030U	0.030	2.00	2.19	110	70 - 130	2.00	2.44	122	11	30
NEtFOSE	1691-99-2	0.030U	0.030	2.00	2.15	107	70 - 130	2.00	2.13	106	1	30
NMeFOSA	31506-32-8	0.040U	0.040	2.00	2.18	109	70 - 130	2.00	2.03	101	8	30
NMeFOSAA	2355-31-9	0.020U	0.020	2.00	2.46	123	70 - 130	2.00	2.39	120	3	30
NMeFOSE	24448-09-7	0.030U	0.030	2.00	2.18	109	70 - 130	2.00	2.07	104	5	30
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	0.140U	0.140	4.00	4.51	113	70 - 130	4.00	4.75	119	5	30
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.020U	0.020	1.77	2.09	118	70 - 130	1.77	2.22	125	6	30
Perfluorobutanoic acid (PFBA)	375-22-4	0.059J	0.040	2.00	2.38	119	70 - 130	2.00	2.51	126	6	30
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.030U	0.030	1.93	2.20	114	70 - 130	1.93	2.14	111	3	30
Perfluorodecanoic acid (PFDA)	335-76-2	0.040U	0.040	2.00	2.38	119	70 - 130	2.00	2.45	122	3	30
Perfluorododecanoic acid (PFDoA)	307-55-1	0.020U	0.020	2.00	2.30	115	70 - 130	2.00	2.42	121	5	30
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.020U	0.020	1.91	2.24	117	70 - 130	1.91	2.27	119	2	30
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.020U	0.020	2.00	2.29	115	70 - 130	2.00	2.41	121	5	30
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.030U	0.030	1.83	2.25	123	70 - 130	1.83	2.22	121	1	30
Perfluorohexanoic acid (PFHxA)	307-24-4	0.032J	0.020	2.00	2.37	119	70 - 130	2.00	2.45	123	3	30
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.030U	0.030	1.92	2.16	112	70 - 130	1.92	2.26	117	4	30
Perfluorononanoic acid (PFNA)	375-95-1	0.020U	0.020	2.00	2.32	116	70 - 130	2.00	2.46	123	6	30
Perfluorooctane Sulfonamide (FOSA)	754-91-6	0.027J	0.020	2.00	2.28	114	70 - 130	2.00	2.35	118	3	30
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.050U	0.050	1.86	2.14	115	70 - 130	1.86	2.21	119	3	30
Perfluorooctanoic acid (PFOA)	335-67-1	0.080U	0.080	2.00	2.34	117	70 - 130	2.00	2.41	120	3	30
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.020U	0.020	1.88	2.23	119	70 - 130	1.88	2.38	126	6	30
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.020U	0.020	2.00	2.34	117	70 - 130	2.00	2.44	122	4	30
Perfluorotetradecanoic acid (PFTA)	376-06-7	0.020U	0.020	2.00	2.30	115	70 - 130	2.00	2.52	126	9	30
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.030U	0.030	2.00	2.34	117	70 - 130	2.00	2.49	124	6	30
Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.020U	0.020	2.00	2.36	118	70 - 130	2.00	2.35	118	0	30
PFDoS	79780-39-5	0.030U	0.030	1.94	2.04	105	70 - 130	1.94	1.99	103	2	30
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%R	Limits	CalArea	Area	%	RPD	Limit
d3-NMeFOSAA	2355-31-9-EIS	80.6	81	100	79.7	80	50 - 150	100	79.3	79	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	87.6	88	100	88.8	89	50 - 150	100	79.8	80	NA	NA
d7-NMeFOSE	24448-09-7-EIS	51	51	100	64.7	65	50 - 150	100	65	65	NA	NA
d9-NEtFOSE	1691-99-2-EIS	46.3	46*	100	64	64	50 - 150	100	56.8	57	NA	NA
d-NEtFOSA	4151-50-2-EIS	7.53	8*	100	51.8	52	50 - 150	100	17.4	17*	NA	NA
d-NMeFOSA	31506-32-8-EIS	14.7	15*	100	50.4	50	50 - 150	100	29.8	30*	NA	NA
M2 4:2 FTS	757124-72-4-EIS	95.6	96	100	85.4	85	50 - 150	100	85.9	86	NA	NA
M2 6:2 FTS	27619-97-2-EIS	81	81	100	83.3	83	50 - 150	100	83.6	84	NA	NA
M2 8:2 FTS	39108-34-4-EIS	86.2	86	100	90.4	90	50 - 150	100	87.3	87	NA	NA
M2PFHxDA	67905-19-5-EIS	106	106	100	116	116	50 - 150	100	104	104	NA	NA
M2PFTA	376-06-7-EIS	80.5	81	100	82.8	83	50 - 150	100	78.6	79	NA	NA
M3HFPODA	13252-13-6-EIS	82.6	83	100	83.6	84	50 - 150	100	86.7	87	NA	NA
M3PFBS	375-73-5-EIS	78.9	79	100	82.1	82	50 - 150	100	83.2	83	NA	NA
M3PFHxS	355-46-4-EIS	81.4	81	100	83.7	84	50 - 150	100	86.4	86	NA	NA
M4PFHpA	375-85-9-EIS	82.9	83	100	85.9	86	50 - 150	100	87	87	NA	NA
M5PFHxA	307-24-4-EIS	84.2	84	100	84	84	50 - 150	100	86.1	86	NA	NA
M5PFPeA	2706-90-3-EIS	82	82	100	84.2	84	50 - 150	100	85.5	86	NA	NA
M6PFDA	335-76-2-EIS	84.3	84	100	87	87	50 - 150	100	85.1	85	NA	NA
M7PFUnA	2058-94-8-EIS	86.1	86	100	83.4	83	50 - 150	100	83.4	83	NA	NA
M8FOSA	754-91-6-EIS	73.1	73	100	77.3	77	50 - 150	100	76.5	76	NA	NA
M8PFOA	335-67-1-EIS	84.8	85	100	85.9	86	50 - 150	100	86.1	86	NA	NA
M8PFOS	1763-23-1-EIS	83.4	83	100	84.6	85	50 - 150	100	86	86	NA	NA
M9PFNA	375-95-1-EIS	87.1	87	100	86.3	86	50 - 150	100	87	87	NA	NA
MPFBA	375-22-4-EIS	82	82	100	83.3	83	50 - 150	100	86.4	86	NA	NA



Report#: 222121745
Project ID: 10637158 MMSD PFAS

Report Date: 04/13/2023

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB757943	LCS757943				LCSD757943				
758656		Lab ID	2441231	2441232				2441233				
Prep Batch		Sample Type	MB	LCS				LCSD				
757943		Prep Date	01/17/23 09:15	01/17/23 09:15				01/17/23 09:15				
Prep Method		Analysis Date	01/25/23 16:54	01/25/23 17:09				01/25/23 17:25				
PFAS Top Assay QSM B15 (Post)		Matrix	Solid	Solid				Solid				
PFAS Top Assay QSM B15 (Post)		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS	78.5	79	100	81.6	82	50 - 150	100	79.3	79	NA	NA
MPFOA	335-67-1-SUR	3.86	77	5	4.11	82	50 - 150	5	4.28	86	NA	NA

LC-MS/MS QC Summary

Analytical Batch 757777		Client ID MB757168	LCS757168					LCSD757168				
Prep Batch 757168		Lab ID 2437554	2437555					2437556				
Prep Method PFAS Top Assay QSM B15 (Post)		Sample Type MB	LCS					LCSD				
		Prep Date 12/30/22 14:30	12/30/22 14:30					12/30/22 14:30				
		Analysis Date 01/11/23 02:16	01/11/23 02:31					01/11/23 02:45				
		Matrix Water	Water					Water				
PFAS Top Assay QSM B15 (Post)		Units Result	ng/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
11CI-PF3OudS	763051-92-9	2.25U	2.25	189	195	103	70 - 130	189	186	99	5	20
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	3.10U	3.10	187	202	108	70 - 130	187	190	101	6	20
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	15.9	3.75	190	228	120	70 - 130	190	249	131*	9	20
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2.65U	2.65	192	209	109	70 - 130	192	200	104	5	20
9CI-PF3ONS	756426-58-1	2.25U	2.25	187	188	101	70 - 130	187	183	98	3	20
ADONA	919005-14-4	2.15U	2.15	189	186	98	70 - 130	189	167	89	10	20
NEtFOSA	4151-50-2	3.50U	3.50	200	194	97	70 - 130	200	203	101	5	20
NEtFOSAA	2991-50-6	3.95U	3.95	200	205	103	70 - 130	200	188	94	9	20
NEtFOSE	1691-99-2	2.53U	2.53	200	202	101	70 - 130	200	193	97	5	20
NMeFOSA	31506-32-8	4.15U	4.15	200	182	91	70 - 130	200	194	97	6	20
NMeFOSAA	2355-31-9	2.25U	2.25	200	208	104	70 - 130	200	207	103	0	20
NMeFOSE	24448-09-7	3.25U	3.25	200	196	98	70 - 130	200	191	96	2	20
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	4.33U	4.33	400	410	102	70 - 130	400	387	97	6	20
Perfluorobutanesulfonic acid (PFBS)	375-73-5	1.55U	1.55	177	183	103	70 - 130	177	170	96	7	20
Perfluorobutanoic acid (PFBA)	375-22-4	3.80U	3.80	200	212	106	70 - 130	200	197	98	7	20
Perfluorodecane sulfonic acid (PFDS)	335-77-3	3.05U	3.05	193	190	99	70 - 130	193	184	95	3	20
Perfluorodecanoic acid (PFDA)	335-76-2	3.60U	3.60	200	205	103	70 - 130	200	198	99	3	20
Perfluorododecanoic acid (PFDoA)	307-55-1	3.25U	3.25	200	204	102	70 - 130	200	196	98	4	20
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	3.05U	3.05	191	193	102	70 - 130	191	183	96	6	20
Perfluoroheptanoic acid (PFHpA)	375-85-9	2.90U	2.90	200	206	103	70 - 130	200	192	96	7	20
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	3.10U	3.10	183	183	100	70 - 130	183	175	96	5	20
Perfluorohexanoic acid (PFHxA)	307-24-4	2.35U	2.35	200	203	102	70 - 130	200	190	95	7	20
Perfluorononanesulfonic acid (PFNS)	68259-12-1	4.35U	4.35	192	193	100	70 - 130	192	188	98	2	20
Perfluorononanoic acid (PFNA)	375-95-1	2.45U	2.45	200	208	104	70 - 130	200	195	98	6	20
Perfluorooctane Sulfonamide (FOSA)	754-91-6	1.85U	1.85	200	201	100	70 - 130	200	196	98	2	20
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	7.87J	1.90	186	194	105	70 - 130	186	235	126	19	20
Perfluorooctanoic acid (PFOA)	335-67-1	2.10U	2.10	200	204	102	70 - 130	200	193	97	5	20
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	2.55U	2.55	188	196	104	70 - 130	188	184	98	6	20
Perfluoropentanoic acid (PFPeA)	2706-90-3	2.20U	2.20	200	207	104	70 - 130	200	190	95	8	20
Perfluorotetradecanoic acid (PFTA)	376-06-7	2.85U	2.85	200	199	100	70 - 130	200	191	95	4	20
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	3.08U	3.08	200	199	100	70 - 130	200	188	94	6	20
Perfluoroundecanoic acid (PFUnA)	2058-94-8	3.10U	3.10	200	205	102	70 - 130	200	191	95	7	20
PFDoS	79780-39-5	3.28U	3.28	194	174	90	70 - 130	194	182	94	4	20
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%R	Limits	CalArea	Area	%	RPD	Limit
d3-NMeFOSAA	2355-31-9-EIS	219	88	250	228	91	50 - 150	250	274	110	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	255	102	250	245	98	50 - 150	250	302	121	NA	NA
d7-NMeFOSE	24448-09-7-EIS	232	93	250	148	59	50 - 150	250	257	103	NA	NA
d9-NEtFOSE	1691-99-2-EIS	245	98	250	142	57	50 - 150	250	268	107	NA	NA
d-NEtFOSA	4151-50-2-EIS	189	76	250	43.3	17*	50 - 150	250	195	78	NA	NA
d-NMeFOSA	31506-32-8-EIS	175	70	250	45.8	18*	50 - 150	250	196	78	NA	NA
M2 4:2 FTS	757124-72-4-EIS	260	104	250	256	102	50 - 150	250	313	125	NA	NA
M2 6:2 FTS	27619-97-2-EIS	247	99	250	239	96	50 - 150	250	290	116	NA	NA
M2 8:2 FTS	39108-34-4-EIS	271	108	250	280	112	50 - 150	250	338	135	NA	NA
M2PFHxDA	67905-19-5-EIS	298	119	250	286	114	50 - 150	250	351	140	NA	NA
M2PFTA	376-06-7-EIS	260	104	250	253	101	50 - 150	250	320	128	NA	NA
M3HFPODA	13252-13-6-EIS	253	101	250	249	100	50 - 150	250	272	109	NA	NA
M3PFBS	375-73-5-EIS	245	98	250	241	97	50 - 150	250	302	121	NA	NA
M3PFHxS	355-46-4-EIS	252	101	250	251	101	50 - 150	250	310	124	NA	NA
M4PFHpA	375-85-9-EIS	268	107	250	260	104	50 - 150	250	297	119	NA	NA
M5PFHxA	307-24-4-EIS	268	107	250	253	101	50 - 150	250	284	114	NA	NA
M5PFPeA	2706-90-3-EIS	258	103	250	247	99	50 - 150	250	278	111	NA	NA
M6PFDA	335-76-2-EIS	265	106	250	267	107	50 - 150	250	316	126	NA	NA
M7PFUnA	2058-94-8-EIS	257	103	250	253	101	50 - 150	250	312	125	NA	NA
M8FOSA	754-91-6-EIS	225	90	250	176	70	50 - 150	250	234	94	NA	NA
M8PFOA	335-67-1-EIS	271	108	250	265	106	50 - 150	250	308	123	NA	NA
M8PFOS	1763-23-1-EIS	248	99	250	252	101	50 - 150	250	304	122	NA	NA
M9PFNA	375-95-1-EIS	265	106	250	260	104	50 - 150	250	313	125	NA	NA
MPFBA	375-22-4-EIS	248	99	250	234	94	50 - 150	250	260	104	NA	NA



Report#: 222121745
Project ID: 10637158 MMSD PFAS

Report Date: 04/13/2023

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB757168	LCS757168				LCSD757168					
757777		Lab ID	2437554	2437555				2437556					
Prep Batch		Sample Type	MB	LCS				LCSD					
757168		Prep Date	12/30/22 14:30	12/30/22 14:30				12/30/22 14:30					
Prep Method		Analysis Date	01/11/23 02:16	01/11/23 02:31				01/11/23 02:45					
PFAS Top Assay QSM B15 (Post)		Matrix	Water	Water				Water					
PFAS Top Assay QSM B15 (Post)			Units Result	ng/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS	251	100	250	252	101	50 - 150	250	316	126	NA	NA	
MPFOA	335-67-1-SUR	498	100	500	486	97	50 - 150	500	583	117	NA	NA	

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS759538				LCSD759538					
759869		MB759538	2450046				2450047					
Prep Batch		Sample Type	LCS				LCSD					
759538		MB	LCS				LCSD					
Prep Method		Prep Date	02/08/23 14:00				02/08/23 14:00					
PFAS Top Assay QSM B15 (Post)		Analysis Date	02/14/23 21:11				02/14/23 21:40					
		Matrix	Water				Water					
PFAS Top Assay QSM B15 (Post)		Units	ng/L	Spike	Result	%R	Control	Spike	Result	%R	RPD	RPD
		Result	DL	Added			Limits	Added			Limit	Limit
11CI-PF3OUdS	763051-92-9	2.25U	2.25	189	188	100	70 - 130	189	185	98	2	20
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	3.10U	3.10	187	207	111	70 - 130	187	202	108	2	20
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	3.75U	3.75	190	214	112	70 - 130	190	216	114	1	20
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2.65U	2.65	192	212	111	70 - 130	192	216	113	2	20
9CI-PF3ONS	756426-58-1	2.25U	2.25	187	189	101	70 - 130	187	189	101	0	20
ADONA	919005-14-4	2.15U	2.15	189	195	103	70 - 130	189	193	102	1	20
NEtFOSA	4151-50-2	3.50U	3.50	200	234	117	70 - 130	200	204	102	14	20
NEtFOSAA	2991-50-6	3.95U	3.95	200	206	103	70 - 130	200	215	108	4	20
NEtFOSE	1691-99-2	2.53U	2.53	200	224	112	70 - 130	200	211	106	6	20
NMeFOSA	31506-32-8	4.15U	4.15	200	258	129	70 - 130	200	231	116	11	20
NMeFOSAA	2355-31-9	2.25U	2.25	200	233	116	70 - 130	200	216	108	8	20
NMeFOSE	24448-09-7	3.25U	3.25	200	227	114	70 - 130	200	209	105	8	20
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	4.33U	4.33	400	419	105	70 - 130	400	452	113	8	20
Perfluorobutanesulfonic acid (PFBS)	375-73-5	1.55U	1.55	177	191	108	70 - 130	177	187	105	2	20
Perfluorobutanoic acid (PFBA)	375-22-4	3.80U	3.80	200	217	109	70 - 130	200	215	107	1	20
Perfluorodecane sulfonic acid (PFDS)	335-77-3	3.05U	3.05	193	192	100	70 - 130	193	189	98	2	20
Perfluorodecanoic acid (PFDA)	335-76-2	3.60U	3.60	200	211	106	70 - 130	200	209	105	1	20
Perfluorododecanoic acid (PFDoA)	307-55-1	3.25U	3.25	200	228	114	70 - 130	200	211	105	8	20
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	3.05U	3.05	191	194	102	70 - 130	191	196	103	1	20
Perfluoroheptanoic acid (PFHpA)	375-85-9	2.90U	2.90	200	210	105	70 - 130	200	208	104	1	20
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	3.10U	3.10	183	192	105	70 - 130	183	193	105	1	20
Perfluorohexanoic acid (PFHxA)	307-24-4	2.35U	2.35	200	207	103	70 - 130	200	212	106	2	20
Perfluorononanesulfonic acid (PFNS)	68259-12-1	4.35U	4.35	192	212	110	70 - 130	192	198	103	7	20
Perfluorononanoic acid (PFNA)	375-95-1	2.45U	2.45	200	215	107	70 - 130	200	210	105	2	20
Perfluorooctane Sulfonamide (FOSA)	754-91-6	1.85U	1.85	200	226	113	70 - 130	200	220	110	3	20
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.90U	1.90	186	195	105	70 - 130	186	197	106	1	20
Perfluorooctanoic acid (PFOA)	335-67-1	2.10U	2.10	200	211	105	70 - 130	200	208	104	1	20
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	2.55U	2.55	188	205	109	70 - 130	188	200	106	2	20
Perfluoropentanoic acid (PFPeA)	2706-90-3	2.20U	2.20	200	215	107	70 - 130	200	213	107	1	20
Perfluorotetradecanoic acid (PFTA)	376-06-7	2.85U	2.85	200	220	110	70 - 130	200	212	106	4	20
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	3.08U	3.08	200	218	109	70 - 130	200	207	104	5	20
Perfluoroundecanoic acid (PFUnA)	2058-94-8	3.10U	3.10	200	214	107	70 - 130	200	207	103	3	20
PFDoS	79780-39-5	3.28U	3.28	194	189	97	70 - 130	194	183	95	3	20
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%R	Limits	CalArea	Area	%	RPD	Limit
d3-NMeFOSAA	2355-31-9-EIS	176	71	250	187	75	50 - 150	250	199	80	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	183	73	250	208	83	50 - 150	250	198	79	NA	NA
d7-NMeFOSE	24448-09-7-EIS	89.4	36*	250	167	67	50 - 150	250	135	54	NA	NA
d9-NEtFOSE	1691-99-2-EIS	77.7	31*	250	170	68	50 - 150	250	124	50	NA	NA
d-NEtFOSA	4151-50-2-EIS	16.6	7*	250	127	51	50 - 150	250	40.4	16*	NA	NA
d-NMeFOSA	31506-32-8-EIS	17.8	7*	250	119	47*	50 - 150	250	44.6	18*	NA	NA
M2 4:2 FTS	757124-72-4-EIS	226	91	250	226	90	50 - 150	250	224	90	NA	NA
M2 6:2 FTS	27619-97-2-EIS	216	86	250	229	92	50 - 150	250	216	86	NA	NA
M2 8:2 FTS	39108-34-4-EIS	207	83	250	218	87	50 - 150	250	209	83	NA	NA
M2PFHxDA	67905-19-5-EIS	156	62	250	162	65	50 - 150	250	142	57	NA	NA
M2PFTA	376-06-7-EIS	167	67	250	181	73	50 - 150	250	182	73	NA	NA
M3HFPODA	13252-13-6-EIS	218	87	250	227	91	50 - 150	250	210	84	NA	NA
M3PFBS	375-73-5-EIS	204	82	250	209	84	50 - 150	250	208	83	NA	NA
M3PFHxS	355-46-4-EIS	190	76	250	209	84	50 - 150	250	200	80	NA	NA
M4PFHpA	375-85-9-EIS	207	83	250	220	88	50 - 150	250	213	85	NA	NA
M5PFHxA	307-24-4-EIS	215	86	250	224	90	50 - 150	250	216	86	NA	NA
M5PFPeA	2706-90-3-EIS	205	82	250	214	86	50 - 150	250	208	83	NA	NA
M6PFDA	335-76-2-EIS	198	79	250	214	86	50 - 150	250	206	82	NA	NA
M7PFUnA	2058-94-8-EIS	186	75	250	205	82	50 - 150	250	200	80	NA	NA
M8FOSA	754-91-6-EIS	160	64	250	177	71	50 - 150	250	172	69	NA	NA
M8PFOA	335-67-1-EIS	207	83	250	225	90	50 - 150	250	217	87	NA	NA
M8PFOS	1763-23-1-EIS	180	72	250	199	80	50 - 150	250	194	77	NA	NA
M9PFNA	375-95-1-EIS	196	78	250	214	86	50 - 150	250	208	83	NA	NA
MPFBA	375-22-4-EIS	208	83	250	213	85	50 - 150	250	209	84	NA	NA



Report#: 222121745
Project ID: 10637158 MMSD PFAS

Report Date: 04/13/2023

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB759538	LCS759538				LCSD759538					
759869		Lab ID	2450045	2450046				2450047					
Prep Batch		Sample Type	MB	LCS				LCSD					
759538		Prep Date	02/08/23 14:00	02/08/23 14:00				02/08/23 14:00					
Prep Method		Analysis Date	02/14/23 21:11	02/14/23 21:26				02/14/23 21:40					
PFAS Top Assay QSM B15 (Post)		Matrix	Water	Water				Water					
PFAS Top Assay QSM B15 (Post)			Units Result	ng/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS		174	70	250	187	75	50 - 150	250	187	75	NA	NA
MPFOA	335-67-1-SUR		371	74	500	421	84	50 - 150	500	404	81	NA	NA

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS757753				
758104		MB757753	2440174				
Prep Batch		Lab ID	LCS				
757753		2440173	01/11/23 09:15				
Prep Method		Sample Type	01/17/23 19:08				
PFAS Top Assay QSM B15 (Pre)		MB	Solid				
		Prep Date	01/11/23 09:15				
		Analysis Date	01/17/23 19:08				
		Matrix	Solid				
PFAS Top Assay QSM B15 (Pre)		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R
11CI-PF3OUdS	763051-92-9	0.020U	0.020	1.89	2.16	115	70 - 130
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.050U	0.050	1.87	2.15	115	70 - 130
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	0.060U	0.060	1.90	2.25	118	70 - 130
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.030U	0.030	1.92	2.33	121	70 - 130
9CI-PF3ONS	756426-58-1	0.030U	0.030	1.87	2.09	112	70 - 130
ADONA	919005-14-4	0.010U	0.010	1.89	2.12	112	70 - 130
NEtFOSA	4151-50-2	0.053J	0.040	2.00	1.98	99	70 - 130
NEtFOSAA	2991-50-6	0.030U	0.030	2.00	2.19	110	70 - 130
NEtFOSE	1691-99-2	0.030U	0.030	2.00	2.20	110	70 - 130
NMeFOSA	31506-32-8	0.040U	0.040	2.00	2.13	106	70 - 130
NMeFOSAA	2355-31-9	0.020U	0.020	2.00	2.27	113	70 - 130
NMeFOSE	24448-09-7	0.030U	0.030	2.00	2.19	109	70 - 130
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	0.140U	0.140	4.00	4.41	110	70 - 130
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.020U	0.020	1.77	1.92	108	70 - 130
Perfluorobutanoic acid (PFBA)	375-22-4	0.040U	0.040	2.00	2.21	111	70 - 130
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.030U	0.030	1.93	2.11	109	70 - 130
Perfluorodecanoic acid (PFDA)	335-76-2	0.040U	0.040	2.00	2.18	109	70 - 130
Perfluorododecanoic acid (PFDoA)	307-55-1	0.020U	0.020	2.00	2.19	109	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.020U	0.020	1.91	2.09	110	70 - 130
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.020U	0.020	2.00	2.17	108	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.030U	0.030	1.83	2.05	112	70 - 130
Perfluorohexanoic acid (PFHxA)	307-24-4	0.020U	0.020	2.00	2.18	109	70 - 130
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.030U	0.030	1.92	2.06	107	70 - 130
Perfluorononanoic acid (PFNA)	375-95-1	0.020U	0.020	2.00	2.18	109	70 - 130
Perfluorooctane Sulfonamide (FOSA)	754-91-6	0.066J	0.020	2.00	2.30	115	70 - 130
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.050U	0.050	1.86	2.02	109	70 - 130
Perfluorooctanoic acid (PFOA)	335-67-1	0.080U	0.080	2.00	2.21	111	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.020U	0.020	1.88	2.05	109	70 - 130
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.020U	0.020	2.00	2.18	109	70 - 130
Perfluorotetradecanoic acid (PFTA)	376-06-7	0.020U	0.020	2.00	2.28	114	70 - 130
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.030U	0.030	2.00	2.16	108	70 - 130
Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.020U	0.020	2.00	2.19	109	70 - 130
PFDoS	79780-39-5	0.030U	0.030	1.94	2.10	108	70 - 130
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%R	Limits
d3-NMeFOSAA	2355-31-9-EIS	96.6	97	100	88.5	88	50 - 150
d5-NEtFOSAA	2991-50-6-EIS	104	104	100	90.5	90	50 - 150
d7-NMeFOSE	24448-09-7-EIS	91.2	91	100	72.7	73	50 - 150
d9-NEtFOSE	1691-99-2-EIS	92.3	92	100	70.8	71	50 - 150
d-NEtFOSA	4151-50-2-EIS	45.5	46*	100	28.6	29*	50 - 150
d-NMeFOSA	31506-32-8-EIS	52.7	53	100	33.5	34*	50 - 150
M2 4:2 FTS	757124-72-4-EIS	94.5	95	100	80.2	80	50 - 150
M2 6:2 FTS	27619-97-2-EIS	94.4	94	100	81.1	81	50 - 150
M2 8:2 FTS	39108-34-4-EIS	103	103	100	83.1	83	50 - 150
M2PFHxDA	67905-19-5-EIS	114	114	100	95.3	95	50 - 150
M2PFTA	376-06-7-EIS	104	104	100	87.9	88	50 - 150
M3HFPODA	13252-13-6-EIS	112	112	100	96.8	97	50 - 150
M3PFBS	375-73-5-EIS	106	106	100	90.8	91	50 - 150
M3PFHxS	355-46-4-EIS	106	106	100	88	88	50 - 150
M4PFHpA	375-85-9-EIS	109	109	100	93.1	93	50 - 150
M5PFHxA	307-24-4-EIS	109	109	100	92.6	93	50 - 150
M5PFPeA	2706-90-3-EIS	109	109	100	92.4	92	50 - 150
M6PFDA	335-76-2-EIS	109	109	100	94.5	94	50 - 150
M7PFUnA	2058-94-8-EIS	109	109	100	91.8	92	50 - 150
M8FOSA	754-91-6-EIS	98.7	99	100	79.8	80	50 - 150
M8PFOA	335-67-1-EIS	111	111	100	92.5	92	50 - 150
M8PFOS	1763-23-1-EIS	105	105	100	88.2	88	50 - 150
M9PFNA	375-95-1-EIS	109	109	100	93.1	93	50 - 150
MPFBA	375-22-4-EIS	106	106	100	91.3	91	50 - 150



Report#: 222121745
Project ID: 10637158 MMSD PFAS

Report Date: 04/13/2023

LC-MS/MS QC Summary

Analytical Batch 758104	Client ID	MB757753	LCS757753				
Prep Batch 757753	Lab ID	2440173	2440174				
Prep Method PFAS Top Assay QSM B15 (Pre)	Sample Type	MB	LCS				
	Prep Date	01/11/23 09:15	01/11/23 09:15				
	Analysis Date	01/17/23 18:53	01/17/23 19:08				
	Matrix	Solid	Solid				
PFAS Top Assay QSM B15 (Pre)		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R
MPFDoA	307-55-1-EIS	105	105	100	91.4	91	50 - 150
MPFOA	335-67-1-SUR	5.72	114	5	4.49	90	50 - 150

LC-MS/MS QC Summary

Analytical Batch		Client ID	LCS757049				LCSD757049					
757653		MB757049	2437109				2437110					
Prep Batch		Lab ID	LCS				LCSD					
757049		2437108	12/29/22 11:00				12/29/22 11:00					
Prep Method		Sample Type	01/09/23 13:20				01/09/23 13:50					
PFAS Top Assay QSM B15 (Pre)		MB	Water				Water					
PFAS Top Assay QSM B15 (Pre)		Units	ng/L	Spike	Result	%R	Control	Spike	Result	%R	RPD	RPD
		Result	DL	Added			Limits	Added				Limit
11CI-PF3OUdS	763051-92-9	2.25U	2.25	189	187	99	70 - 130	189	201	107	7	20
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	3.10U	3.10	187	189	101	70 - 130	187	200	107	5	20
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	3.75U	3.75	190	202	106	70 - 130	190	220	116	8	20
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2.65U	2.65	192	189	99	70 - 130	192	217	113	14	20
9CI-PF3ONS	756426-58-1	2.25U	2.25	187	169	90	70 - 130	187	195	104	14	20
ADONA	919005-14-4	2.15U	2.15	189	180	95	70 - 130	189	195	103	8	20
NEtFOSA	4151-50-2	3.50U	3.50	200	213	107	70 - 130	200	204	102	4	20
NEtFOSAA	2991-50-6	3.95U	3.95	200	191	96	70 - 130	200	208	104	8	20
NEtFOSE	1691-99-2	2.53U	2.53	200	219	110	70 - 130	200	222	111	1	20
NMeFOSA	31506-32-8	4.15U	4.15	200	216	108	70 - 130	200	212	106	2	20
NMeFOSAA	2355-31-9	2.25U	2.25	200	191	95	70 - 130	200	204	102	7	20
NMeFOSE	24448-09-7	3.25U	3.25	200	192	96	70 - 130	200	199	100	4	20
Perfluoro-2-proxypropanoic acid (HFPO-DA)	13252-13-6	4.33U	4.33	400	408	102	70 - 130	400	444	111	8	20
Perfluorobutanesulfonic acid (PFBS)	375-73-5	1.55U	1.55	177	179	101	70 - 130	177	194	109	8	20
Perfluorobutanoic acid (PFBA)	375-22-4	3.80U	3.80	200	196	98	70 - 130	200	218	109	11	20
Perfluorodecane sulfonic acid (PFDS)	335-77-3	3.05U	3.05	193	197	102	70 - 130	193	210	109	7	20
Perfluorodecanoic acid (PFDA)	335-76-2	3.60U	3.60	200	188	94	70 - 130	200	220	110	16	20
Perfluorododecanoic acid (PFDoA)	307-55-1	3.25U	3.25	200	203	102	70 - 130	200	218	109	7	20
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	3.05U	3.05	191	191	100	70 - 130	191	219	115	13	20
Perfluoroheptanoic acid (PFHpA)	375-85-9	2.90U	2.90	200	199	100	70 - 130	200	219	109	9	20
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	3.10U	3.10	183	180	98	70 - 130	183	202	111	12	20
Perfluorohexanoic acid (PFHxA)	307-24-4	2.35U	2.35	200	201	100	70 - 130	200	223	112	11	20
Perfluorononanesulfonic acid (PFNS)	68259-12-1	4.35U	4.35	192	187	97	70 - 130	192	208	108	11	20
Perfluorononanoic acid (PFNA)	375-95-1	2.45U	2.45	200	196	98	70 - 130	200	218	109	10	20
Perfluorooctane Sulfonamide (FOSA)	754-91-6	1.85U	1.85	200	200	100	70 - 130	200	226	113	13	20
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.90U	1.90	186	183	99	70 - 130	186	198	107	8	20
Perfluorooctanoic acid (PFOA)	335-67-1	2.10U	2.10	200	200	100	70 - 130	200	219	109	9	20
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	2.55U	2.55	188	186	99	70 - 130	188	207	110	11	20
Perfluoropentanoic acid (PFPeA)	2706-90-3	2.20U	2.20	200	199	99	70 - 130	200	218	109	9	20
Perfluorotetradecanoic acid (PFTA)	376-06-7	2.85U	2.85	200	191	96	70 - 130	200	230	115	18	20
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	3.08U	3.08	200	202	101	70 - 130	200	213	107	5	20
Perfluoroundecanoic acid (PFUnA)	2058-94-8	3.10U	3.10	200	202	101	70 - 130	200	218	109	8	20
PFDoS	79780-39-5	3.28U	3.28	194	192	99	70 - 130	194	195	101	2	20
Extracted Internal Standard(EIS)	CAS#	Area	%R	CalArea	Area	%R	Limits	CalArea	Area	%	RPD	Limit
d3-NMeFOSAA	2355-31-9-EIS	206	82	250	217	87	50 - 150	250	209	84	NA	NA
d5-NEtFOSAA	2991-50-6-EIS	213	85	250	213	85	50 - 150	250	214	86	NA	NA
d7-NMeFOSE	24448-09-7-EIS	170	68	250	176	71	50 - 150	250	169	68	NA	NA
d9-NEtFOSE	1691-99-2-EIS	154	62	250	163	65	50 - 150	250	154	62	NA	NA
d-NEtFOSA	4151-50-2-EIS	121	49*	250	139	56	50 - 150	250	126	51	NA	NA
d-NMeFOSA	31506-32-8-EIS	130	52	250	138	55	50 - 150	250	126	50	NA	NA
M2 4:2 FTS	757124-72-4-EIS	225	90	250	224	90	50 - 150	250	216	86	NA	NA
M2 6:2 FTS	27619-97-2-EIS	233	93	250	214	85	50 - 150	250	207	83	NA	NA
M2 8:2 FTS	39108-34-4-EIS	243	97	250	228	91	50 - 150	250	223	89	NA	NA
M2PFHxDA	67905-19-5-EIS	271	108	250	243	97	50 - 150	250	253	101	NA	NA
M2PFTA	376-06-7-EIS	187	75	250	205	82	50 - 150	250	189	76	NA	NA
M3HFPODA	13252-13-6-EIS	220	88	250	215	86	50 - 150	250	208	83	NA	NA
M3PFBS	375-73-5-EIS	218	87	250	214	86	50 - 150	250	203	81	NA	NA
M3PFHxS	355-46-4-EIS	213	85	250	215	86	50 - 150	250	202	81	NA	NA
M4PFHpA	375-85-9-EIS	221	89	250	219	88	50 - 150	250	209	84	NA	NA
M5PFHxA	307-24-4-EIS	217	87	250	216	86	50 - 150	250	204	82	NA	NA
M5PFPeA	2706-90-3-EIS	218	87	250	213	85	50 - 150	250	202	81	NA	NA
M6PFDA	335-76-2-EIS	219	88	250	219	88	50 - 150	250	211	84	NA	NA
M7PFUnA	2058-94-8-EIS	226	90	250	219	88	50 - 150	250	217	87	NA	NA
M8FOSA	754-91-6-EIS	182	73	250	185	74	50 - 150	250	173	69	NA	NA
M8PFOA	335-67-1-EIS	223	89	250	217	87	50 - 150	250	210	84	NA	NA
M8PFOS	1763-23-1-EIS	225	90	250	224	90	50 - 150	250	213	85	NA	NA
M9PFNA	375-95-1-EIS	224	90	250	225	90	50 - 150	250	211	84	NA	NA
MPFBA	375-22-4-EIS	212	85	250	209	84	50 - 150	250	195	78	NA	NA



Report#: 222121745
Project ID: 10637158 MMSD PFAS

Report Date: 04/13/2023

LC-MS/MS QC Summary

Analytical Batch		Client ID	MB757049	LCS757049				LCSD757049					
757653		Lab ID	2437108	2437109				2437110					
Prep Batch		Sample Type	MB	LCS				LCSD					
757049		Prep Date	12/29/22 11:00	12/29/22 11:00				12/29/22 11:00					
Prep Method		Analysis Date	01/09/23 13:20	01/09/23 13:35				01/09/23 13:50					
PFAS Top Assay QSM B15 (Pre)		Matrix	Water	Water				Water					
PFAS Top Assay QSM B15 (Pre)			Units Result	ng/L DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
MPFDoA	307-55-1-EIS		223	89	250	213	85	50 - 150	250	210	84	NA	NA
MPFOA	335-67-1-SUR		406	81	500	409	82	50 - 150	500	405	81	NA	NA

Top Assay Pre/Post Summary

Client ID LAB ID Collected Matrix Units	INFLUENT 02 20221212 22212174501 12/12/22 23:59 Water ng/L				INFLUENT 07 20221212 22212174502 12/12/22 23:59 Water ng/L			
	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF	RPD(%)
PFAS Top Assay QSM B15								
11CI-PF3OUdS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10U	0	0	3.10U	3.10U	0	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	3.75U	3.75U	0	0	3.75U	3.75U	0	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65U	0	0	2.65U	2.65U	0	0
9CI-PF3ONS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
ADONA	2.15U	2.15U	0	0	2.15U	2.15U	0	0
NEtFOSA	3.50U	3.50U	0	0	3.50U	3.50U	0	0
NEtFOSAA	3.95U	3.95U	0	0	3.95U	3.95U	0	0
NEtFOSE	2.53U	2.53U	0	0	2.53U	2.53U	0	0
NMeFOSA	4.15U	4.15U	0	0	4.15U	4.15U	0	0
NMeFOSAA	2.25U	2.25U	0	0	2.25U	2.25U	0	0
NMeFOSE	3.25U	3.25U	0	0	3.25U	3.25U	0	0
PFDoS	3.28U	3.28U	0	0	3.28U	3.28U	0	0
Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33U	0	0	4.33U	4.33U	0	0
Perfluorobutanesulfonic acid (PFBS)	2.54J	1.55U	-2.54	200	4.14J	1.55U	-4.14	200
Perfluorobutanoic acid (PFBA)	3.88J	11.9	8.02	101.6	12.2	25.9	13.7	71.9
Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluorodecanoic acid (PFDA)	3.60U	3.60U	0	0	3.60U	3.60U	0	0
Perfluorododecanoic acid (PFDoA)	3.25U	3.25U	0	0	3.25U	3.25U	0	0
Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluoroheptanoic acid (PFHpA)	2.90U	2.90U	0	0	2.90U	2.90U	0	0
Perfluorohexanesulfonic acid (PFHxS)	5.71J	6.68J	0.97	15.7	11.6	16.4	4.8	34.3
Perfluorohexanoic acid (PFHxA)	5.05J	5.96J	0.91	16.5	12.0	14.9	2.9	21.6
Perfluorononanesulfonic acid (PFNS)	4.35U	4.35U	0	0	4.35U	4.35U	0	0
Perfluorononanoic acid (PFNA)	2.45U	2.45U	0	0	2.45U	2.45U	0	0
Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85U	0	0	1.85U	1.85U	0	0
Perfluorooctanesulfonic acid (PFOS)	4.09J	7.07J	2.98	53.4	5.96J	9.63J	3.67	47.1
Perfluorooctanoic acid (PFOA)	2.73J	2.75J	0.02	0.7	6.39J	6.70J	0.31	4.7
Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55U	0	0	2.55U	3.36J	3.36	200
Perfluoropentanoic acid (PFPeA)	53.3	12.3	-41	125	7.51J	15.2	7.69	67.7
Perfluorotetradecanoic acid (PFTA)	2.85U	2.85U	0	0	2.85U	2.85U	0	0
Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08U	0	0	3.08U	3.08U	0	0
Perfluoroundecanoic acid (PFUnA)	3.10U	3.10U	0	0	3.10U	3.10U	0	0

Top Assay Pre/Post Summary (Continued)

Client ID LAB ID Collected Matrix Units	INFLUENT 08 20221212 22212174503 12/12/22 23:59 Water ng/L				INFLUENT 11 20221212 22212174504 12/12/22 23:59 Water ng/L			
	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF	RPD(%)
PFAS Top Assay QSM B15								
11CI-PF3OUdS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10U	0	0	3.10U	3.10U	0	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	3.75U	3.75U	0	0	3.75U	3.75U	0	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65U	0	0	2.65U	2.65U	0	0
9CI-PF3ONS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
ADONA	2.15U	2.15U	0	0	2.15U	2.15U	0	0
NEtFOSA	3.50U	3.50U	0	0	3.50U	3.50U	0	0
NEtFOSAA	3.95U	3.95U	0	0	3.95U	3.95U	0	0
NEtFOSE	2.53U	2.53U	0	0	2.53U	2.53U	0	0
NMeFOSA	4.15U	4.15U	0	0	4.15U	4.15U	0	0
NMeFOSAA	2.25U	2.25U	0	0	2.25U	2.25U	0	0
NMeFOSE	3.25U	3.25U	0	0	3.25U	3.25U	0	0
PFDoS	3.28U	3.28U	0	0	3.28U	3.28U	0	0
Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33U	0	0	4.33U	4.33U	0	0
Perfluorobutanesulfonic acid (PFBS)	1.60J	1.55U	-1.6	200	1.55U	1.95J	1.95	200
Perfluorobutanoic acid (PFBA)	3.80U	10.7	10.7	200	3.80U	11.7	11.7	200
Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluorodecanoic acid (PFDA)	3.60U	3.60U	0	0	3.60U	3.60U	0	0
Perfluorododecanoic acid (PFDoA)	3.25U	3.25U	0	0	3.25U	3.25U	0	0
Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluoroheptanoic acid (PFHpA)	2.90U	2.90U	0	0	2.90U	2.90U	0	0
Perfluorohexanesulfonic acid (PFHxS)	5.76J	6.71J	0.95	15.2	3.10U	7.85J	7.85	200
Perfluorohexanoic acid (PFHxA)	4.86J	9.00J	4.14	59.7	3.44J	7.96J	4.52	79.3
Perfluorononanesulfonic acid (PFNS)	4.35U	4.35U	0	0	4.35U	4.35U	0	0
Perfluorononanoic acid (PFNA)	2.45U	2.45U	0	0	2.45U	2.45U	0	0
Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85U	0	0	1.85U	1.85U	0	0
Perfluorooctanesulfonic acid (PFOS)	5.48J	7.93J	2.45	36.5	3.97J	6.36J	2.39	46.3
Perfluorooctanoic acid (PFOA)	2.56J	2.70J	0.14	5.3	2.52J	2.96J	0.44	16.1
Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55U	0	0	2.55U	2.55U	0	0
Perfluoropentanoic acid (PFPeA)	56.3	18.1	-38.2	102.7	69.7	11.0	-58.7	145.5
Perfluorotetradecanoic acid (PFTA)	2.85U	2.85U	0	0	2.85U	2.85U	0	0
Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08U	0	0	3.08U	3.08U	0	0
Perfluoroundecanoic acid (PFUnA)	3.10U	3.10U	0	0	3.10U	3.10U	0	0

Top Assay Pre/Post Summary (Continued)

Client ID LAB ID Collected Matrix Units	INFLUENT 18 20221212 22212174505 12/12/22 23:59 Water ng/L				EFFLUENT 20221213 22212174506 12/13/22 23:59 Water ng/L			
	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF	RPD(%)
PFAS Top Assay QSM B15								
11CI-PF3OUdS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10U	0	0	3.10U	3.10U	0	0
6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75U	0	0	3.75U	3.75U	0	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65U	0	0	2.65U	2.65U	0	0
9CI-PF3ONS	2.25U	2.25U	0	0	2.25U	2.25U	0	0
ADONA	2.15U	2.15U	0	0	2.15U	2.15U	0	0
NEtFOSA	3.50U	3.50U	0	0	3.50U	3.50U	0	0
NEtFOSAA	3.95U	3.95U	0	0	3.95U	3.95U	0	0
NEtFOSE	2.53U	2.53U	0	0	2.53U	2.53U	0	0
NMeFOSA	4.15U	4.15U	0	0	4.15U	4.15U	0	0
NMeFOSAA	2.25U	2.25U	0	0	2.25U	2.25U	0	0
NMeFOSE	3.25U	3.25U	0	0	3.25U	3.25U	0	0
PFDoS	3.28U	3.28U	0	0	3.28U	3.28U	0	0
Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33U	0	0	4.33U	4.33U	0	0
Perfluorobutanesulfonic acid (PFBS)	3.96J	1.55U	-3.96	200	2.86J	3.30J	0.44	14.3
Perfluorobutanoic acid (PFBA)	8.77J	22.8	14.03	88.9	7.34J	16.5	9.16	76.8
Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluorodecanoic acid (PFDA)	3.60U	3.60U	0	0	3.60U	3.60U	0	0
Perfluorododecanoic acid (PFDoA)	3.25U	3.25U	0	0	3.25U	3.25U	0	0
Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05U	0	0	3.05U	3.05U	0	0
Perfluoroheptanoic acid (PFHpA)	2.90U	2.90U	0	0	2.90U	3.28J	3.28	200
Perfluorohexanesulfonic acid (PFHxS)	14.9	19.4	4.5	26.2	7.27J	6.04J	-1.23	18.5
Perfluorohexanoic acid (PFHxA)	8.01J	11.2	3.19	33.2	16.4	14.8	-1.6	10.3
Perfluorononanesulfonic acid (PFNS)	4.35U	4.35U	0	0	4.35U	4.35U	0	0
Perfluorononanoic acid (PFNA)	2.45U	2.45U	0	0	2.45U	2.45U	0	0
Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85U	0	0	1.85U	1.85U	0	0
Perfluorooctanesulfonic acid (PFOS)	8.87J	14.5	5.63	48.2	4.17J	8.90J	4.73	72.4
Perfluorooctanoic acid (PFOA)	6.81J	7.12J	0.31	4.5	7.29J	5.21J	-2.08	33.3
Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55U	0	0	2.55U	2.55U	0	0
Perfluoropentanoic acid (PFPeA)	6.59J	12.0	5.41	58.2	12.3	2.20U	-12.3	200
Perfluorotetradecanoic acid (PFTA)	2.85U	2.85U	0	0	2.85U	2.85U	0	0
Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08U	0	0	3.08U	3.08U	0	0
Perfluoroundecanoic acid (PFUnA)	3.10U	3.10U	0	0	3.10U	3.10U	0	0

Top Assay Pre/Post Summary (Continued)

Client ID LAB ID Collected Matrix Units	BIOSOLIDS A20221214 22212174507 12/14/22 07:20 Solid ug/Kg				BIOSOLIDS B20221214 22212174508 12/14/22 07:45 Solid ug/Kg			
	PRE	POST	DIFF	RPD(%)	PRE	POST	DIFF	RPD(%)
PFAS Top Assay QSM B15								
11CI-PF3OUdS	0.056U	0.055U	0	0	0.299U	0.301U	0	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.141U	0.137U	0	0	0.748U	0.752U	0	0
6:2 Fluorotelomer sulfonic acid (6:2FTS)	5.67	2.81	-2.86	67.5	0.897U	7.54J	7.54	200
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	1.56J	0.694J	-0.866	76.8	0.449U	1.87J	1.87	200
9CI-PF3ONS	0.085U	0.082U	0	0	0.449U	0.451U	0	0
ADONA	0.028U	0.027U	0	0	0.150U	0.150U	0	0
NEtFOSA	0.180J	0.110U	-0.18	200	0.598U	0.601U	0	0
NEtFOSAA	6.41	0.082U	-6.41	200	3.28J	0.451U	-3.28	200
NEtFOSE	0.986J	0.135J	-0.851	151.8	0.740J	0.451U	-0.74	200
NMeFOSA	0.201J	0.110U	-0.201	200	0.598U	0.601U	0	0
NMeFOSAA	25.3	0.075J	-25.225	198.8	7.23J	0.301U	-7.23	200
NMeFOSE	4.25	0.082U	-4.25	200	3.76J	0.451U	-3.76	200
PFDoS	1.25J	0.082U	-1.25	200	2.57J	0.451U	-2.57	200
Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.395U	0.384U	0	0	2.09U	2.11U	0	0
Perfluorobutanesulfonic acid (PFBS)	1.42J	2.33J	0.91	48.5	0.299U	0.834J	0.834	200
Perfluorobutanoic acid (PFBA)	6.56	33.1	26.54	133.8	0.598U	34.2	34.2	200
Perfluorodecane sulfonic acid (PFDS)	1.41J	0.857J	-0.553	48.8	7.57J	0.451U	-7.57	200
Perfluorodecanoic acid (PFDA)	10.2	4.09	-6.11	85.5	2.26J	1.93J	-0.33	15.8
Perfluorododecanoic acid (PFDoA)	2.95	1.93J	-1.02	41.8	1.30J	1.04J	-0.26	22.2
Perfluoroheptanesulfonic acid (PFHpS)	0.206J	0.082J	-0.124	86.1	0.299U	0.301U	0	0
Perfluoroheptanoic acid (PFHpA)	1.74J	8.07	6.33	129.1	0.299U	6.01J	6.01	200
Perfluorohexanesulfonic acid (PFHxS)	0.866J	0.805J	-0.061	7.3	0.873J	0.584J	-0.289	39.7
Perfluorohexanoic acid (PFHxA)	28.5	17.7	-10.8	46.8	0.991J	11.1J	10.109	167.2
Perfluorononanesulfonic acid (PFNS)	0.085U	0.082U	0	0	0.449U	0.451U	0	0
Perfluorononanoic acid (PFNA)	1.06J	2.73J	1.67	88.1	0.323J	2.31J	1.987	150.9
Perfluorooctane Sulfonamide (FOSA)	1.54J	0.151J	-1.389	164.3	1.85J	0.556J	-1.294	107.6
Perfluorooctanesulfonic acid (PFOS)	11.8	9.56	-2.24	21	5.64J	4.51J	-1.13	22.3
Perfluorooctanoic acid (PFOA)	22.0	9.25	-12.75	81.6	1.20U	5.48J	5.48	200
Perfluoropentanesulfonic acid (PFPeS)	0.056U	0.055U	0	0	0.299U	0.301U	0	0
Perfluoropentanoic acid (PFPeA)	12.1	22.1	10	58.5	0.411J	18.4	17.989	191.3
Perfluorotetradecanoic acid (PFTA)	0.717J	0.406J	-0.311	55.4	0.413J	0.301U	-0.413	200
Perfluorotridecanoic acid (PFTTrDA)	0.440J	0.423J	-0.017	3.9	0.449U	0.451U	0	0
Perfluoroundecanoic acid (PFUnA)	1.10J	1.44J	0.34	26.8	0.589J	1.20J	0.611	68.3



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 222121745		CHECKLIST		YES	NO
Client 4367 - Pace Analytical Services	PM R/We 4367 - Pace Analytical Services	Transport Method FEDEX	Samples received with proper thermal preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			All containers received in good condition and within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			All sample labels and containers received match the chain of custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Preservative added to any containers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			If received, was headspace for VOC water containers < 6mm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			Samples collected in containers provided by Pace Gulf Coast?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
COOLERS			DISCREPANCIES	LAB PRESERVATIONS	
Airbill	Thermometer ID: E38	Temp °C	None	None	
592371432837		1.6			
NOTES					

Appendix D: Data Quality and Usability Reviews

March 2022

Data Quality and Usability Review – March 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 5/18/2022

TRC sampled Madison Metropolitan Sewerage District's (MMSD's) Nine Springs wastewater treatment plant influent, effluent, and biosolids on March 28-30, 2022 in conjunction with an additional characterization study. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS), total suspended solids (TSS), and total solids by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 10602741 (Revision 4; PFAS only) and 10602741 (dated 05/17/2022; TSS and total solids only).

Select samples were submitted to be analyzed for total oxidizable precursor (TOP) assay PFAS by Pace Analytical's – Gulf Coast in Baton Rouge, Louisiana laboratory; however, due to method blank contamination and extraction issues at the laboratory, the TOP assay PFAS results were not reported for samples collected in March 2022.

Samples included in this review are listed below:

- INFLUENT-02-20220328
- INFLUENT-07-20220328
- INFLUENT-08-20220328
- INFLUENT-11-20220328
- INFLUENT-18-20220328
- EFFLUENT-20220329
- BIOSOLIDS-PRE-THERM-20220329
- BIOSOLIDS-POST-THERM-20220329
- BIOSOLIDS-A-20220330
- BIOSOLIDS-B-20220329
- DUP01-20220329*
- DUP02-20220330**
- EB01-20220330

Notes:

* Field duplicate of BIOSOLIDS-B-20220329

** Field duplicate of BIOSOLIDS-A-20220330

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D
Total Solids*	ASTM D2974*

Notes:

* The laboratory does not hold NELAC/TNI accreditation for TSS.

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document #EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the

data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS, TSS, and total solids data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization with the exception of MeFOSA and EtFOSA in samples EFFLUENT-20220329, BIOSOLIDS-POST-THERM-20220329, and DUP01-20220329 which were rejected due to significantly low isotopically labeled surrogate recoveries which has a major impact on the data usability.
- The TOP assay PFAS results were not reported for samples collected in March 2022 due to method blank contamination and extraction issues at the laboratory.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The revised data packages were found to be complete as received from the laboratory.
- The cooler temperatures upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the method blanks.
- One equipment blank (EB01-20220330) was collected. Target analytes were not detected in this blank sample.
- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS percent recoveries (%Rs) for all analytes were within QC limits.
- MS/MSD analyses were performed on samples INFLUENT-11-20220328, EFFLUENT-20220329, BIOSOLIDS-PRE-THERM-20220329, BIOSOLIDS-A-20220330, and BIOSOLIDS-B-20220329 for PFAS. The following table summarizes the %Rs and relative percent differences (RPDs) that did not meet the acceptance criteria (50-150% and 30%, respectively) and the validation action.

MS/MSD Parent Sample ID	Compound	MS/MSD %Rs	MS/MSD RPD (%)	Action
INFLUENT-11-20220328	PFDoS	32/36	-	The nondetect result for PFDoS in sample INFLUENT-11-20220328 was qualified as estimated (UJ).
	PFHxS	-/237	45.6	The positive results for PFHxS and PFOS* in sample INFLUENT-11-20220328 were qualified as estimated (J).
	PFOS	-/214	40.3	

MS/MSD Parent Sample ID	Compound	MS/MSD %Rs	MS/MSD RPD (%)	Action
EFFLUENT-20220329	PFDoS	-/47	-	The nondetect result for PFDoS in sample EFFLUENT-20220329 was qualified as estimated (UJ).
BIOSOLIDS-PRE-THERM-20220329	PFDoS	-/49	-	The nondetect result for PFDoS in sample BIOSOLIDS-PRE-THERM-20220329 was qualified as estimated (UJ).
BIOSOLIDS-A-20220330	PFOS	207/-	-	No validation actions were taken on this basis since the results for PFOS, PFDA, NMeFOSAA, and NEtFOSAA were >4x the spike amount in sample BIOSOLIDS-A-20220330.
	PFDA	271/291	-	
	NMeFOSA A	234/0	-	
	NEtFOSAA	186/207	-	
BIOSOLIDS-A-20220330	PFDoA	-/159	-	The positive result for PFDoA in sample BIOSOLIDS-A-20220330 was qualified as estimated (J).
	PFDoS	33/26	-	The nondetect result for PFDoS in sample BIOSOLIDS-A-20220330 was qualified as estimated (UJ).
	PFBS	-/-	41.5	No validation actions were taken on this basis since PFBS and PFNS were not detected in sample BIOSOLIDS-A-20220330.
	PFNS	-/-	41.2	
BIOSOLIDS-B-20220329	PFDoS	45/38	-	The nondetect result for PFDoS in sample BIOSOLIDS-B-20220329 was qualified as estimated (UJ).
	PFBS	-/37	-	The positive results for PFBS and PFDA in sample BIOSOLIDS-B-20220329 were qualified as estimated (J).
	PFDA	-/153	-	

Notes:

-: Met criteria

* Note that this result was also qualified as estimated (J) by the laboratory due to detection between the method detection limit (MDL) and QL.

- Several isotopically labeled surrogate %R were outside of criteria; results were qualified as follows:
 - Samples EFFLUENT-20220329, BIOSOLIDS-POST-THERM-20220329, and DUP01-20220329 exhibited %Rs of d3-N-MeFOSA and d5-N-EtFOSA significantly below the acceptance limits (10-150%). The nondetect results for MeFOSA and EtFOSA were rejected (R) in samples EFFLUENT-20220329, BIOSOLIDS-POST-THERM-20220329, and DUP01-20220329.
 - Samples INFLUENT-02-20220328, INFLUENT-11-20220328, BIOSOLIDS-PRE-THERM-20220329, and BIOSOLIDS-POST-THERM-20220329 exhibited %Rs of 13C2 4:2FTS, 13C2 6:2FTS, and 13C2 8:2FTS above the acceptance limits (25-150%). No validation actions were required on this basis since 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in these samples.

- Sample INFLUENT-07-20220328 exhibited %Rs of 13C2 4:2FTS, 13C2 6:2FTS, and 13C2 8:2FTS above the acceptance limits (25-150%). The positive result for 6:2 FTS was already qualified as estimated (J) by the laboratory in this sample due to detection between the MDL and QL; thus, no further validation action was required for 6:2 FTS in this sample. No validation actions were required on this basis for 4:2 FTS and 8:2 FTS since these two compounds were not detected in this sample.
- Sample INFLUENT-08-20220328 exhibited %Rs of 13C2 4:2FTS, 13C2 6:2FTS, and 13C2 8:2FTS above the acceptance limits (25-150%). The positive results for 6:2 FTS and 8:2 FTS were already qualified as estimated (J) by the laboratory in this sample due to detection between the MDL and QL; thus, no further validation action was required for 6:2 FTS and 8:2 FTS in this sample. No validation actions were required on this basis for 4:2 FTS since this compound was not detected in this sample.
- Sample INFLUENT-18-20220328 exhibited %Rs of 13C2 4:2FTS, 13C2 6:2FTS, and 13C2 8:2FTS above the acceptance limits (25-150%). The positive result for 6:2 FTS was qualified as estimated (J) in this sample. No validation actions were required on this basis for 4:2 FTS and 8:2 FTS since these two compounds were not detected in this sample.
- Sample EFFLUENT-20220329 exhibited %Rs of 13C2 4:2FTS, 13C2 6:2FTS, 13C2 8:2FTS, 13C6 PFDA, d3-MeFOSAA, and d5-EtFOSAA above the acceptance limits (25-150%). The positive result for 6:2 FTS was qualified as estimated (J) in this sample. The positive results for PFDA, NMeFOSAA, and NEtFOSAA were already qualified as estimated (J) by the laboratory in this sample due to detection between the MDL and QL; thus, no further validation action was required for PFDA, NMeFOSAA, and NEtFOSAA in this sample. No validation actions were required on this basis for 4:2 FTS and 8:2 FTS since these compounds were not detected in this sample.
- Samples BIOSOLIDS-A-20220330 and DUP02-20220330 exhibited %Rs of 13C2 6:2FTS and 13C2 8:2FTS above the acceptance limits (25-150%). The positive results for 8:2 FTS were qualified as estimated (J) in these two samples. The positive results for 6:2 FTS were already qualified as estimated (J) by the laboratory in these two samples due to detection between the MDL and QL and/or ion transition ratios that did not meet the acceptance criteria; thus, no further validation action was required for 6:2 FTS in these two samples.
- Samples BIOSOLIDS-A-20220330 and DUP02-20220330 exhibited %Rs of 13C2 PFDa and 13C2 PFTeDA below the acceptance limits (25-150%). The positive results for PFDa, PFTrDA, and PFTDA were qualified as estimated (J) in samples BIOSOLIDS-A-20220330 and DUP02-20220330.
- Samples BIOSOLIDS-A-20220330 and DUP02-20220330 exhibited %Rs of d5-N-EtFOSA below the acceptance limits (10-150%). The positive results for EtFOSA were qualified as estimated (J) in samples BIOSOLIDS-A-20220330 and DUP02-20220330.
- Samples BIOSOLIDS-B-20220329 and DUP01-20220329 exhibited %Rs of 13C2 4:2FTS, 13C2 6:2FTS, and 13C2 8:2FTS above the acceptance limits (25-150%). The positive result for 8:2 FTS was already qualified as estimated (J) by the laboratory in this sample due to detection between the MDL and QL; thus, no further validation action was required for 8:2 FTS in these two samples. No validation actions were required on this basis for 4:2 FTS and 6:2 FTS since these two compounds were not detected in these two samples.
- The field duplicate pair samples were BIOSOLIDS-B-20220329/DUP01-20220329 and BIOSOLIDS-A-20220330/DUP02-20220330. All criteria were met.

- Laboratory duplicate analyses were performed on samples INFLUENT-11-20220328 and EFFLUENT-20220329 for TSS. The RPD (10%) in the duplicate analysis of sample INFLUENT-11-20220328 exceeded the laboratory QC limit (5%). However, due to the low QC limit for TSS and professional judgement, an RPD criteria of 20% was used for the evaluation of laboratory duplicate results. No validation actions were taken on this basis since the RPD was <20%.
- The case narrative of SDG 10602741 (Revision 4) noted that samples INFLUENT-02-20220328, INFLUENT-07-20220328, INFLUENT-08-20220328, INFLUENT-11-20220328, and INFLUENT-18-20220328 required centrifugation prior to extraction due to excessive solids present in the samples. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottles was rinsed as normal and centrifuge bottle was rinsed with 4mL of methanol. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <1mL and reconstituted to 1mL using methanol by transfer pipet. No qualification was applied to the results based on these laboratory observations.
- Select sample QLs were outside of the ranges of QLs suggested in the SAB of 2-5 ng/L and 1-5 ug/kg per individual PFAS due to sample volume and/or low total solids. There were no dilutions performed on the samples in this data set.
- The QLs for TSS in samples INFLUENT-02-20220328, INFLUENT-07-20220328, INFLUENT-08-20220328, INFLUENT-11-20220328, and INFLUENT-18-20220328 were 2.5x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the QL in these samples. No validation action was required on this basis.
- The following sample results were flagged with an “I” by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive results for the compounds listed below were qualified as estimated (J) in the listed samples.
 - PFOS in sample INFLUENT-08-20220328;
 - PFHpA* and PFHxS in sample INFLUENT-11-20220328;
 - PFHpS in sample BIOSOLIDS-A-20220330;
 - PFBS and PFHxA in sample BIOSOLIDS-B-20220329;
 - 8:2 FTS* in sample DUP01-20220329; and
 - 6:2 FTS* and PFHpS in sample DUP02-20220330.
- * Note that these results were also qualified as estimated (J) by the laboratory due to detection between the MDL and QL.
- The percent moisture for the biosolids samples was high (>70% moisture). The laboratory was contacted during this review and stated that the biosolids samples were homogenized, indicating that a representative sample was extracted for PFAS analysis. No validation actions were taken on this basis.

QUALIFIED FORM 1s



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-02-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741001	Total Amount Extracted	240mL
Lab File ID	Q220408A_005	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.5	2.1	0.46	0.46	1	375-22-4		04/08/2022 16:46
PFPeA	3.4	2.1	0.46	0.46	1	2706-90-3		04/08/2022 16:46
HFPO-DA	ND	2.1	0.55	0.55	1	13252-13-6		04/08/2022 16:46
PFBS	1.9	1.8	0.49	0.49	1	375-73-5		04/08/2022 16:46
PFHxA	3.8	2.1	0.46	0.46	1	307-24-4		04/08/2022 16:46
4:2 FTS	ND	1.9	0.58	0.58	1	757124-72-		04/08/2022 16:46
PFPeS	ND	2.0	0.49	0.49	1	2706-91-4		04/08/2022 16:46
PFHpA	1.7 J	2.1	0.57	0.57	1	375-85-9		04/08/2022 16:46
DONA	ND	2.0	0.53	0.53	1	919005-14-		04/08/2022 16:46
PFHxS	5.0	1.9	0.53	0.53	1	355-46-4		04/08/2022 16:46
PFOA	2.7	2.1	0.61	0.61	1	335-67-1		04/08/2022 16:46
6:2 FTS	ND	2.0	0.67	0.67	1	27619-97-2		04/08/2022 16:46
PFHpS	ND	2.0	0.43	0.43	1	375-92-8		04/08/2022 16:46
PFNA	ND	2.1	0.77	0.77	1	375-95-1		04/08/2022 16:46
PFOSAm	ND	2.1	0.85	0.85	1	754-91-6		04/08/2022 16:46
PFOS	4.9	1.9	0.57	0.57	1	1763-23-1		04/08/2022 16:46
MeFOSA	ND	2.1	0.53	0.53	1	31506-32-8		04/08/2022 16:46
PFDA	ND	2.1	0.59	0.59	1	335-76-2		04/08/2022 16:46
EtFOSAm	ND	2.1	0.63	0.63	1	4151-50-2		04/08/2022 16:46
8:2 FTS	ND	2.0	0.68	0.68	1	39108-34-4		04/08/2022 16:46
9-CI-PF3ON	ND	1.9	0.32	0.32	1	756426-58-		04/08/2022 16:46
PFNS	ND	2.0	0.46	0.46	1	68259-12-1		04/08/2022 16:46
PFUnDA	ND	2.1	0.56	0.56	1	2058-94-8		04/08/2022 16:46
NMeFOSAA	ND	2.1	0.45	0.45	1	2355-31-9		04/08/2022 16:46
NEtFOSAA	ND	2.1	0.58	0.58	1	2991-50-6		04/08/2022 16:46
PFDS	ND	2.0	0.47	0.47	1	335-77-3		04/08/2022 16:46
PFDOA	ND	2.1	0.50	0.50	1	307-55-1		04/08/2022 16:46
MeFOSE	0.84 J	2.1	0.34	0.34	1	24448-09-7		04/08/2022 16:46
EtFOSE	ND	2.1	0.52	0.52	1	1691-99-2		04/08/2022 16:46
11-CI-PF3OUdS	ND	2.0	0.45	0.45	1	763051-92-		04/08/2022 16:46
PFTTrDA	ND	2.1	0.65	0.65	1	72629-94-8		04/08/2022 16:46
PFDoS	ND	2.0	0.48	0.48	1	79780-39-5		04/08/2022 16:46
PFTDA	ND	2.1	0.49	0.49	1	376-06-7		04/08/2022 16:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-07-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741002	Total Amount Extracted	261mL
Lab File ID	Q220408A_006	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	1.9	0.42	0.42	1	375-22-4		04/08/2022 17:04
PFPeA	5.9	1.9	0.42	0.42	1	2706-90-3		04/08/2022 17:04
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		04/08/2022 17:04
PFBS	3.6	1.7	0.45	0.45	1	375-73-5		04/08/2022 17:04
PFHxA	11	1.9	0.42	0.42	1	307-24-4		04/08/2022 17:04
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-		04/08/2022 17:04
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		04/08/2022 17:04
PFHpA	3.0	1.9	0.53	0.53	1	375-85-9		04/08/2022 17:04
DONA	ND	1.8	0.49	0.49	1	919005-14-		04/08/2022 17:04
PFHxS	4.5	1.7	0.49	0.49	1	355-46-4		04/08/2022 17:04
PFOA	5.2	1.9	0.56	0.56	1	335-67-1		04/08/2022 17:04
6:2 FTS	0.88 J	1.8	0.62	0.62	1	27619-97-2		04/08/2022 17:04
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		04/08/2022 17:04
PFNA	14	1.9	0.71	0.71	1	375-95-1		04/08/2022 17:04
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		04/08/2022 17:04
PFOS	2.8	1.8	0.53	0.53	1	1763-23-1		04/08/2022 17:04
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		04/08/2022 17:04
PFDA	0.63 J	1.9	0.54	0.54	1	335-76-2		04/08/2022 17:04
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		04/08/2022 17:04
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		04/08/2022 17:04
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-		04/08/2022 17:04
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		04/08/2022 17:04
PFUnDA	1.7 J	1.9	0.52	0.52	1	2058-94-8		04/08/2022 17:04
NMeFOSAA	1.4 J	1.9	0.42	0.42	1	2355-31-9		04/08/2022 17:04
NEtFOSAA	12	1.9	0.53	0.53	1	2991-50-6		04/08/2022 17:04
PFDS	ND	1.8	0.43	0.43	1	335-77-3		04/08/2022 17:04
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		04/08/2022 17:04
MeFOSE	2.1	1.9	0.32	0.32	1	24448-09-7		04/08/2022 17:04
EtFOSE	0.59 J	1.9	0.48	0.48	1	1691-99-2		04/08/2022 17:04
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-		04/08/2022 17:04
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		04/08/2022 17:04
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		04/08/2022 17:04
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		04/08/2022 17:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-08-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741003	Total Amount Extracted	249mL
Lab File ID	Q220408A_007	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.4	2.0	0.44	0.44	1	375-22-4		04/08/2022 17:23
PFPeA	3.0	2.0	0.44	0.44	1	2706-90-3		04/08/2022 17:23
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		04/08/2022 17:23
PFBS	1.7 J	1.8	0.48	0.48	1	375-73-5		04/08/2022 17:23
PFHxA	3.7	2.0	0.44	0.44	1	307-24-4		04/08/2022 17:23
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-		04/08/2022 17:23
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		04/08/2022 17:23
PFHpA	1.6 J	2.0	0.55	0.55	1	375-85-9		04/08/2022 17:23
DONA	ND	1.9	0.52	0.52	1	919005-14-		04/08/2022 17:23
PFHxS	3.5	1.8	0.51	0.51	1	355-46-4		04/08/2022 17:23
PFOA	2.0 J	2.0	0.59	0.59	1	335-67-1		04/08/2022 17:23
6:2 FTS	1.5 J	1.9	0.65	0.65	1	27619-97-2		04/08/2022 17:23
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		04/08/2022 17:23
PFNA	ND	2.0	0.74	0.74	1	375-95-1		04/08/2022 17:23
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		04/08/2022 17:23
PFOS	5.0 I J	1.9	0.55	0.55	1	1763-23-1		04/08/2022 17:23
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		04/08/2022 17:23
PFDA	ND	2.0	0.57	0.57	1	335-76-2		04/08/2022 17:23
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		04/08/2022 17:23
8:2 FTS	0.73 J	1.9	0.66	0.66	1	39108-34-4		04/08/2022 17:23
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-		04/08/2022 17:23
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		04/08/2022 17:23
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		04/08/2022 17:23
NMeFOSAA	ND	2.0	0.44	0.44	1	2355-31-9		04/08/2022 17:23
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		04/08/2022 17:23
PFDS	ND	1.9	0.45	0.45	1	335-77-3		04/08/2022 17:23
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		04/08/2022 17:23
MeFOSE	1.3 J	2.0	0.33	0.33	1	24448-09-7		04/08/2022 17:23
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		04/08/2022 17:23
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-		04/08/2022 17:23
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		04/08/2022 17:23
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		04/08/2022 17:23
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		04/08/2022 17:23

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-11-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741004	Total Amount Extracted	247mL
Lab File ID	Q220408A_008	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.8	2.0	0.45	0.45	1	375-22-4		04/08/2022 17:41
PFPeA	2.1	2.0	0.44	0.44	1	2706-90-3		04/08/2022 17:41
HFPO-DA	ND	2.0	0.54	0.54	1	13252-13-6		04/08/2022 17:41
PFBS	0.85 J	1.8	0.48	0.48	1	375-73-5		04/08/2022 17:41
PFHxA	3.0	2.0	0.44	0.44	1	307-24-4		04/08/2022 17:41
4:2 FTS	ND	1.9	0.57	0.57	1	757124-72-		04/08/2022 17:41
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4		04/08/2022 17:41
PFHpA	1.4 IJ	2.0	0.56	0.56	1	375-85-9		04/08/2022 17:41
DONA	ND	1.9	0.52	0.52	1	919005-14-		04/08/2022 17:41
PFHxS	2.8 I J	1.8	0.52	0.52	1	355-46-4		04/08/2022 17:41
PFOA	1.8 J	2.0	0.59	0.59	1	335-67-1		04/08/2022 17:41
6:2 FTS	ND	1.9	0.65	0.65	1	27619-97-2		04/08/2022 17:41
PFHpS	ND	1.9	0.42	0.42	1	375-92-8		04/08/2022 17:41
PFNA	ND	2.0	0.75	0.75	1	375-95-1		04/08/2022 17:41
PFOSAm	ND	2.0	0.83	0.83	1	754-91-6		04/08/2022 17:41
PFOS	1.4 J	1.9	0.56	0.56	1	1763-23-1		04/08/2022 17:41
MeFOSA	ND	2.0	0.52	0.52	1	31506-32-8		04/08/2022 17:41
PFDA	ND	2.0	0.57	0.57	1	335-76-2		04/08/2022 17:41
EtFOSAm	ND	2.0	0.62	0.62	1	4151-50-2		04/08/2022 17:41
8:2 FTS	ND	1.9	0.66	0.66	1	39108-34-4		04/08/2022 17:41
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-		04/08/2022 17:41
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		04/08/2022 17:41
PFUnDA	ND	2.0	0.55	0.55	1	2058-94-8		04/08/2022 17:41
NMeFOSAA	0.45 J	2.0	0.44	0.44	1	2355-31-9		04/08/2022 17:41
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6		04/08/2022 17:41
PFDS	ND	2.0	0.46	0.46	1	335-77-3		04/08/2022 17:41
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		04/08/2022 17:41
MeFOSE	1.3 J	2.0	0.33	0.33	1	24448-09-7		04/08/2022 17:41
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		04/08/2022 17:41
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-		04/08/2022 17:41
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		04/08/2022 17:41
PFDoS	ND- UJ	2.0	0.47	0.47	1	79780-39-5		04/08/2022 17:41
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		04/08/2022 17:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-18-20220328	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741005	Total Amount Extracted	245mL
Lab File ID	Q220408A_009	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/28/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.6	2.0	0.45	0.45	1	375-22-4		04/08/2022 18:00
PFPeA	6.3	2.0	0.45	0.45	1	2706-90-3		04/08/2022 18:00
HFPO-DA	ND	2.0	0.54	0.54	1	13252-13-6		04/08/2022 18:00
PFBS	3.1	1.8	0.48	0.48	1	375-73-5		04/08/2022 18:00
PFHxA	7.3	2.0	0.45	0.45	1	307-24-4		04/08/2022 18:00
4:2 FTS	ND	1.9	0.57	0.57	1	757124-72-		04/08/2022 18:00
PFPeS	1.5 J	1.9	0.49	0.49	1	2706-91-4		04/08/2022 18:00
PFHpA	3.0	2.0	0.56	0.56	1	375-85-9		04/08/2022 18:00
DONA	ND	1.9	0.53	0.53	1	919005-14-		04/08/2022 18:00
PFHxS	17	1.9	0.52	0.52	1	355-46-4		04/08/2022 18:00
PFOA	7.9	2.0	0.60	0.60	1	335-67-1		04/08/2022 18:00
6:2 FTS	2.2 J	1.9	0.66	0.66	1	27619-97-2		04/08/2022 18:00
PFHpS	ND	1.9	0.42	0.42	1	375-92-8		04/08/2022 18:00
PFNA	ND	2.0	0.76	0.76	1	375-95-1		04/08/2022 18:00
PFOSAm	ND	2.0	0.84	0.84	1	754-91-6		04/08/2022 18:00
PFOS	6.7	1.9	0.56	0.56	1	1763-23-1		04/08/2022 18:00
MeFOSA	ND	2.0	0.52	0.52	1	31506-32-8		04/08/2022 18:00
PFDA	ND	2.0	0.58	0.58	1	335-76-2		04/08/2022 18:00
EtFOSAm	ND	2.0	0.62	0.62	1	4151-50-2		04/08/2022 18:00
8:2 FTS	ND	2.0	0.67	0.67	1	39108-34-4		04/08/2022 18:00
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-		04/08/2022 18:00
PFNS	ND	2.0	0.46	0.46	1	68259-12-1		04/08/2022 18:00
PFUnDA	ND	2.0	0.55	0.55	1	2058-94-8		04/08/2022 18:00
NMeFOSAA	0.67 J	2.0	0.44	0.44	1	2355-31-9		04/08/2022 18:00
NEtFOSAA	1.3 J	2.0	0.57	0.57	1	2991-50-6		04/08/2022 18:00
PFDS	ND	2.0	0.46	0.46	1	335-77-3		04/08/2022 18:00
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		04/08/2022 18:00
MeFOSE	1.5 J	2.0	0.34	0.34	1	24448-09-7		04/08/2022 18:00
EtFOSE	ND	2.0	0.51	0.51	1	1691-99-2		04/08/2022 18:00
11-CI-PF3OUdS	ND	1.9	0.45	0.45	1	763051-92-		04/08/2022 18:00
PFTTrDA	ND	2.0	0.64	0.64	1	72629-94-8		04/08/2022 18:00
PFDoS	ND	2.0	0.47	0.47	1	79780-39-5		04/08/2022 18:00
PFTDA	ND	2.0	0.49	0.49	1	376-06-7		04/08/2022 18:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	EFFLUENT-20220329	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741006	Total Amount Extracted	266mL
Lab File ID	Q220408A_010	Ical ID	220407A01
Matrix	Water	CCal File	Q220407C_034
Collected	03/29/2022 23:59	Ending CCal File	Q220408A_012
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	7.7	1.9	0.41	0.41	1	375-22-4		04/08/2022 18:19
PFPeA	12	1.9	0.41	0.41	1	2706-90-3		04/08/2022 18:19
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		04/08/2022 18:19
PFBS	2.7	1.7	0.44	0.44	1	375-73-5		04/08/2022 18:19
PFHxA	17	1.9	0.41	0.41	1	307-24-4		04/08/2022 18:19
4:2 FTS	ND	1.8	0.52	0.52	1	757124-72-		04/08/2022 18:19
PFPeS	0.73 J	1.8	0.45	0.45	1	2706-91-4		04/08/2022 18:19
PFHpA	2.4	1.9	0.52	0.52	1	375-85-9		04/08/2022 18:19
DONA	ND	1.8	0.48	0.48	1	919005-14-		04/08/2022 18:19
PFHxS	7.5	1.7	0.48	0.48	1	355-46-4		04/08/2022 18:19
PFOA	9.0	1.9	0.55	0.55	1	335-67-1		04/08/2022 18:19
6:2 FTS	2.1 J	1.8	0.61	0.61	1	27619-97-2		04/08/2022 18:19
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		04/08/2022 18:19
PFNA	1.3 J	1.9	0.70	0.70	1	375-95-1		04/08/2022 18:19
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		04/08/2022 18:19
PFOS	3.8	1.7	0.51	0.51	1	1763-23-1		04/08/2022 18:19
MeFOSA	R ND	1.9	0.48	0.48	1	31506-32-8		04/08/2022 18:19
PFDA	0.90 J	1.9	0.53	0.53	1	335-76-2		04/08/2022 18:19
EtFOSAm	R ND	1.9	0.57	0.57	1	4151-50-2		04/08/2022 18:19
8:2 FTS	ND	1.8	0.61	0.61	1	39108-34-4		04/08/2022 18:19
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-		04/08/2022 18:19
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		04/08/2022 18:19
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		04/08/2022 18:19
NMeFOSAA	0.84 J	1.9	0.41	0.41	1	2355-31-9		04/08/2022 18:19
NEtFOSAA	0.53 J	1.9	0.52	0.52	1	2991-50-6		04/08/2022 18:19
PFDS	ND	1.8	0.42	0.42	1	335-77-3		04/08/2022 18:19
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		04/08/2022 18:19
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7		04/08/2022 18:19
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		04/08/2022 18:19
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-		04/08/2022 18:19
PFTTrDA	ND	1.9	0.58	0.58	1	72629-94-8		04/08/2022 18:19
PFDoS	ND -UJ	1.8	0.43	0.43	1	79780-39-5		04/08/2022 18:19
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		04/08/2022 18:19

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-PRE-THERM-20	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741007	Total Amount Extracted	5.04g
Lab File ID	Q220412C_039	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_032
Collected	03/29/2022 11:30	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	3.8	0.91	0.91	1	375-22-4		04/13/2022 04:03
PFPeA	ND	3.8	1.0	1.0	1	2706-90-3		04/13/2022 04:03
HFPO-DA	ND	3.8	1.1	1.1	1	13252-13-6		04/13/2022 04:03
PFBS	ND	3.4	0.85	0.85	1	375-73-5		04/13/2022 04:03
PFHxA	4.9	3.8	1.2	1.2	1	307-24-4		04/13/2022 04:03
4:2 FTS	ND	3.6	1.2	1.2	1	757124-72-		04/13/2022 04:03
PFPeS	ND	3.6	0.72	0.72	1	2706-91-4		04/13/2022 04:03
PFHpA	ND	3.8	0.87	0.87	1	375-85-9		04/13/2022 04:03
DONA	ND	3.6	1.5	1.5	1	919005-14-		04/13/2022 04:03
PFHxS	1.0 J	3.5	0.85	0.85	1	355-46-4		04/13/2022 04:03
PFOA	1.9 J	3.8	0.87	0.87	1	335-67-1		04/13/2022 04:03
6:2 FTS	ND	3.7	1.2	1.2	1	27619-97-2		04/13/2022 04:03
PFHpS	ND	3.7	0.96	0.96	1	375-92-8		04/13/2022 04:03
PFNA	ND	3.8	1.1	1.1	1	375-95-1		04/13/2022 04:03
PFOSAm	0.97 J	3.8	0.90	0.90	1	754-91-6		04/13/2022 04:03
PFOS	6.8	3.6	1.1	1.1	1	1763-23-1		04/13/2022 04:03
MeFOSA	ND	3.8	0.96	0.96	1	31506-32-8		04/13/2022 04:03
PFDA	3.8 J	3.8	0.83	0.83	1	335-76-2		04/13/2022 04:03
EtFOSAm	ND	3.8	0.91	0.91	1	4151-50-2		04/13/2022 04:03
8:2 FTS	ND	3.7	1.00	1.00	1	39108-34-4		04/13/2022 04:03
9-CI-PF3ON	ND	3.6	0.56	0.56	1	756426-58-		04/13/2022 04:03
PFNS	ND	3.7	0.69	0.69	1	68259-12-1		04/13/2022 04:03
PFUnDA	ND	3.8	1.1	1.1	1	2058-94-8		04/13/2022 04:03
NMeFOSAA	10	3.8	0.90	0.90	1	2355-31-9		04/13/2022 04:03
NEtFOSAA	5.7	3.8	0.95	0.95	1	2991-50-6		04/13/2022 04:03
PFDS	1.1 J	3.7	0.97	0.97	1	335-77-3		04/13/2022 04:03
PFDOA	1.7 J	3.8	1.0	1.0	1	307-55-1		04/13/2022 04:03
MeFOSE	7.1	3.8	0.91	0.91	1	24448-09-7		04/13/2022 04:03
EtFOSE	1.8 J	3.8	0.96	0.96	1	1691-99-2		04/13/2022 04:03
11-CI-PF3OUdS	ND	3.6	0.62	0.62	1	763051-92-		04/13/2022 04:03
PFTTrDA	ND	3.8	0.82	0.82	1	72629-94-8		04/13/2022 04:03
PFDoS	ND UJ	3.7	1.2	1.2	1	79780-39-5		04/13/2022 04:03
PFTDA	ND	3.8	1.2	1.2	1	376-06-7		04/13/2022 04:03

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-POST-THERM-2	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741008	Total Amount Extracted	5.13g
Lab File ID	Q220412C_033	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_032
Collected	03/30/2022 09:40	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	1.7 J	5.1	1.2	1.2	1	375-22-4		04/13/2022 02:12
PFPeA	1.4 J	5.1	1.3	1.3	1	2706-90-3		04/13/2022 02:12
HFPO-DA	ND	5.1	1.5	1.5	1	13252-13-6		04/13/2022 02:12
PFBS	ND	4.5	1.1	1.1	1	375-73-5		04/13/2022 02:12
PFHxA	9.7	5.1	1.5	1.5	1	307-24-4		04/13/2022 02:12
4:2 FTS	ND	4.8	1.6	1.6	1	757124-72-		04/13/2022 02:12
PFPeS	ND	4.8	0.95	0.95	1	2706-91-4		04/13/2022 02:12
PFHpA	ND	5.1	1.1	1.1	1	375-85-9		04/13/2022 02:12
DONA	ND	4.8	2.0	2.0	1	919005-14-		04/13/2022 02:12
PFHxS	2.3 J	4.6	1.1	1.1	1	355-46-4		04/13/2022 02:12
PFOA	4.6 J	5.1	1.1	1.1	1	335-67-1		04/13/2022 02:12
6:2 FTS	ND	4.8	1.6	1.6	1	27619-97-2		04/13/2022 02:12
PFHpS	ND	4.8	1.3	1.3	1	375-92-8		04/13/2022 02:12
PFNA	ND	5.1	1.5	1.5	1	375-95-1		04/13/2022 02:12
PFOSAm	1.2 J	5.1	1.2	1.2	1	754-91-6		04/13/2022 02:12
PFOS	8.7	4.7	1.4	1.4	1	1763-23-1		04/13/2022 02:12
MeFOSA	R ND	5.1	1.3	1.3	1	31506-32-8		04/13/2022 02:12
PFDA	5.4	5.1	1.1	1.1	1	335-76-2		04/13/2022 02:12
EtFOSAm	R ND	5.1	1.2	1.2	1	4151-50-2		04/13/2022 02:12
8:2 FTS	ND	4.9	1.3	1.3	1	39108-34-4		04/13/2022 02:12
9-CI-PF3ON	ND	4.7	0.74	0.74	1	756426-58-		04/13/2022 02:12
PFNS	ND	4.9	0.91	0.91	1	68259-12-1		04/13/2022 02:12
PFUnDA	1.5 J	5.1	1.4	1.4	1	2058-94-8		04/13/2022 02:12
NMeFOSAA	21	5.1	1.2	1.2	1	2355-31-9		04/13/2022 02:12
NEtFOSAA	7.9	5.1	1.3	1.3	1	2991-50-6		04/13/2022 02:12
PFDS	ND	4.9	1.3	1.3	1	335-77-3		04/13/2022 02:12
PFDOA	3.5 J	5.1	1.4	1.4	1	307-55-1		04/13/2022 02:12
MeFOSE	15	5.1	1.2	1.2	1	24448-09-7		04/13/2022 02:12
EtFOSE	3.6 J	5.1	1.3	1.3	1	1691-99-2		04/13/2022 02:12
11-CI-PF3OUdS	ND	4.8	0.82	0.82	1	763051-92-		04/13/2022 02:12
PFTTrDA	ND	5.1	1.1	1.1	1	72629-94-8		04/13/2022 02:12
PFDoS	ND	4.9	1.5	1.5	1	79780-39-5		04/13/2022 02:12
PFTDA	ND	5.1	1.6	1.6	1	376-06-7		04/13/2022 02:12

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-A-20220330	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741009	Total Amount Extracted	5.02g
Lab File ID	Q220412C_045	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_032
Collected	03/30/2022 10:00	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	0.46	0.11	0.11	1	375-22-4		04/13/2022 05:54
PFPeA	0.18 J	0.46	0.12	0.12	1	2706-90-3		04/13/2022 05:54
HFPO-DA	ND	0.46	0.14	0.14	1	13252-13-6		04/13/2022 05:54
PFBS	ND	0.40	0.10	0.10	1	375-73-5		04/13/2022 05:54
PFHxA	1.7	0.46	0.14	0.14	1	307-24-4		04/13/2022 05:54
4:2 FTS	ND	0.43	0.14	0.14	1	757124-72-		04/13/2022 05:54
PFPeS	ND	0.43	0.08	0.08	1	2706-91-4		04/13/2022 05:54
PFHpA	ND	0.46	0.10	0.10	1	375-85-9		04/13/2022 05:54
DONA	ND	0.43	0.17	0.17	1	919005-14-		04/13/2022 05:54
PFHxS	1.0	0.41	0.10	0.10	1	355-46-4		04/13/2022 05:54
PFOA	1.7	0.46	0.10	0.10	1	335-67-1		04/13/2022 05:54
6:2 FTS	0.31 J	0.43	0.15	0.15	1	27619-97-2		04/13/2022 05:54
PFHpS	0.76 I J	0.43	0.11	0.11	1	375-92-8		04/13/2022 05:54
PFNA	0.74	0.46	0.13	0.13	1	375-95-1		04/13/2022 05:54
PFOSAm	1.2	0.46	0.11	0.11	1	754-91-6		04/13/2022 05:54
PFOS	9.9	0.42	0.13	0.13	1	1763-23-1		04/13/2022 05:54
MeFOSA	0.25 J	0.46	0.11	0.11	1	31506-32-8		04/13/2022 05:54
PFDA	5.7	0.46	0.09	0.09	1	335-76-2		04/13/2022 05:54
EtFOSAm	0.51 J	0.46	0.11	0.11	1	4151-50-2		04/13/2022 05:54
8:2 FTS	0.89 J	0.44	0.12	0.12	1	39108-34-4		04/13/2022 05:54
9-CI-PF3ON	ND	0.42	0.06	0.06	1	756426-58-		04/13/2022 05:54
PFNS	ND	0.44	0.08	0.08	1	68259-12-1		04/13/2022 05:54
PFUnDA	1.4	0.46	0.13	0.13	1	2058-94-8		04/13/2022 05:54
NMeFOSAA	21	0.46	0.11	0.11	1	2355-31-9		04/13/2022 05:54
NEtFOSAA	7.3	0.46	0.11	0.11	1	2991-50-6		04/13/2022 05:54
PFDS	1.6	0.44	0.11	0.11	1	335-77-3		04/13/2022 05:54
PFDOA	3.1 J	0.46	0.12	0.12	1	307-55-1		04/13/2022 05:54
MeFOSE	17	0.46	0.11	0.11	1	24448-09-7		04/13/2022 05:54
EtFOSE	3.4	0.46	0.11	0.11	1	1691-99-2		04/13/2022 05:54
11-CI-PF3OUdS	ND	0.43	0.07	0.07	1	763051-92-		04/13/2022 05:54
PFTTrDA	0.56 J	0.46	0.09	0.09	1	72629-94-8		04/13/2022 05:54
PFDoS	ND- UJ	0.44	0.14	0.14	1	79780-39-5		04/13/2022 05:54
PFTDA	0.73 J	0.46	0.15	0.15	1	376-06-7		04/13/2022 05:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	BIOSOLIDS-B-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741010	Total Amount Extracted	5.12g
Lab File ID	Q220412C_057	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_056
Collected	03/29/2022 10:10	Ending CCal File	Q220412C_064
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.8	0.42	0.42	1	375-22-4		04/13/2022 09:37
PFPeA	ND	1.8	0.46	0.46	1	2706-90-3		04/13/2022 09:37
HFPO-DA	ND	1.8	0.52	0.52	1	13252-13-6		04/13/2022 09:37
PFBS	2.2 I J	1.6	0.39	0.39	1	375-73-5		04/13/2022 09:37
PFHxA	2.6 I J	1.8	0.53	0.53	1	307-24-4		04/13/2022 09:37
4:2 FTS	ND	1.6	0.56	0.56	1	757124-72-		04/13/2022 09:37
PFPeS	ND	1.7	0.33	0.33	1	2706-91-4		04/13/2022 09:37
PFHpA	ND	1.8	0.40	0.40	1	375-85-9		04/13/2022 09:37
DONA	ND	1.7	0.68	0.68	1	919005-14-		04/13/2022 09:37
PFHxS	1.3 J	1.6	0.39	0.39	1	355-46-4		04/13/2022 09:37
PFOA	1.4 J	1.8	0.40	0.40	1	335-67-1		04/13/2022 09:37
6:2 FTS	ND	1.7	0.56	0.56	1	27619-97-2		04/13/2022 09:37
PFHpS	ND	1.7	0.44	0.44	1	375-92-8		04/13/2022 09:37
PFNA	ND	1.8	0.50	0.50	1	375-95-1		04/13/2022 09:37
PFOSAm	0.98 J	1.8	0.41	0.41	1	754-91-6		04/13/2022 09:37
PFOS	6.5	1.6	0.49	0.49	1	1763-23-1		04/13/2022 09:37
MeFOSA	ND	1.8	0.44	0.44	1	31506-32-8		04/13/2022 09:37
PFDA	2.9 J	1.8	0.38	0.38	1	335-76-2		04/13/2022 09:37
EtFOSAm	ND	1.8	0.42	0.42	1	4151-50-2		04/13/2022 09:37
8:2 FTS	0.77 J	1.7	0.46	0.46	1	39108-34-4		04/13/2022 09:37
9-CI-PF3ON	ND	1.6	0.26	0.26	1	756426-58-		04/13/2022 09:37
PFNS	ND	1.7	0.31	0.31	1	68259-12-1		04/13/2022 09:37
PFUnDA	1.1 J	1.8	0.49	0.49	1	2058-94-8		04/13/2022 09:37
NMeFOSAA	9.9	1.8	0.41	0.41	1	2355-31-9		04/13/2022 09:37
NEtFOSAA	3.5	1.8	0.43	0.43	1	2991-50-6		04/13/2022 09:37
PFDS	0.56 J	1.7	0.44	0.44	1	335-77-3		04/13/2022 09:37
PFDOA	1.6 J	1.8	0.47	0.47	1	307-55-1		04/13/2022 09:37
MeFOSE	7.9	1.8	0.42	0.42	1	24448-09-7		04/13/2022 09:37
EtFOSE	2.2	1.8	0.44	0.44	1	1691-99-2		04/13/2022 09:37
11-CI-PF3OUdS	ND	1.7	0.28	0.28	1	763051-92-		04/13/2022 09:37
PFTTrDA	ND	1.8	0.38	0.38	1	72629-94-8		04/13/2022 09:37
PFDoS	ND UJ	1.7	0.53	0.53	1	79780-39-5		04/13/2022 09:37
PFTDA	ND	1.8	0.56	0.56	1	376-06-7		04/13/2022 09:37

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	DUP01-20220329	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741011	Total Amount Extracted	5.07g
Lab File ID	Q220412C_035	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_032
Collected	03/29/2022 00:00	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.8	0.43	0.43	1	375-22-4		04/13/2022 02:49
PFPeA	ND	1.8	0.48	0.48	1	2706-90-3		04/13/2022 02:49
HFPO-DA	ND	1.8	0.54	0.54	1	13252-13-6		04/13/2022 02:49
PFBS	ND	1.6	0.40	0.40	1	375-73-5		04/13/2022 02:49
PFHxA	2.4	1.8	0.55	0.55	1	307-24-4		04/13/2022 02:49
4:2 FTS	ND	1.7	0.58	0.58	1	757124-72-		04/13/2022 02:49
PFPeS	ND	1.7	0.34	0.34	1	2706-91-4		04/13/2022 02:49
PFHpA	ND	1.8	0.41	0.41	1	375-85-9		04/13/2022 02:49
DONA	ND	1.7	0.70	0.70	1	919005-14-		04/13/2022 02:49
PFHxS	0.82 J	1.7	0.40	0.40	1	355-46-4		04/13/2022 02:49
PFOA	1.3 J	1.8	0.41	0.41	1	335-67-1		04/13/2022 02:49
6:2 FTS	ND	1.7	0.58	0.58	1	27619-97-2		04/13/2022 02:49
PFHpS	ND	1.7	0.45	0.45	1	375-92-8		04/13/2022 02:49
PFNA	0.56 J	1.8	0.52	0.52	1	375-95-1		04/13/2022 02:49
PFOSAm	0.94 J	1.8	0.43	0.43	1	754-91-6		04/13/2022 02:49
PFOS	6.3	1.7	0.51	0.51	1	1763-23-1		04/13/2022 02:49
MeFOSA	R ND	1.8	0.45	0.45	1	31506-32-8		04/13/2022 02:49
PFDA	3.4	1.8	0.39	0.39	1	335-76-2		04/13/2022 02:49
EtFOSAm	R ND	1.8	0.43	0.43	1	4151-50-2		04/13/2022 02:49
8:2 FTS	0.72 IJ	1.7	0.47	0.47	1	39108-34-4		04/13/2022 02:49
9-CI-PF3ON	ND	1.7	0.26	0.26	1	756426-58-		04/13/2022 02:49
PFNS	ND	1.7	0.33	0.33	1	68259-12-1		04/13/2022 02:49
PFUnDA	0.88 J	1.8	0.51	0.51	1	2058-94-8		04/13/2022 02:49
NMeFOSAA	9.7	1.8	0.42	0.42	1	2355-31-9		04/13/2022 02:49
NEtFOSAA	3.5	1.8	0.45	0.45	1	2991-50-6		04/13/2022 02:49
PFDS	0.73 J	1.8	0.46	0.46	1	335-77-3		04/13/2022 02:49
PFDOA	1.6 J	1.8	0.48	0.48	1	307-55-1		04/13/2022 02:49
MeFOSE	8.5	1.8	0.43	0.43	1	24448-09-7		04/13/2022 02:49
EtFOSE	1.8 J	1.8	0.45	0.45	1	1691-99-2		04/13/2022 02:49
11-CI-PF3OUdS	ND	1.7	0.29	0.29	1	763051-92-		04/13/2022 02:49
PFTTrDA	ND	1.8	0.39	0.39	1	72629-94-8		04/13/2022 02:49
PFDoS	ND	1.8	0.54	0.54	1	79780-39-5		04/13/2022 02:49
PFTDA	ND	1.8	0.58	0.58	1	376-06-7		04/13/2022 02:49

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	DUP02-20220330	Extraction Date	04/07/2022 10:00
Lab Sample ID	10602741012	Total Amount Extracted	5.09g
Lab File ID	Q220412C_037	Ical ID	220412B01
Matrix	Soil	CCal File	Q220412C_032
Collected	03/30/2022 00:00	Ending CCal File	Q220412C_056
Received	03/31/2022 08:50	Blank File	Q220412C_008

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	0.11 J	0.45	0.11	0.11	1	375-22-4		04/13/2022 03:26
PFPeA	0.14 J	0.45	0.12	0.12	1	2706-90-3		04/13/2022 03:26
HFPO-DA	ND	0.45	0.13	0.13	1	13252-13-6		04/13/2022 03:26
PFBS	ND	0.40	0.09	0.09	1	375-73-5		04/13/2022 03:26
PFHxA	1.6	0.45	0.13	0.13	1	307-24-4		04/13/2022 03:26
4:2 FTS	ND	0.42	0.14	0.14	1	757124-72-		04/13/2022 03:26
PFPeS	ND	0.42	0.08	0.08	1	2706-91-4		04/13/2022 03:26
PFHpA	ND	0.45	0.10	0.10	1	375-85-9		04/13/2022 03:26
DONA	ND	0.42	0.17	0.17	1	919005-14-		04/13/2022 03:26
PFHxS	0.98	0.41	0.10	0.10	1	355-46-4		04/13/2022 03:26
PFOA	1.7	0.45	0.10	0.10	1	335-67-1		04/13/2022 03:26
6:2 FTS	0.25 IJ	0.43	0.14	0.14	1	27619-97-2		04/13/2022 03:26
PFHpS	0.44 I J	0.43	0.11	0.11	1	375-92-8		04/13/2022 03:26
PFNA	0.73	0.45	0.13	0.13	1	375-95-1		04/13/2022 03:26
PFOSAm	1.1	0.45	0.11	0.11	1	754-91-6		04/13/2022 03:26
PFOS	9.7	0.42	0.12	0.12	1	1763-23-1		04/13/2022 03:26
MeFOSA	ND	0.45	0.11	0.11	1	31506-32-8		04/13/2022 03:26
PFDA	5.6	0.45	0.09	0.09	1	335-76-2		04/13/2022 03:26
EtFOSAm	0.60 J	0.45	0.11	0.11	1	4151-50-2		04/13/2022 03:26
8:2 FTS	0.84 J	0.43	0.12	0.12	1	39108-34-4		04/13/2022 03:26
9-CI-PF3ON	ND	0.42	0.06	0.06	1	756426-58-		04/13/2022 03:26
PFNS	ND	0.43	0.08	0.08	1	68259-12-1		04/13/2022 03:26
PFUnDA	1.4	0.45	0.13	0.13	1	2058-94-8		04/13/2022 03:26
NMeFOSAA	22	0.45	0.10	0.10	1	2355-31-9		04/13/2022 03:26
NEtFOSAA	7.9	0.45	0.11	0.11	1	2991-50-6		04/13/2022 03:26
PFDS	1.5	0.43	0.11	0.11	1	335-77-3		04/13/2022 03:26
PFDOA	3.7 J	0.45	0.12	0.12	1	307-55-1		04/13/2022 03:26
MeFOSE	16	0.45	0.11	0.11	1	24448-09-7		04/13/2022 03:26
EtFOSE	3.2	0.45	0.11	0.11	1	1691-99-2		04/13/2022 03:26
11-CI-PF3OUdS	ND	0.42	0.07	0.07	1	763051-92-		04/13/2022 03:26
PFTTrDA	0.56 J	0.45	0.09	0.09	1	72629-94-8		04/13/2022 03:26
PFDoS	ND	0.43	0.13	0.13	1	79780-39-5		04/13/2022 03:26
PFTDA	0.66 J	0.45	0.14	0.14	1	376-06-7		04/13/2022 03:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	EB01-20220330	Extraction Date	04/06/2022 15:26
Lab Sample ID	10602741013	Total Amount Extracted	265mL
Lab File ID	Q220414A_011	Ical ID	220412B01
Matrix	Non_Potable_Water	CCal File	Q220414A_010
Collected	03/30/2022 09:55	Ending CCal File	Q220414A_017
Received	03/31/2022 08:50	Blank File	Q220408A_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.42	0.42	1	375-22-4		04/14/2022 12:06
PFPeA	ND	1.9	0.41	0.41	1	2706-90-3		04/14/2022 12:06
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		04/14/2022 12:06
PFBS	ND	1.7	0.45	0.45	1	375-73-5		04/14/2022 12:06
PFHxA	ND	1.9	0.41	0.41	1	307-24-4		04/14/2022 12:06
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-		04/14/2022 12:06
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		04/14/2022 12:06
PFHpA	ND	1.9	0.52	0.52	1	375-85-9		04/14/2022 12:06
DONA	ND	1.8	0.48	0.48	1	919005-14-		04/14/2022 12:06
PFHxS	ND	1.7	0.48	0.48	1	355-46-4		04/14/2022 12:06
PFOA	ND	1.9	0.55	0.55	1	335-67-1		04/14/2022 12:06
6:2 FTS	ND	1.8	0.61	0.61	1	27619-97-2		04/14/2022 12:06
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		04/14/2022 12:06
PFNA	ND	1.9	0.70	0.70	1	375-95-1		04/14/2022 12:06
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		04/14/2022 12:06
PFOS	ND	1.7	0.52	0.52	1	1763-23-1		04/14/2022 12:06
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		04/14/2022 12:06
PFDA	ND	1.9	0.53	0.53	1	335-76-2		04/14/2022 12:06
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		04/14/2022 12:06
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		04/14/2022 12:06
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-		04/14/2022 12:06
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		04/14/2022 12:06
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		04/14/2022 12:06
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9		04/14/2022 12:06
NEtFOSAA	ND	1.9	0.52	0.52	1	2991-50-6		04/14/2022 12:06
PFDS	ND	1.8	0.42	0.42	1	335-77-3		04/14/2022 12:06
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		04/14/2022 12:06
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7		04/14/2022 12:06
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		04/14/2022 12:06
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-		04/14/2022 12:06
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		04/14/2022 12:06
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		04/14/2022 12:06
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		04/14/2022 12:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

April 2022

Data Quality and Usability Review – April 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 6/17/2022

TRC sampled Madison Metropolitan Sewerage District's (MMSD's) Nine Springs wastewater treatment plant influent, effluent, and field blank samples on April 25-27, 2022 in conjunction with an additional characterization study. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10606351 (revised June 14, 2022).

Samples included in this review are listed below:

- INFLUENT-02-20220425
- INFLUENT-07-20220425
- INFLUENT-08-20220425
- INFLUENT-11-20220425
- INFLUENT-18-20220425
- EFFLUENT-20220426
- FB01-20220426
- FB-20220427

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;

- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization with the exception of MeFOSA and EtFOSA in sample EFFLUENT-20220426 which were rejected due to significantly low isotopically labeled surrogate recoveries which has a major impact on the data usability.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- Total oxidizable precursor (TOP) assay was inadvertently requested on the COC for sample EFFLUENT-20220426; TOP assay analysis was not required for this sample and therefore, the analysis was not performed.

- The revised data package was found to be complete as received from the laboratory.
- The cooler temperatures upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the TSS method blanks. The following table summarizes the PFAS compounds detected in the method blanks, the associated samples, and the validation actions.

Blank ID	Compound	Blank concentration	Action
BLANK-98543	6:2 FTS	0.92 J ng/L	No validation action was required on this basis since 6:2 FTS was not detected in the associated samples.
Associated samples: INFLUENT-02-20220425, FB01-20220426, FB-20220427			
BLANK-98939	6:2 FTS	0.82 J ng/L	The positive results for 6:2 FTS in samples INFLUENT-07-20220425, INFLUENT-08-20220425, INFLUENT-11-20220425, and EFFLUENT-20220426 were qualified as estimated nondetects (UJ) at the reported concentrations since the results were < the QL. The positive result for 6:2 FTS in sample INFLUENT-18-20220425 was qualified as a nondetect (U) at the reported concentration since the result was > the QL and < 10x the blank concentration.
Associated samples: INFLUENT-07-20220425, INFLUENT-08-20220425, INFLUENT-11-20220425, INFLUENT-18-20220425, EFFLUENT-20220426			

- Two field blank samples (FB01-20220426 and FB-20220427) were collected. Target analytes were not detected in these blank samples.
- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS percent recoveries (%Rs) for all analytes were within QC limits.
- MS/MSD analyses were not performed on a sample in this data set.
- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
INFLUENT-02-20220425	13C2_4:2FTS	454	25-150	No validation actions were required on this basis since 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in this sample.
	13C2_6:2FTS	386		
	13C2_8:2FTS	307		
INFLUENT-07-20220425	13C2_4:2FTS	442	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	255		
	13C2_6:2FTS	516		The positive result for 6:2 FTS in sample INFLUENT-07-20220425 was subsequently qualified as an estimated nondetect (UJ) at the reported concentration due to method blank contamination and detection < the QL. No further action was required on this basis.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
INFLUENT-08-20220425	13C2_4:2FTS	434	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	282		
	13C2_6:2FTS	491		The positive result for 6:2 FTS in sample INFLUENT-08-20220425 was subsequently qualified as an estimated nondetect (UJ) at the reported concentration due to method blank contamination and detection < the QL. No further action was required on this basis.
INFLUENT-11-20220425	13C2_4:2FTS	374	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	216		
	13C2_6:2FTS	471		The positive result for 6:2 FTS in sample INFLUENT-11-20220425 was subsequently qualified as an estimated nondetect (UJ) at the reported concentration due to method blank contamination and detection < the QL. No further action was required on this basis.
INFLUENT-18-20220425	13C2_4:2FTS	497	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	274		
	13C2_6:2FTS	553		The positive result for 6:2 FTS in sample INFLUENT-18-20220425 was subsequently qualified as a nondetect (U) at the reported concentration due to method blank contamination. No further action was required on this basis.
	d7-N-MeFOSE	154	10-150	The positive result for MeFOSE in sample INFLUENT-18-20220425 was already qualified as estimated (J) due to detection < the QL; no further action was required on this basis.
EFFLUENT-20220426	13C2_4:2FTS	346	25-150	No validation actions were required on this basis since 4:2 FTS, 8:2 FTS, and NEtFOSAA were not detected in this sample.
	13C2_8:2FTS	256		
	d5-EtFOSAA	152		
	13C2_6:2FTS	254	The positive result for 6:2 FTS in sample EFFLUENT-20220426 was subsequently qualified as an estimated nondetect (UJ) at the reported concentration due to method blank contamination and detection < the QL. No further action was required on this basis.	
	d3-N-MeFOSA	5	10-150	The nondetect results for MeFOSA and EtFOSA were rejected (R) in sample EFFLUENT-20220426 due to significantly low (<10%) recovery.
	d5-N-EtFOSA	4		

- A field duplicate pair was not collected with this sample set.
- Laboratory duplicate analyses were not performed on a sample from this data set.
- The discussion related to the PFAS analyses noted that samples INFLUENT-02-20220425, INFLUENT-07-20220425, INFLUENT-08-20220425, INFLUENT-11-20220425, and INFLUENT-18-20220425 required centrifugation prior to extraction due to excessive solids present in the samples. The laboratory stated that centrifugation was performed following the laboratory's PFAS Aqueous Centrifuge Protocol; samples were spiked with isotopically labeled surrogates and centrifuged for 10 minutes. Sample bottles were rinsed with methanol and the bottle rinsate was added to the elution. Samples concentrated to <1mL and reconstituted to 1mL using methanol by transfer pipet. No qualification was applied to the results based on these laboratory observations.

- Select sample QLs were outside of the ranges of QLs suggested in the SAB of 2-5 ng/L per individual PFAS due to sample volume. There were no dilutions performed on the samples in this data set.
- The limits of quantitation (LOQs) for TSS in samples INFLUENT-02-20220425, INFLUENT-07-20220425, INFLUENT-08-20220425, INFLUENT-11-20220425, and INFLUENT-18-20220425 were 3.33x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in these samples. No validation action was required on this basis.
- The following sample result was flagged with an “I” by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive result for the compound listed below was qualified as estimated (J) in the listed sample.
 - PFHxS in sample INFLUENT-11-20220425.
- The positive result for 6:2 FTS in sample INFLUENT-08-20220425 was also flagged with an “I” by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; however, this result was subsequently qualified as an estimated nondetect (UJ) at the reported concentration due to method blank contamination and detection below the QL. No further action was required on this basis.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10606351

Sample: INFLUENT-02-20220425 Lab ID: 10606351001 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	184	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-07-20220425 Lab ID: 10606351002 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	151	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-08-20220425 Lab ID: 10606351003 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	226	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-11-20220425 Lab ID: 10606351004 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	200	mg/L	33.3	16.7	1		05/02/22 19:38		
Sample: INFLUENT-18-20220425 Lab ID: 10606351005 Collected: 04/25/22 23:59 Received: 04/28/22 08:50 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	264	mg/L	33.3	16.7	1		05/02/22 19:38		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10606351

Sample: EFFLUENT-20220426 **Lab ID: 10606351006** Collected: 04/26/22 23:59 Received: 04/28/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Pace Analytical Services - Minneapolis									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		05/03/22 10:32		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-02-20220425	Extraction Date	05/06/2022 12:20
Lab Sample ID	10606351001	Total Amount Extracted	234mL
Lab File ID	Q220509B_029	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220509A01
Collected	04/25/2022 23:59	CCal File	Q220509B_024
Received	04/28/2022 08:50	Ending CCal File	Q220509B_035
		Blank File	A220510B_006

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.2	2.1	0.47	0.47	1	375-22-4		05/09/2022 23:45
PFPeA	3.2	2.1	0.47	0.47	1	2706-90-3		05/09/2022 23:45
HFPO-DA	ND	2.1	0.56	0.56	1	13252-13-6		05/09/2022 23:45
PFBS	4.6	1.9	0.50	0.50	1	375-73-5		05/09/2022 23:45
PFHxA	3.2	2.1	0.47	0.47	1	307-24-4		05/09/2022 23:45
4:2 FTS	ND	2.0	0.60	0.60	1	757124-72-4		05/09/2022 23:45
PFPeS	ND	2.0	0.51	0.51	1	2706-91-4		05/09/2022 23:45
PFHpA	1.0 J	2.1	0.59	0.59	1	375-85-9		05/09/2022 23:45
DONA	ND	2.0	0.55	0.55	1	919005-14-4		05/09/2022 23:45
PFHxS	3.8	1.9	0.54	0.54	1	355-46-4		05/09/2022 23:45
PFOA	2.3	2.1	0.62	0.62	1	335-67-1		05/09/2022 23:45
6:2 FTS	ND	2.0	0.69	0.69	1	27619-97-2		05/09/2022 23:45
PFHpS	ND	2.0	0.44	0.44	1	375-92-8		05/09/2022 23:45
PFNA	ND	2.1	0.79	0.79	1	375-95-1		05/09/2022 23:45
PFOSAm	ND	2.1	0.87	0.87	1	754-91-6		05/09/2022 23:45
PFOS	4.1	2.0	0.58	0.58	1	1763-23-1		05/09/2022 23:45
MeFOSA	ND	2.1	0.55	0.55	1	31506-32-8		05/09/2022 23:45
PFDA	ND	2.1	0.60	0.60	1	335-76-2		05/09/2022 23:45
EtFOSAm	ND	2.1	0.65	0.65	1	4151-50-2		05/09/2022 23:45
8:2 FTS	ND	2.0	0.70	0.70	1	39108-34-4		05/09/2022 23:45
9-CI-PF3ON	ND	2.0	0.33	0.33	1	756426-58-1		05/09/2022 23:45
PFNS	ND	2.0	0.48	0.48	1	68259-12-1		05/09/2022 23:45
PFUnDA	ND	2.1	0.58	0.58	1	2058-94-8		05/09/2022 23:45
NMeFOSAA	ND	2.1	0.46	0.46	1	2355-31-9		05/09/2022 23:45
NEtFOSAA	ND	2.1	0.59	0.59	1	2991-50-6		05/09/2022 23:45
PFDS	ND	2.1	0.48	0.48	1	335-77-3		05/09/2022 23:45
PFDOA	ND	2.1	0.52	0.52	1	307-55-1		05/09/2022 23:45
MeFOSE	0.90 J	2.1	0.35	0.35	1	24448-09-7		05/09/2022 23:45
EtFOSE	ND	2.1	0.53	0.53	1	1691-99-2		05/09/2022 23:45
11-CI-PF3OUdS	ND	2.0	0.47	0.47	1	763051-92-9		05/09/2022 23:45
PFTTrDA	ND	2.1	0.66	0.66	1	72629-94-8		05/09/2022 23:45
PFDoS	ND	2.1	0.49	0.49	1	79780-39-5		05/09/2022 23:45
PFTDA	ND	2.1	0.51	0.51	1	376-06-7		05/09/2022 23:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-07-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351002-R	Total Amount Extracted	259mL
Lab File ID	B220530A_006	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	14	1.9	0.43	0.43	1	375-22-4		05/30/2022 22:38
PFPeA	7.5	1.9	0.42	0.42	1	2706-90-3		05/30/2022 22:38
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/30/2022 22:38
PFBS	5.9	1.7	0.46	0.46	1	375-73-5		05/30/2022 22:38
PFHxA	12	1.9	0.42	0.42	1	307-24-4		05/30/2022 22:38
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		05/30/2022 22:38
PFPeS	0.80 J	1.8	0.46	0.46	1	2706-91-4		05/30/2022 22:38
PFHpA	2.9	1.9	0.53	0.53	1	375-85-9		05/30/2022 22:38
DONA	ND	1.8	0.50	0.50	1	919005-14-4		05/30/2022 22:38
PFHxS	10	1.8	0.49	0.49	1	355-46-4		05/30/2022 22:38
PFOA	7.3	1.9	0.56	0.56	1	335-67-1		05/30/2022 22:38
6:2 FTS	1.7 -BJ-- UJ	1.8	0.62	0.62	1	27619-97-2		05/30/2022 22:38
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		05/30/2022 22:38
PFNA	ND	1.9	0.71	0.71	1	375-95-1		05/30/2022 22:38
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		05/30/2022 22:38
PFOS	6.8	1.8	0.53	0.53	1	1763-23-1		05/30/2022 22:38
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		05/30/2022 22:38
PFDA	ND	1.9	0.54	0.54	1	335-76-2		05/30/2022 22:38
EtFOSAm	ND	1.9	0.59	0.59	1	4151-50-2		05/30/2022 22:38
8:2 FTS	ND	1.9	0.63	0.63	1	39108-34-4		05/30/2022 22:38
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		05/30/2022 22:38
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		05/30/2022 22:38
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/30/2022 22:38
NMeFOSAA	1.3 J	1.9	0.42	0.42	1	2355-31-9		05/30/2022 22:38
NEtFOSAA	1.1 J	1.9	0.54	0.54	1	2991-50-6		05/30/2022 22:38
PFDS	ND	1.9	0.43	0.43	1	335-77-3		05/30/2022 22:38
PFDOA	ND	1.9	0.47	0.47	1	307-55-1		05/30/2022 22:38
MeFOSE	2.2	1.9	0.32	0.32	1	24448-09-7		05/30/2022 22:38
EtFOSE	0.80 J	1.9	0.48	0.48	1	1691-99-2		05/30/2022 22:38
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/30/2022 22:38
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		05/30/2022 22:38
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		05/30/2022 22:38
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		05/30/2022 22:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-08-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351003-R	Total Amount Extracted	241mL
Lab File ID	B220530A_007	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.0	2.1	0.46	0.46	1	375-22-4		05/30/2022 22:58
PFPeA	3.7	2.1	0.45	0.45	1	2706-90-3		05/30/2022 22:58
HFPO-DA	ND	2.1	0.55	0.55	1	13252-13-6		05/30/2022 22:58
PFBS	2.5	1.8	0.49	0.49	1	375-73-5		05/30/2022 22:58
PFHxA	5.3	2.1	0.45	0.45	1	307-24-4		05/30/2022 22:58
4:2 FTS	ND	1.9	0.58	0.58	1	757124-72-4		05/30/2022 22:58
PFPeS	ND	1.9	0.49	0.49	1	2706-91-4		05/30/2022 22:58
PFHpA	1.2 J	2.1	0.57	0.57	1	375-85-9		05/30/2022 22:58
DONA	ND	2.0	0.53	0.53	1	919005-14-4		05/30/2022 22:58
PFHxS	3.8	1.9	0.53	0.53	1	355-46-4		05/30/2022 22:58
PFOA	2.6	2.1	0.61	0.61	1	335-67-1		05/30/2022 22:58
6:2 FTS	0.70 -BJ-- UJ	2.0	0.67	0.67	1	27619-97-2		05/30/2022 22:58
PFHpS	ND	2.0	0.43	0.43	1	375-92-8		05/30/2022 22:58
PFNA	ND	2.1	0.77	0.77	1	375-95-1		05/30/2022 22:58
PFOSAm	ND	2.1	0.85	0.85	1	754-91-6		05/30/2022 22:58
PFOS	2.7	1.9	0.57	0.57	1	1763-23-1		05/30/2022 22:58
MeFOSA	ND	2.1	0.53	0.53	1	31506-32-8		05/30/2022 22:58
PFDA	0.71 J	2.1	0.58	0.58	1	335-76-2		05/30/2022 22:58
EtFOSAm	ND	2.1	0.63	0.63	1	4151-50-2		05/30/2022 22:58
8:2 FTS	ND	2.0	0.68	0.68	1	39108-34-4		05/30/2022 22:58
9-CI-PF3ON	ND	1.9	0.32	0.32	1	756426-58-1		05/30/2022 22:58
PFNS	ND	2.0	0.46	0.46	1	68259-12-1		05/30/2022 22:58
PFUnDA	ND	2.1	0.56	0.56	1	2058-94-8		05/30/2022 22:58
NMeFOSAA	ND	2.1	0.45	0.45	1	2355-31-9		05/30/2022 22:58
NEtFOSAA	0.85 J	2.1	0.58	0.58	1	2991-50-6		05/30/2022 22:58
PFDS	ND	2.0	0.47	0.47	1	335-77-3		05/30/2022 22:58
PFDOA	ND	2.1	0.50	0.50	1	307-55-1		05/30/2022 22:58
MeFOSE	1.4 J	2.1	0.34	0.34	1	24448-09-7		05/30/2022 22:58
EtFOSE	0.91 J	2.1	0.52	0.52	1	1691-99-2		05/30/2022 22:58
11-CI-PF3OUdS	ND	2.0	0.45	0.45	1	763051-92-9		05/30/2022 22:58
PFTTrDA	ND	2.1	0.64	0.64	1	72629-94-8		05/30/2022 22:58
PFDoS	ND	2.0	0.48	0.48	1	79780-39-5		05/30/2022 22:58
PFTDA	ND	2.1	0.49	0.49	1	376-06-7		05/30/2022 22:58

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-11-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351004-R	Total Amount Extracted	262mL
Lab File ID	B220530A_008	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.4	1.9	0.42	0.42	1	375-22-4		05/30/2022 23:18
PFPeA	2.6	1.9	0.42	0.42	1	2706-90-3		05/30/2022 23:18
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/30/2022 23:18
PFBS	2.7	1.7	0.45	0.45	1	375-73-5		05/30/2022 23:18
PFHxA	4.3	1.9	0.42	0.42	1	307-24-4		05/30/2022 23:18
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		05/30/2022 23:18
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		05/30/2022 23:18
PFHpA	0.88 J	1.9	0.53	0.53	1	375-85-9		05/30/2022 23:18
DONA	ND	1.8	0.49	0.49	1	919005-14-4		05/30/2022 23:18
PFHxS	2.2 I J	1.7	0.49	0.49	1	355-46-4		05/30/2022 23:18
PFOA	2.6	1.9	0.56	0.56	1	335-67-1		05/30/2022 23:18
6:2 FTS	0.82 BJ UJ	1.8	0.62	0.62	1	27619-97-2		05/30/2022 23:18
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		05/30/2022 23:18
PFNA	ND	1.9	0.71	0.71	1	375-95-1		05/30/2022 23:18
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		05/30/2022 23:18
PFOS	1.9	1.8	0.52	0.52	1	1763-23-1		05/30/2022 23:18
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		05/30/2022 23:18
PFDA	ND	1.9	0.54	0.54	1	335-76-2		05/30/2022 23:18
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		05/30/2022 23:18
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		05/30/2022 23:18
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		05/30/2022 23:18
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		05/30/2022 23:18
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/30/2022 23:18
NMeFOSAA	0.45 J	1.9	0.41	0.41	1	2355-31-9		05/30/2022 23:18
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		05/30/2022 23:18
PFDS	ND	1.8	0.43	0.43	1	335-77-3		05/30/2022 23:18
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		05/30/2022 23:18
MeFOSE	1.0 J	1.9	0.31	0.31	1	24448-09-7		05/30/2022 23:18
EtFOSE	0.64 J	1.9	0.47	0.47	1	1691-99-2		05/30/2022 23:18
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/30/2022 23:18
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		05/30/2022 23:18
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		05/30/2022 23:18
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		05/30/2022 23:18

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	INFLUENT-18-20220425	Extraction Date	05/19/2022 15:17
Lab Sample ID	10606351005-R	Total Amount Extracted	249mL
Lab File ID	B220530A_009	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220527B02
Collected	04/25/2022 23:59	CCal File	B220530A_003
Received	04/28/2022 08:50	Ending CCal File	B220530A_012
		Blank File	B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	2.0	0.44	0.44	1	375-22-4		05/30/2022 23:38
PFPeA	6.5	2.0	0.44	0.44	1	2706-90-3		05/30/2022 23:38
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		05/30/2022 23:38
PFBS	5.8	1.8	0.48	0.48	1	375-73-5		05/30/2022 23:38
PFHxA	8.4	2.0	0.44	0.44	1	307-24-4		05/30/2022 23:38
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		05/30/2022 23:38
PFPeS	1.9	1.9	0.48	0.48	1	2706-91-4		05/30/2022 23:38
PFHpA	2.7	2.0	0.55	0.55	1	375-85-9		05/30/2022 23:38
DONA	ND	1.9	0.52	0.52	1	919005-14-4		05/30/2022 23:38
PFHxS	16	1.8	0.51	0.51	1	355-46-4		05/30/2022 23:38
PFOA	8.3	2.0	0.59	0.59	1	335-67-1		05/30/2022 23:38
6:2 FTS	2.3 B U	1.9	0.65	0.65	1	27619-97-2		05/30/2022 23:38
PFHpS	0.41 J	1.9	0.41	0.41	1	375-92-8		05/30/2022 23:38
PFNA	ND	2.0	0.74	0.74	1	375-95-1		05/30/2022 23:38
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6		05/30/2022 23:38
PFOS	9.8	1.9	0.55	0.55	1	1763-23-1		05/30/2022 23:38
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		05/30/2022 23:38
PFDA	ND	2.0	0.57	0.57	1	335-76-2		05/30/2022 23:38
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		05/30/2022 23:38
8:2 FTS	ND	1.9	0.66	0.66	1	39108-34-4		05/30/2022 23:38
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		05/30/2022 23:38
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		05/30/2022 23:38
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		05/30/2022 23:38
NMeFOSAA	1.0 J	2.0	0.44	0.44	1	2355-31-9		05/30/2022 23:38
NEtFOSAA	1.4 J	2.0	0.56	0.56	1	2991-50-6		05/30/2022 23:38
PFDS	ND	1.9	0.45	0.45	1	335-77-3		05/30/2022 23:38
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		05/30/2022 23:38
MeFOSE	0.73 J	2.0	0.33	0.33	1	24448-09-7		05/30/2022 23:38
EtFOSE	1.7 J	2.0	0.50	0.50	1	1691-99-2		05/30/2022 23:38
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		05/30/2022 23:38
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		05/30/2022 23:38
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		05/30/2022 23:38
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		05/30/2022 23:38

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID EFFLUENT-20220426
 Lab Sample ID 10606351006-R
 Lab File ID B220530A_010
 Matrix Industrial_Water
 Collected 04/26/2022 23:59
 Received 04/28/2022 08:50

Extraction Date 05/19/2022 15:17
 Total Amount Extracted 178mL
 Percent Moisture N/A
 Ical ID 220527B02
 CCal File B220530A_003
 Ending CCal File B220530A_012
 Blank File B220524A_044

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.9	2.8	0.62	0.62	1	375-22-4		05/30/2022 23:58
PFPeA	11	2.8	0.62	0.62	1	2706-90-3		05/30/2022 23:58
HFPO-DA	ND	2.8	0.74	0.74	1	13252-13-6		05/30/2022 23:58
PFBS	3.5	2.5	0.67	0.67	1	375-73-5		05/30/2022 23:58
PFHxA	21	2.8	0.62	0.62	1	307-24-4		05/30/2022 23:58
4:2 FTS	ND	2.6	0.79	0.79	1	757124-72-4		05/30/2022 23:58
PFPeS	ND	2.6	0.67	0.67	1	2706-91-4		05/30/2022 23:58
PFHpA	2.5 J	2.8	0.77	0.77	1	375-85-9		05/30/2022 23:58
DONA	ND	2.7	0.72	0.72	1	919005-14-4		05/30/2022 23:58
PFHxS	7.0	2.6	0.72	0.72	1	355-46-4		05/30/2022 23:58
PFOA	7.8	2.8	0.82	0.82	1	335-67-1		05/30/2022 23:58
6:2 FTS	2.1 BJ--UJ	2.7	0.91	0.91	1	27619-97-2		05/30/2022 23:58
PFHpS	ND	2.7	0.58	0.58	1	375-92-8		05/30/2022 23:58
PFNA	ND	2.8	1.0	1.0	1	375-95-1		05/30/2022 23:58
PFOSAm	ND	2.8	1.2	1.2	1	754-91-6		05/30/2022 23:58
PFOS	3.0	2.6	0.77	0.77	1	1763-23-1		05/30/2022 23:58
MeFOSA	R ND	2.8	0.72	0.72	1	31506-32-8		05/30/2022 23:58
PFDA	0.98 J	2.8	0.79	0.79	1	335-76-2		05/30/2022 23:58
EtFOSAm	R ND	2.8	0.86	0.86	1	4151-50-2		05/30/2022 23:58
8:2 FTS	ND	2.7	0.92	0.92	1	39108-34-4		05/30/2022 23:58
9-CI-PF3ON	ND	2.6	0.43	0.43	1	756426-58-1		05/30/2022 23:58
PFNS	ND	2.7	0.63	0.63	1	68259-12-1		05/30/2022 23:58
PFUnDA	ND	2.8	0.76	0.76	1	2058-94-8		05/30/2022 23:58
NMeFOSAA	1.1 J	2.8	0.61	0.61	1	2355-31-9		05/30/2022 23:58
NEtFOSAA	ND	2.8	0.78	0.78	1	2991-50-6		05/30/2022 23:58
PFDS	ND	2.7	0.63	0.63	1	335-77-3		05/30/2022 23:58
PFDOA	ND	2.8	0.68	0.68	1	307-55-1		05/30/2022 23:58
MeFOSE	ND	2.8	0.46	0.46	1	24448-09-7		05/30/2022 23:58
EtFOSE	ND	2.8	0.70	0.70	1	1691-99-2		05/30/2022 23:58
11-CI-PF3OUdS	ND	2.7	0.61	0.61	1	763051-92-9		05/30/2022 23:58
PFTTrDA	ND	2.8	0.88	0.88	1	72629-94-8		05/30/2022 23:58
PFDoS	ND	2.7	0.65	0.65	1	79780-39-5		05/30/2022 23:58
PFTDA	ND	2.8	0.67	0.67	1	376-06-7		05/30/2022 23:58

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Page 1 of 2

Client Sample ID FB01-20220426
 Lab Sample ID 10606351007
 Lab File ID Q220509B_036
 Matrix Water
 Collected 04/26/2022 09:59
 Received 04/28/2022 08:50

Extraction Date 05/06/2022 12:20
 Total Amount Extracted 257mL
 Percent Moisture N/A
 Ical ID 220509A01
 CCal File Q220509B_035
 Ending CCal File Q220509B_046
 Blank File A220510B_006

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.43	0.43	1	375-22-4		05/10/2022 01:55
PFPeA	ND	1.9	0.43	0.43	1	2706-90-3		05/10/2022 01:55
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/10/2022 01:55
PFBS	ND	1.7	0.46	0.46	1	375-73-5		05/10/2022 01:55
PFHxA	ND	1.9	0.43	0.43	1	307-24-4		05/10/2022 01:55
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		05/10/2022 01:55
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		05/10/2022 01:55
PFHpA	ND	1.9	0.53	0.53	1	375-85-9		05/10/2022 01:55
DONA	ND	1.8	0.50	0.50	1	919005-14-4		05/10/2022 01:55
PFHxS	ND	1.8	0.49	0.49	1	355-46-4		05/10/2022 01:55
PFOA	ND	1.9	0.57	0.57	1	335-67-1		05/10/2022 01:55
6:2 FTS	ND	1.8	0.63	0.63	1	27619-97-2		05/10/2022 01:55
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		05/10/2022 01:55
PFNA	ND	1.9	0.72	0.72	1	375-95-1		05/10/2022 01:55
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		05/10/2022 01:55
PFOS	ND	1.8	0.53	0.53	1	1763-23-1		05/10/2022 01:55
MeFOSA	ND	1.9	0.50	0.50	1	31506-32-8		05/10/2022 01:55
PFDA	ND	1.9	0.55	0.55	1	335-76-2		05/10/2022 01:55
EtFOSAm	ND	1.9	0.59	0.59	1	4151-50-2		05/10/2022 01:55
8:2 FTS	ND	1.9	0.63	0.63	1	39108-34-4		05/10/2022 01:55
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		05/10/2022 01:55
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		05/10/2022 01:55
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/10/2022 01:55
NMeFOSAA	ND	1.9	0.42	0.42	1	2355-31-9		05/10/2022 01:55
NEtFOSAA	ND	1.9	0.54	0.54	1	2991-50-6		05/10/2022 01:55
PFDS	ND	1.9	0.44	0.44	1	335-77-3		05/10/2022 01:55
PFDOA	ND	1.9	0.47	0.47	1	307-55-1		05/10/2022 01:55
MeFOSE	ND	1.9	0.32	0.32	1	24448-09-7		05/10/2022 01:55
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		05/10/2022 01:55
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/10/2022 01:55
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		05/10/2022 01:55
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		05/10/2022 01:55
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		05/10/2022 01:55

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID FB-20220427
 Lab Sample ID 10606351008
 Lab File ID Q220509B_037
 Matrix Water
 Collected 04/27/2022 07:00
 Received 04/28/2022 08:50

Extraction Date 05/06/2022 12:20
 Total Amount Extracted 258mL
 Percent Moisture N/A
 Ical ID 220509A01
 CCal File Q220509B_035
 Ending CCal File Q220509B_046
 Blank File A220510B_006

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.43	0.43	1	375-22-4		05/10/2022 02:14
PFPeA	ND	1.9	0.42	0.42	1	2706-90-3		05/10/2022 02:14
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		05/10/2022 02:14
PFBS	ND	1.7	0.46	0.46	1	375-73-5		05/10/2022 02:14
PFHxA	ND	1.9	0.42	0.42	1	307-24-4		05/10/2022 02:14
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		05/10/2022 02:14
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		05/10/2022 02:14
PFHpA	ND	1.9	0.53	0.53	1	375-85-9		05/10/2022 02:14
DONA	ND	1.8	0.50	0.50	1	919005-14-4		05/10/2022 02:14
PFHxS	ND	1.8	0.49	0.49	1	355-46-4		05/10/2022 02:14
PFOA	ND	1.9	0.57	0.57	1	335-67-1		05/10/2022 02:14
6:2 FTS	ND	1.8	0.62	0.62	1	27619-97-2		05/10/2022 02:14
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		05/10/2022 02:14
PFNA	ND	1.9	0.72	0.72	1	375-95-1		05/10/2022 02:14
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		05/10/2022 02:14
PFOS	ND	1.8	0.53	0.53	1	1763-23-1		05/10/2022 02:14
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		05/10/2022 02:14
PFDA	ND	1.9	0.55	0.55	1	335-76-2		05/10/2022 02:14
EtFOSAm	ND	1.9	0.59	0.59	1	4151-50-2		05/10/2022 02:14
8:2 FTS	ND	1.9	0.63	0.63	1	39108-34-4		05/10/2022 02:14
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		05/10/2022 02:14
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		05/10/2022 02:14
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		05/10/2022 02:14
NMeFOSAA	ND	1.9	0.42	0.42	1	2355-31-9		05/10/2022 02:14
NEtFOSAA	ND	1.9	0.54	0.54	1	2991-50-6		05/10/2022 02:14
PFDS	ND	1.9	0.44	0.44	1	335-77-3		05/10/2022 02:14
PFDOA	ND	1.9	0.47	0.47	1	307-55-1		05/10/2022 02:14
MeFOSE	ND	1.9	0.32	0.32	1	24448-09-7		05/10/2022 02:14
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		05/10/2022 02:14
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		05/10/2022 02:14
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		05/10/2022 02:14
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		05/10/2022 02:14
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		05/10/2022 02:14

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

May 2022

Data Quality and Usability Review – May 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 6/30/2022

Madison Metropolitan Sewerage District (MMSD) collected influent and effluent samples at the Nine Springs wastewater treatment plant on May 24 and 25, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10610437 (revised June 29, 2022).

Samples included in this review are listed below:

- Influent-02 20220523
- Influent-07 20220523
- Influent-08 20220523
- Influent-11 20220523
- Influent-18 20220523
- Effluent 20220525

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;

- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.
- All data are usable for the purposes of the additional characterization. The issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The revised data package was found to be complete as received from the laboratory.
- The cooler temperature upon receipt at the laboratory was within the acceptance criteria (< 10°C).

- Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the method blanks.
- No field blank samples were collected with this sample set.
- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS and LCS duplicate percent recoveries (%Rs) and relative percent differences, where applicable, for all analytes were within QC limits.
- MS/MSD analyses were not performed on a sample in this data set.
- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent-02 20220523	13C2_4:2FTS	383	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	264		
	13C2_6:2FTS	445		The positive result for 6:2 FTS in sample Influent-02 20220523 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-07 20220523	13C2_4:2FTS	400	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	265		
	13C2_6:2FTS	476		The positive result for 6:2 FTS in sample Influent-07 20220523 was qualified as estimated (J).
Influent-08 20220523	13C2_4:2FTS	406	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	322		
	13C2_6:2FTS	536		The positive result for 6:2 FTS in sample Influent-08 20220523 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-11 20220523	13C2_4:2FTS	388	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	280		
	13C2_6:2FTS	478		The positive result for 6:2 FTS in sample Influent-11 20220523 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-18 20220523	13C2_4:2FTS	419	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	283		
	13C2_6:2FTS	482		The positive result for 6:2 FTS in sample Influent-18 20220523 was qualified as estimated (J).

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Effluent 20220525	13C2_4:2FTS	469	25-150	No validation actions were required on this basis since 4:2 FTS, 8:2 FTS, NEtFOSAA, and PFUnDA were not detected in this sample.
	13C2_8:2FTS	363		
	d5-EtFOSAA	160		
	13C7_PFUdA	151		
	13C2_6:2FTS	400		The positive results for 6:2 FTS, PFDA, and NMeFOSAA in sample Effluent 20220525 were already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
	13C6_PFDA	153		
	d3-MeFOSAA	167		

- A field duplicate pair was not collected with this sample set.
- Laboratory duplicate analyses were not performed on a sample from this data set.
- The discussion related to the PFAS analyses in the laboratory narrative noted that samples Influent-02 20220523, Influent-07 20220523, Influent-08 20220523, Influent-11 20220523, and Influent-18 20220523 required centrifugation prior to extraction due to excessive solids present in the samples. The laboratory stated that centrifugation was performed following the laboratory's PFAS Aqueous Centrifuge Protocol; samples were spiked with isotopically labeled surrogates and centrifuged for 10 minutes. Sample bottles were rinsed with methanol and the bottle rinsate was added to the elution. Samples were concentrated to <1mL and were reconstituted to 1mL using methanol by transfer pipet. No qualification was applied to the results based on these laboratory observations.
- Sample QLs were within the ranges of QLs suggested in the SAB of 2-5 ng/L for individual PFAS. There were no dilutions performed on the samples in this data set.
- The limits of quantitation (LOQs) for TSS in samples Influent-02 20220523, Influent-07 20220523, Influent-08 20220523, Influent-11 20220523, and Influent-18 20220523 were 3.33x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in these samples. No validation action was required on this basis.
- The result for PFHxS in sample Influent-11-20220523 was flagged with an "I" by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive result for PFHxS was qualified as estimated (J). However, this result was also qualified as estimated (J) by the laboratory due to detection < the QL. Therefore, no further validation action was required.
- The internal standard (also referred to as injection internal standard by Pace) 13C2_PFDA (153%) recovered above the acceptance limits (50-150%) in sample Effluent 20220525. However, since internal standards are not used to quantitate any sample results, no validation actions were taken on this basis.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10610437

Sample: Influent-02 20220523 **Lab ID: 10610437001** Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	208	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-07 20220523 **Lab ID: 10610437002** Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	214	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-08 20220523 **Lab ID: 10610437003** Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	221	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-11 20220523 **Lab ID: 10610437004** Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	248	mg/L	33.3	16.7	1		05/30/22 17:12		

Sample: Influent-18 20220523 **Lab ID: 10610437005** Collected: 05/24/22 11:59 Received: 05/27/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	230	mg/L	33.3	16.7	1		05/30/22 17:12		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10610437

Sample: Effluent 20220525 **Lab ID: 10610437006** Collected: 05/25/22 11:59 Received: 05/27/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Pace Analytical Services - Minneapolis									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		06/01/22 11:40		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02 20220523
 Lab Sample ID 10610437001
 Lab File ID B220613C_013
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 262mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.2	1.9	0.42	0.42	1	375-22-4		06/14/2022 05:34
PFPeA	3.4	1.9	0.42	0.42	1	2706-90-3		06/14/2022 05:34
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/14/2022 05:34
PFBS	1.9	1.7	0.45	0.45	1	375-73-5		06/14/2022 05:34
PFHxA	4.2	1.9	0.42	0.42	1	307-24-4		06/14/2022 05:34
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		06/14/2022 05:34
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		06/14/2022 05:34
PFHpA	1.4 J	1.9	0.53	0.53	1	375-85-9		06/14/2022 05:34
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/14/2022 05:34
PFHxS	5.0	1.7	0.49	0.49	1	355-46-4		06/14/2022 05:34
PFOA	3.2	1.9	0.56	0.56	1	335-67-1		06/14/2022 05:34
6:2 FTS	1.5 J	1.8	0.62	0.62	1	27619-97-2		06/14/2022 05:34
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		06/14/2022 05:34
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/14/2022 05:34
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		06/14/2022 05:34
PFOS	4.2	1.8	0.52	0.52	1	1763-23-1		06/14/2022 05:34
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/14/2022 05:34
PFDA	ND	1.9	0.54	0.54	1	335-76-2		06/14/2022 05:34
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/14/2022 05:34
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		06/14/2022 05:34
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 05:34
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/14/2022 05:34
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/14/2022 05:34
NMeFOSAA	0.42 J	1.9	0.41	0.41	1	2355-31-9		06/14/2022 05:34
NEtFOSAA	0.71 J	1.9	0.53	0.53	1	2991-50-6		06/14/2022 05:34
PFDS	7.3	1.8	0.43	0.43	1	335-77-3		06/14/2022 05:34
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/14/2022 05:34
MeFOSE	1.5 J	1.9	0.31	0.31	1	24448-09-7		06/14/2022 05:34
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/14/2022 05:34
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/14/2022 05:34
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		06/14/2022 05:34
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/14/2022 05:34
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		06/14/2022 05:34

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07 20220523
 Lab Sample ID 10610437002
 Lab File ID B220613C_014
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 247mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	2.0	0.45	0.45	1	375-22-4		06/14/2022 05:54
PFPeA	5.5	2.0	0.44	0.44	1	2706-90-3		06/14/2022 05:54
HFPO-DA	ND	2.0	0.54	0.54	1	13252-13-6		06/14/2022 05:54
PFBS	4.8	1.8	0.48	0.48	1	375-73-5		06/14/2022 05:54
PFHxA	8.6	2.0	0.44	0.44	1	307-24-4		06/14/2022 05:54
4:2 FTS	ND	1.9	0.57	0.57	1	757124-72-4		06/14/2022 05:54
PFPeS	1.0 J	1.9	0.48	0.48	1	2706-91-4		06/14/2022 05:54
PFHpA	2.2	2.0	0.56	0.56	1	375-85-9		06/14/2022 05:54
DONA	ND	1.9	0.52	0.52	1	919005-14-4		06/14/2022 05:54
PFHxS	11	1.8	0.51	0.51	1	355-46-4		06/14/2022 05:54
PFOA	6.2	2.0	0.59	0.59	1	335-67-1		06/14/2022 05:54
6:2 FTS	3.5 J	1.9	0.65	0.65	1	27619-97-2		06/14/2022 05:54
PFHpS	ND	1.9	0.42	0.42	1	375-92-8		06/14/2022 05:54
PFNA	ND	2.0	0.75	0.75	1	375-95-1		06/14/2022 05:54
PFOSAm	ND	2.0	0.83	0.83	1	754-91-6		06/14/2022 05:54
PFOS	8.9	1.9	0.56	0.56	1	1763-23-1		06/14/2022 05:54
MeFOSA	ND	2.0	0.52	0.52	1	31506-32-8		06/14/2022 05:54
PFDA	0.63 J	2.0	0.57	0.57	1	335-76-2		06/14/2022 05:54
EtFOSAm	ND	2.0	0.62	0.62	1	4151-50-2		06/14/2022 05:54
8:2 FTS	ND	1.9	0.66	0.66	1	39108-34-4		06/14/2022 05:54
9-CI-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1		06/14/2022 05:54
PFNS	ND	1.9	0.45	0.45	1	68259-12-1		06/14/2022 05:54
PFUnDA	ND	2.0	0.55	0.55	1	2058-94-8		06/14/2022 05:54
NMeFOSAA	0.74 J	2.0	0.44	0.44	1	2355-31-9		06/14/2022 05:54
NEtFOSAA	0.95 J	2.0	0.56	0.56	1	2991-50-6		06/14/2022 05:54
PFDS	ND	2.0	0.46	0.46	1	335-77-3		06/14/2022 05:54
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		06/14/2022 05:54
MeFOSE	1.9 J	2.0	0.33	0.33	1	24448-09-7		06/14/2022 05:54
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2		06/14/2022 05:54
11-CI-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9		06/14/2022 05:54
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		06/14/2022 05:54
PFDoS	ND	2.0	0.47	0.47	1	79780-39-5		06/14/2022 05:54
PFTDA	ND	2.0	0.48	0.48	1	376-06-7		06/14/2022 05:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08 20220523
 Lab Sample ID 10610437003
 Lab File ID B220613C_015
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 261mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.5	1.9	0.42	0.42	1	375-22-4		06/14/2022 06:14
PFPeA	3.9	1.9	0.42	0.42	1	2706-90-3		06/14/2022 06:14
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/14/2022 06:14
PFBS	1.7	1.7	0.45	0.45	1	375-73-5		06/14/2022 06:14
PFHxA	4.1	1.9	0.42	0.42	1	307-24-4		06/14/2022 06:14
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		06/14/2022 06:14
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		06/14/2022 06:14
PFHpA	0.92 J	1.9	0.53	0.53	1	375-85-9		06/14/2022 06:14
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/14/2022 06:14
PFHxS	4.2	1.7	0.49	0.49	1	355-46-4		06/14/2022 06:14
PFOA	1.9	1.9	0.56	0.56	1	335-67-1		06/14/2022 06:14
6:2 FTS	1.4 J	1.8	0.62	0.62	1	27619-97-2		06/14/2022 06:14
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		06/14/2022 06:14
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/14/2022 06:14
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		06/14/2022 06:14
PFOS	2.9	1.8	0.52	0.52	1	1763-23-1		06/14/2022 06:14
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/14/2022 06:14
PFDA	ND	1.9	0.54	0.54	1	335-76-2		06/14/2022 06:14
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/14/2022 06:14
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		06/14/2022 06:14
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 06:14
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/14/2022 06:14
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/14/2022 06:14
NMeFOSAA	ND	1.9	0.42	0.42	1	2355-31-9		06/14/2022 06:14
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		06/14/2022 06:14
PFDS	ND	1.8	0.43	0.43	1	335-77-3		06/14/2022 06:14
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/14/2022 06:14
MeFOSE	1.8 J	1.9	0.31	0.31	1	24448-09-7		06/14/2022 06:14
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/14/2022 06:14
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/14/2022 06:14
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		06/14/2022 06:14
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/14/2022 06:14
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		06/14/2022 06:14

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11 20220523
 Lab Sample ID 10610437004
 Lab File ID B220613C_016
 Matrix Industrial_Water
 Collected 05/24/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 260mL
 Percent Moisture N/A
 Ical ID 220613A02
 CCal File B220613C_012
 Ending CCal File B220613C_023
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.7	1.9	0.42	0.42	1	375-22-4		06/14/2022 06:34
PFPeA	2.2	1.9	0.42	0.42	1	2706-90-3		06/14/2022 06:34
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/14/2022 06:34
PFBS	1.5 J	1.7	0.45	0.45	1	375-73-5		06/14/2022 06:34
PFHxA	3.5	1.9	0.42	0.42	1	307-24-4		06/14/2022 06:34
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		06/14/2022 06:34
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		06/14/2022 06:34
PFHpA	0.82 J	1.9	0.53	0.53	1	375-85-9		06/14/2022 06:34
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/14/2022 06:34
PFHxS	1.5 IJ	1.8	0.49	0.49	1	355-46-4		06/14/2022 06:34
PFOA	1.9	1.9	0.56	0.56	1	335-67-1		06/14/2022 06:34
6:2 FTS	1.1 J	1.8	0.62	0.62	1	27619-97-2		06/14/2022 06:34
PFHpS	ND	1.8	0.40	0.40	1	375-92-8		06/14/2022 06:34
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/14/2022 06:34
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		06/14/2022 06:34
PFOS	2.1	1.8	0.53	0.53	1	1763-23-1		06/14/2022 06:34
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/14/2022 06:34
PFDA	ND	1.9	0.54	0.54	1	335-76-2		06/14/2022 06:34
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/14/2022 06:34
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		06/14/2022 06:34
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 06:34
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/14/2022 06:34
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/14/2022 06:34
NMeFOSAA	0.60 J	1.9	0.42	0.42	1	2355-31-9		06/14/2022 06:34
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		06/14/2022 06:34
PFDS	ND	1.9	0.43	0.43	1	335-77-3		06/14/2022 06:34
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/14/2022 06:34
MeFOSE	4.6	1.9	0.32	0.32	1	24448-09-7		06/14/2022 06:34
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/14/2022 06:34
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/14/2022 06:34
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		06/14/2022 06:34
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/14/2022 06:34
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		06/14/2022 06:34

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID	Influent-18 20220523	Extraction Date	06/10/2022 09:02
Lab Sample ID	10610437005	Total Amount Extracted	266mL
Lab File ID	B220613C_017	Percent Moisture	N/A
Matrix	Industrial_Water	Ical ID	220613A02
Collected	05/24/2022 11:59	CCal File	B220613C_012
Received	05/27/2022 08:50	Ending CCal File	B220613C_023
		Blank File	B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.7	1.9	0.41	0.41	1	375-22-4		06/14/2022 06:54
PFPeA	5.1	1.9	0.41	0.41	1	2706-90-3		06/14/2022 06:54
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		06/14/2022 06:54
PFBS	3.9	1.7	0.44	0.44	1	375-73-5		06/14/2022 06:54
PFHxA	6.5	1.9	0.41	0.41	1	307-24-4		06/14/2022 06:54
4:2 FTS	ND	1.8	0.52	0.52	1	757124-72-4		06/14/2022 06:54
PFPeS	1.3 J	1.8	0.45	0.45	1	2706-91-4		06/14/2022 06:54
PFHpA	1.9	1.9	0.52	0.52	1	375-85-9		06/14/2022 06:54
DONA	ND	1.8	0.48	0.48	1	919005-14-4		06/14/2022 06:54
PFHxS	13	1.7	0.48	0.48	1	355-46-4		06/14/2022 06:54
PFOA	5.9	1.9	0.55	0.55	1	335-67-1		06/14/2022 06:54
6:2 FTS	2.2 J	1.8	0.61	0.61	1	27619-97-2		06/14/2022 06:54
PFHpS	0.39 J	1.8	0.39	0.39	1	375-92-8		06/14/2022 06:54
PFNA	ND	1.9	0.70	0.70	1	375-95-1		06/14/2022 06:54
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		06/14/2022 06:54
PFOS	7.1	1.7	0.51	0.51	1	1763-23-1		06/14/2022 06:54
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		06/14/2022 06:54
PFDA	0.54 J	1.9	0.53	0.53	1	335-76-2		06/14/2022 06:54
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		06/14/2022 06:54
8:2 FTS	ND	1.8	0.61	0.61	1	39108-34-4		06/14/2022 06:54
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/14/2022 06:54
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		06/14/2022 06:54
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		06/14/2022 06:54
NMeFOSAA	0.58 J	1.9	0.41	0.41	1	2355-31-9		06/14/2022 06:54
NEtFOSAA	0.83 J	1.9	0.52	0.52	1	2991-50-6		06/14/2022 06:54
PFDS	ND	1.8	0.42	0.42	1	335-77-3		06/14/2022 06:54
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		06/14/2022 06:54
MeFOSE	3.7	1.9	0.31	0.31	1	24448-09-7		06/14/2022 06:54
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		06/14/2022 06:54
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		06/14/2022 06:54
PFTTrDA	ND	1.9	0.58	0.58	1	72629-94-8		06/14/2022 06:54
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		06/14/2022 06:54
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		06/14/2022 06:54

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220525
 Lab Sample ID 10610437006
 Lab File ID B220616B_014
 Matrix Industrial_Water
 Collected 05/25/2022 11:59
 Received 05/27/2022 08:50

Extraction Date 06/10/2022 09:02
 Total Amount Extracted 260mL
 Percent Moisture N/A
 Ical ID 220616A02
 CCal File B220616B_006
 Ending CCal File B220616B_016
 Blank File B220613C_002

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.7	1.9	0.42	0.42	1	375-22-4		06/16/2022 17:19
PFPeA	16	1.9	0.42	0.42	1	2706-90-3		06/16/2022 17:19
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		06/16/2022 17:19
PFBS	2.2	1.7	0.45	0.45	1	375-73-5		06/16/2022 17:19
PFHxA	22	1.9	0.42	0.42	1	307-24-4		06/16/2022 17:19
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		06/16/2022 17:19
PFPeS	0.54 J	1.8	0.46	0.46	1	2706-91-4		06/16/2022 17:19
PFHpA	1.8 J	1.9	0.53	0.53	1	375-85-9		06/16/2022 17:19
DONA	ND	1.8	0.49	0.49	1	919005-14-4		06/16/2022 17:19
PFHxS	6.2	1.7	0.49	0.49	1	355-46-4		06/16/2022 17:19
PFOA	6.8	1.9	0.56	0.56	1	335-67-1		06/16/2022 17:19
6:2 FTS	1.3 J	1.8	0.62	0.62	1	27619-97-2		06/16/2022 17:19
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		06/16/2022 17:19
PFNA	ND	1.9	0.71	0.71	1	375-95-1		06/16/2022 17:19
PFOSAm	ND	1.9	0.79	0.79	1	754-91-6		06/16/2022 17:19
PFOS	3.1	1.8	0.53	0.53	1	1763-23-1		06/16/2022 17:19
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		06/16/2022 17:19
PFDA	1.4 J	1.9	0.54	0.54	1	335-76-2		06/16/2022 17:19
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		06/16/2022 17:19
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		06/16/2022 17:19
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		06/16/2022 17:19
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		06/16/2022 17:19
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		06/16/2022 17:19
NMeFOSAA	0.92 J	1.9	0.42	0.42	1	2355-31-9		06/16/2022 17:19
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		06/16/2022 17:19
PFDS	ND	1.9	0.43	0.43	1	335-77-3		06/16/2022 17:19
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		06/16/2022 17:19
MeFOSE	ND	1.9	0.32	0.32	1	24448-09-7		06/16/2022 17:19
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		06/16/2022 17:19
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		06/16/2022 17:19
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		06/16/2022 17:19
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		06/16/2022 17:19
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		06/16/2022 17:19

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

June 2022

Data Quality and Usability Review – June 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 11/3/2022

Madison Metropolitan Sewerage District (MMSD) collected influent, effluent, and biosolids samples at the Nine Springs wastewater treatment plant on June 20-22, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS), total suspended solids (TSS), and total solids by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota (Pace – Minneapolis). Samples were analyzed for total oxidizable precursor (TOP) assay PFAS by Pace Analytical – Gulf Coast in Baton Rouge, Louisiana (Pace – Gulf Coast). The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 10614143 (Revision 1 dated 08/02/22; total PFAS), 10614143 (dated 08/29/22; TSS and total solids only) and 222062951 ("10614143 TOP Assay REV 2") (dated 10/13/2022; PFAS TOP Assay only).

Samples included in this review are listed below:

- Influent-02-20220620
- Influent-07-20220620
- Influent-08-20220620
- Influent-11-20220620
- Influent-18-20220620
- Effluent-20220621
- Biosolids A-20220622
- Biosolids B-20220622
- Equipment Blank 20220622

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
PFAS (total) (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
PFAS TOP Assay (33 Analytes)	Laboratory SOP using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D
Total Solids*	ASTM D2974*

Notes:

* The laboratory does not hold NELAC/TNI accreditation for total solids.

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable

Water) and Non-Aqueous Matrices Method Expectations, Document #EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed total PFAS, TOP Assay PFAS, TSS, and total solids data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization with the exception of several nondetect total and/or TOP assay PFAS results in samples Influent-02-20220620, Influent-07-20220620, Influent-08-20220620, Influent-11-20220620, Influent-18-20220620, Effluent-20220621, Equipment Blank 20220622, and Biosolids B-20220622 which were rejected due to significantly low isotopically labeled surrogate recoveries which has a major impact on the data usability.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The revised data packages were found to be complete as received from the laboratory with the following exceptions and/or notes.
 - The collection date for sample Effluent-20220621 was mistakenly transcribed by the laboratory as 06/20/2022 on the subcontracted chain-of-custody for the TOP assay analyses; therefore, the collection date for this sample is incorrect in SDG 222062951. The collection date for this sample was 06/21/2022 as indicated on the original COC in SDG 10614143; however, the laboratory also misidentified the collection date in the TSS report for this sample. The collection date was changed on the Form 1s (TSS and TOP Assay) for this sample during validation.
 - The laboratory did not report the isotopically labelled surrogate result for 13C8_PFOs from the 5-fold diluted total PFAS analysis of sample Biosolids A-20220622; this information was provided as a supplement during this review and was within the acceptance limits.
 - Upon review during validation, several discrepancies in SDG 222062951 were noted with the TOP Assay results for the biosolids samples when compared to the electronic data deliverable (EDD). After discussions with the laboratory, it was determined that the laboratory did not adjust detected biosolids TOP Assay results for moisture content and that biosolids results detected between the detection limit (DL) and limit of quantitation (LOQ) were not consistently qualified as estimated by the laboratory with a “J” flag. A revised report was provided by the laboratory on 10/13/2022 to correct the TOP Assay result reporting issues for the biosolids samples. Only the revised TOP Assay report dated 10/13/22 should be used for project objectives.
- The cooler temperatures upon receipt at the laboratories were within the acceptance criteria (< 10°C).
 - Samples were flagged by the laboratory as out of the laboratory’s temperature criteria (0-6°C) in SDG 10614143 (revision 1). These samples were received at a temperature of 8.8°C. Professional judgement was used and since the PFAS samples were received at a temperature < 10°C, no validation action was taken. However, potential low bias exists for the positive TSS results of all influent and effluent samples in this data set due to this issue. These results were qualified as estimated (J-) with a potential low bias.

- Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A method blank was analyzed with each analytical batch for PFAS (total and TOP assay) and TSS. The following table summarizes the compounds detected in the method blanks, the associated samples, and the validation actions.

Blank ID (Analysis Date)	Compound	Blank concentration	Action
MB744695 (post-TOP assay) (7/17/22 @0418)	PFBA	0.091 J µg/Kg	The positive post-TOP assay results for PFBA, PFHxA, and PFPeA in sample Biosolids B-20220622 were qualified as estimated nondetects (UJ) at the reported concentrations since the results were < the QL.
	PFHxA	0.044 J µg/Kg	
	PFPeA	0.057 J µg/Kg	No validation action was required on this basis for sample Biosolids A-20220622 since the post-TOP assay results for PFBA, PFHxA, and PFPeA were > 10x the blank concentration when adjusted for sample-specific volume and percent solids.
Associated samples: Biosolids A-20220622, Biosolids B-20220622			

- One equipment blank (Equipment Blank 20220622) was collected and analyzed for total PFAS. The following table summarizes the total PFAS compounds detected in the equipment blank, the associated sample, and the validation actions.

Blank ID	Compound	Blank concentration	Action
Equipment Blank 20220622	HFPO-DA	0.63 J ng/L	No validation action was required on this basis since total HFPO-DA was not detected in the associated sample.
	PFBA	5.6 ng/L	The positive results for total PFBA and total PFBS in sample Biosolids A-20220622 were qualified as nondetects (U) at the reported concentrations since the results were > the QL and < 10x the blank concentration when adjusted for sample-specific volume and percent solids.
	PFBS	0.48 J ng/L	
Associated sample: Biosolids A-20220622			

- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS and LCSD percent recoveries (%Rs) and relative percent differences (RPDs), where applicable, for all analytes were within QC limits except as noted below.
 - The RPD for total PFHxS (36.4%) in the LCS/LCSD associated with all total influent, effluent, and equipment blank samples in this data set was above the acceptance criteria (30%). The positive results for total PFHxS in samples Influent-02-20220620, Influent-07-20220620, Influent-08-20220620, Influent-11-20220620, Influent-18-20220620, and Effluent-20220621 were qualified as estimated (J). No qualification was required on this basis for sample Equipment Blank 20220622 since total PFHxS was not detected.
 - The pre-TOP assay LCS and/or LCSD %Rs for NEtFOSA (mid/high-range LCS/LCSD: 142%/134%), NEtFOSE (mid/high-range LCS/LCSD: 132%/136% [LCS within WNDR limits of 65-135%]/low-range LCS: 138% [within WDNR limits of 50-150%]), NMeFOSA (mid/high-range LCS/LCSD: 153%/138%), and NMeFOSE (mid/high-

range LCSD: 135%) were above the laboratory's acceptance limits (70-130%) in prep batch 744481 which was associated with all pre-TOP assay influent and effluent samples in this data set. Select %Rs were within the WDNR acceptance limits as noted. No validation actions were required on this basis since NEtFOSA, NEtFOSE, NMeFOSA, and NMeFOSE were not detected in the pre-TOP assay analyses of all influent and the effluent samples.

- MS analysis was performed on sample Influent-02-20220620 and MS/MSD analyses were performed on sample Biosolids B-20220622 for total PFAS. The following table summarizes the %Rs and RPDs that did not meet the acceptance criteria (50-150% and 30%, respectively) and the validation action.

MS/MSD Parent Sample ID	Compound	MS/MSD %Rs	MS/MSD RPD (%)	Action
Influent-02-20220620 (total PFAS)	PFBA	10/NA	NA	The positive results for total PFBA*, total PFBS, total PFOA*, total MeFOSE*, and total PFDS* in sample Influent-02-20220620 were qualified as estimated (J).
	PFBS	36/NA	NA	
	PFOA	23/NA	NA	
	MeFOSE	0/NA	NA	
	PFDS	27/NA	NA	
	EtFOSE	47/NA	NA	The nondetect results for total EtFOSE and total PFDoS in sample Influent-02-20220620 would have been qualified as estimated (UJ); however, these results were subsequently rejected (R) due to significantly low isotopically labeled surrogate recovery (see section below). No further action was required.
	PFDoS	36/NA	NA	
Biosolids B-20220622 (total PFAS)	PFHxS	0/NA	NA	No validation actions were taken on this basis since the results for total PFHxS and total PFOS were >4x the spike amount in sample Influent-02-20220620.
	PFOS	0/NA	NA	
	MeFOSE	174/169	-	
	PFHxS	-/-	38.3	The positive result for total PFHxS* in sample Biosolids B-20220622 was qualified as estimated (J).

Notes:

-: Met criteria

NA: Not applicable; and MSD was not performed.

* Note that this result was also qualified as estimated (J) by the laboratory due to detection between the method detection limit (MDL) and QL and/or as estimated (J) during validation due to low isotopically labeled surrogate recovery; thus, bias was not applied.

- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action*
Influent-02-20220620 (total PFAS)	13C2_4:2FTS	10	25-150	The positive and nondetect results for total 4:2FTS, 6:2FTS, 8:2FTS, EtFOSAA, and PFTeDA were qualified as estimated (J/UJ) in sample Influent-02-20220620.
	13C2_6:2FTS	10		
	13C2_8:2FTS	11		
	d5-EtFOSAA	11		
	13C2_PFTeDA	11		

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action*
Influent-02-20220620 (total PFAS)	13C4_PFBAs	3	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent-02-20220620 due to significantly low (<10%) recoveries: DONA, PFHpS, PFNA, PFOSA, MeFOSA, EtFOSA, 9-CI-PF3ON, PFNS, PFUnDA, PFDOA, EtFOSE, 11-CI-PF3OUdS, PFDoS, and PFTTrDA. The positive results for the remaining listed total PFAS were qualified as estimated (J) in sample Influent-02-20220620.
	13C5_PFPeA	4		
	13C3_PFBs	4		
	13C5_PFHxA	4		
	13C4_PFHpA	4		
	13C3_PFHxS	3		
	13C8_PFOA	4		
	13C9_PFNA	5		
	13C8_PFOS	4		
	13C6_PFDA	6		
	d3-MeFOSAA	9		
	13C8_PFOSA	7		
	13C7_PFUdA	9		
	13C2_PFDoA	9		
	13C3_HFPO-DA	4		
	d7-N-MeFOSE	5	10-150	
	d9-N-EtFOSE	4		
d3-N-MeFOSA	3			
d5-N-EtFOSA	2			
Influent-02-20220620 (pre-TOP assay)	d-NEtFOSA	45	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.
	d-NMeFOSA	45		
Influent-02-20220620 (post-TOP assay)	d-NEtFOSA	18		
	d-NMeFOSA	23		
Influent-07-20220620 (total PFAS)	13C4_PFBAs	2	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent-07-20220620 due to significantly low (<10%) recoveries: PFHpS, PFOSA, MeFOSA, PFDA, 8:2FTS, EtFOSA, 9-CI-PF3ON, PFNS, PFUnDA, PFDS, PFDOA, 11-CI-PF3OUdS, PFDoS, PFTDA, and PFTTrDA. The positive results for the remaining listed total PFAS were qualified as estimated (J) in sample Influent-07-20220620.
	13C5_PFPeA	2		
	13C3_PFBs	3		
	13C5_PFHxA	3		
	13C4_PFHpA	3		
	13C3_PFHxS	3		
	13C2_6:2FTS	4		
	13C8_PFOA	3		
	13C9_PFNA	3		
	13C8_PFOS	3		
	13C2_8:2FTS	7		
	13C6_PFDA	4		
	d3-MeFOSAA	5		
	13C8_PFOSA	4		
	d5-EtFOSAA	8		
	13C7_PFUdA	6		
	13C2_PFDoA	6		
	13C2_PFTeDA	8		
	13C3_HFPO-DA	3		
	d7-N-MeFOSE	4	10-150	
d9-N-EtFOSE	4			
d3-N-MeFOSA	3			
d5-N-EtFOSA	2			

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action*
Influent-07-20220620 (total PFAS)	13C2_4:2FTS	15	25-150	The nondetect result for total 4:2FTS was qualified as estimated (UJ) in sample Influent-07-20220620.
Influent-07-20220620 (pre-TOP assay)	d7-NMeFOSE	49	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.
Influent-07-20220620 (post-TOP assay)	d-NEtFOSA	6	50-150	The nondetect post-TOP assay results for NEtFOSA and NMeFOSA were rejected (R) in sample Influent-08-20220620 due to significantly low (<10%) recoveries.
	d-NMeFOSA	8		
Influent-08-20220620 (total PFAS)	13C2_4:2FTS	21	25-150	The positive and nondetect results for total 4:2FTS, 6:2FTS, PFNA, 8:2FTS, PFDA, MeFOSAA, EtFOSAA, PFUdA, and PFTeDA were qualified as estimated (J/UJ) in sample Influent-08-20220620.
	13C2_6:2FTS	22		
	13C9_PFNA	10		
	13C2_8:2FTS	24		
	13C6_PFDA	11		
	d3-MeFOSAA	11		
	d5-EtFOSAA	14		
	13C7_PFUdA	11		
	13C2_PFTeDA	12		
	13C4_PFBA	4		
	13C5_PFPeA	6	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent-08-20220620 due to significantly low (<10%) recoveries: PFPeS, DONA, PFHpS, PFOSA, MeFOSA, EtFOSA, 9-CI-PF3ON, PFNS, PFDS, PFDOA, 11-CI-PF3OUdS, PFDoS, and PFTrDA. The positive results for the remaining listed total PFAS were qualified as estimated (J) in sample Influent-08-20220620.
	13C3_PFBS	7		
	13C5_PFHxA	7		
	13C4_PFHpA	7		
	13C3_PFHxS	8		
	13C8_PFOA	9		
	13C8_PFOS	8		
	13C8_PFOSA	8		
	13C2_PFDoA	9		
	13C3_HFPO-DA	6		
d7-N-MeFOSE	7	10-150		
d9-N-EtFOSE	6			
d3-N-MeFOSA	5			
d5-N-EtFOSA	3			
Influent-08-20220620 (pre-TOP assay)	d-NEtFOSA	48	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.
	d7-NMeFOSE	38		
	d9-NEtFOSE	42		
Influent-08-20220620 (post-TOP assay)	d-NEtFOSA	36	50-150	
	d-NMeFOSA	40		
Influent-11-20220620 (total PFAS)	13C2_4:2FTS	10	25-150	The positive and nondetect results for total 4:2FTS, 8:2FTS, EtFOSAA, and PFTeDA were qualified as estimated (J/UJ) in sample Influent-11-20220620.
	13C2_8:2FTS	11		
	d5-EtFOSAA	12		
	13C2_PFTeDA	12		

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action*
Influent-11-20220620 (total PFAS)	13C4_PFBFA	2	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent-11-20220620 due to significantly low (<10%) recoveries: PFPeS, DONA, PFOA, PFHpS, PFOSA, MeFOSA, PFDA, EtFOSA, 9-CI-PF3ON, PFNS, PFUnDA, 11-CI-PF3OUdS, and PFTrDA. The positive results for the remaining listed total PFAS were qualified as estimated (J) in sample Influent-11-20220620.
	13C5_PFPeA	3		
	13C3_PFBFS	3		
	13C5_PFHxA	3		
	13C4_PFHpA	3		
	13C3_PFHxS	3		
	13C2_6:2FTS	8		
	13C8_PFOA	4		
	13C9_PFNA	4		
	13C8_PFOS	4		
	13C6_PFDA	6		
	d3-MeFOSAA	9		
	13C8_PFOSA	6		
	13C7_PFUdA	9		
	13C2_PFDoA	8		
	13C3_HFPO-DA	4		
	d7-N-MeFOSE	5	10-150	
	d9-N-EtFOSE	5		
	d3-N-MeFOSA	4		
	d5-N-EtFOSA	3		
Influent-11-20220620 (pre-TOP assay)	d-NMeFOSA	49	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.
Influent-18-20220620 (total PFAS)	13C4_PFBFA	23	25-150	The positive and nondetect results for total PFBA, PFPeA, MeFOSAA, PFOSA, PFDoA, PFTrDA, and PFTDA were qualified as estimated (J/UJ) in sample Influent-18-20220620.
	13C5_PFPeA	24		
	d3-MeFOSAA	22		
	13C8_PFOSA	17		
	13C2_PFDoA	21		
	13C2_PFTeDA	24		
	d5-N-EtFOSA	8	10-150	The nondetect result for total EtFOSA was rejected (R) in sample Influent-18-20220620 due to significantly low (<10%) recovery.
Influent-18-20220620 (post-TOP assay)	d-NEtFOSA	0.6	50-150	The nondetect post-TOP assay results for NEtFOSA, NMeFOSA, and NEtFOSE were rejected (R) in sample Influent-18-20220620 due to significantly low (<10%) recoveries.
	d-NMeFOSA	2		
	d9-NEtFOSE	9		
	M2PFHxDA	8		No validation actions were required on this basis since this surrogate was not used to quantitate any target analyte sample results.
	d7-NMeFOSE	11		Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150% and 25-150%, respectively.
M2PFTA	40			

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action*
Effluent-20220621 (total PFAS)	13C4_PFBFA	7	25-150	The nondetect results for total HFPO-DA, MeFOSA, and EtFOSA were rejected (R) in sample Effluent-20220621 due to significantly low (<10%) recoveries. The positive results for total PFBA, PFPeA, PFBS, PFHxA, PFHxS, and PFPeS were qualified as estimated (J) in sample Effluent-20220621.
	13C5_PFPeA	8		
	13C3_PFBFS	8		
	13C5_PFHxA	9		
	13C3_PFHxS	9		
	13C3_HFPO-DA	8		
	d3-N-MeFOSA	4	10-150	
	d5-N-EtFOSA	3		
	13C2_4:2FTS	15	25-150	The positive and nondetect results for total 4:2FTS, PFHpA, 6:2FTS, PFOA, DONA, PFNA, PFOS, PFHpS, 9-Cl-PF3ON, PFNS, PFDS, 11-Cl-PF3OUdS, PFDoS, 8:2FTS, PFDA, MeFOSAA, PFOSA, EtFOSAA, PFUdA, PFDaA, PFTeDA, and PFTeDA were qualified as estimated (J/UJ) in sample Effluent-20220621.
	13C4_PFHpA	10		
	13C2_6:2FTS	12		
	13C8_PFOA	10		
	13C9_PFNA	11		
	13C8_PFOS	12		
	13C2_8:2FTS	16		
	13C6_PFDA	13		
	d3-MeFOSAA	16		
	13C8_PFOSA	13		
	d5-EtFOSAA	18		
	13C7_PFUdA	21		
13C2_PFDaA	24			
13C2_PFTeDA	23			
Effluent-20220621 (post-TOP assay)	d-NEtFOSA	35	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.
	d-NMeFOSA	48		
Equipment Blank 20220622 (total PFAS)	13C8_PFOS	12	25-150	The nondetect results for total PFOS, PFHpS, 9-Cl-PF3ON, PFNS, PFDS, 11-Cl-PF3OUdS, PFDaA, 8:2FTS, PFDA, and PFUdA were qualified as estimated (UJ) in sample Equipment Blank 20220622.
	13C2_8:2FTS	12		
	13C6_PFDA	14		
	13C7_PFUdA	23		
	13C4_PFBFA	5		
	13C5_PFPeA	5		
	13C3_PFBFS	7		
	13C2_4:2FTS	7		
	13C5_PFHxA	6		
	13C4_PFHpA	7		
	13C3_PFHxS	9		
	13C2_6:2FTS	8		
	13C8_PFOA	7		
	13C9_PFNA	9		
	13C8_PFOSA	8		
	13C3_HFPO-DA	7		
	d7-N-MeFOSE	7	10-150	
	d9-N-EtFOSE	7		
	d3-N-MeFOSA	6		
	d5-N-EtFOSA	4		

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action*	
Biosolids A-20220622 (total PFAS)	13C2_4:2FTS	197	25-150	No qualification was required on this basis since total 4:2 FTS was not detected in sample Biosolids A-20220622.	
Biosolids A-20220622 (post-TOP assay)	d-NEtFOSA	39	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%. No validation actions were required on this basis since 4:2 FTS was not detected in the post-TOP assay analysis of this sample. The positive pre-TOP assay result for 8:2FTS was qualified as estimated (J) in sample Biosolids-A-20220621. No validation actions were required on this basis since this surrogate was not used to quantitate any target analyte sample results.	
	d-NMeFOSA	43			
Biosolids A-20220622 (pre-TOP assay)	d-NEtFOSA	27			
	d-NMeFOSA	24			
	d9-NEtFOSE	43			
	M2 4:2 FTS	165			
	M2 8:2 FTS	187			
	M2PFHxDA	49			
Biosolids B-20220622 (total PFAS)	13C2_4:2FTS	260	25-150	No qualification was required on this basis since total 4:2 FTS and 6:2 FTS were not detected in sample Biosolids A-20220622. The positive result for total 8:2 FTS was qualified as estimated (J) in sample Biosolids B-20220622.	
	13C2_6:2FTS	224			
	13C2_8:2FTS	221			
		d3-N-MeFOSA	9	10-150	The nondetect results for total MeFOSA and EtFOSA were rejected (R) in sample Biosolids B-20220622 due to significantly low (<10%) recoveries.
		d5-N-EtFOSA	8		
Biosolids B-20220622 (pre-TOP assay)	d-NEtFOSA	6	50-150	The nondetect pre-TOP assay results for NEtFOSA and NMeFOSA were rejected (R) in sample Biosolids B-20220622 due to significantly low (<10%) recoveries. Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.	
	d-NMeFOSA	7			
	d7-NMeFOSE	30			
	d9-NEtFOSE	24			
Biosolids B-20220622 (post-TOP assay)	d-NEtFOSA	26	50-150		
	d-NMeFOSA	28			

* Note that several results were also qualified as estimated (J) by the laboratory due to detection between the method detection limit (MDL) and QL.

It should be noted that several other surrogate %Rs were outside of the acceptance limits in method blanks, LCSs, and/or MS/MSDs. No validation actions were required on this basis so these issues are not summarized.

- A field duplicate pair was not collected with this data set.
- Laboratory duplicate analyses were performed on sample Influent-08-20220620 for total PFAS. RPDs are only applicable when both results are > 5x the QL; otherwise, and absolute difference is calculated. The laboratory duplicate results were within the acceptance limits except as noted below.

- The results for total PFBA and total MeFOSE were <5x the QL in the duplicate analysis of sample Influent-08-20220620; the absolute differences (2.8 ng/L and 4.2 ng/L, respectively) were greater than the QLs (2.0 ng/L). Therefore, the positive results for total PFBA and total MeFOSE were qualified as estimated (J) in sample Influent-08-20220620.
- The discussion related to the total PFAS analyses in the laboratory narrative noted that samples Influent-02-20220620, Influent-07-20220620, Influent-08-20220620, Influent-11-20220620, and Influent-18-20220620 required centrifugation prior to extraction due to excessive solids present in the samples. The laboratory has stated that centrifugation was performed following the laboratory’s PFAS Aqueous Centrifuge Protocol; samples were spiked with isotopically labeled surrogates and centrifuged for 10 minutes. Sample bottles were rinsed with methanol and the bottle rinsate was added to the elution. Samples were concentrated to <1mL and were reconstituted to 1mL using methanol by transfer pipet. No qualification was applied to the results based on these laboratory observations.
- Select sample QLs were outside of the ranges of QLs suggested in the SAB of 2-5 ng/L and 1-5 ug/kg per individual PFAS due to sample volume and/or low total solids.
- Sample Biosolids A-20220622 was diluted 5-fold due to the concentration of total PFOS which likely exceeded the calibration range in the undiluted analysis. The laboratory combined the results of the diluted and undiluted analyses in order to report all compounds within calibration range and with the lowest possible QLs. No other dilutions were performed on the samples in this data set.
- The QLs for TSS in samples Influent-02-20220620, Influent-07-20220620, Influent-08-20220620, Influent-11-20220620, and Influent-18-20220620 were 2.5x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the QL in these samples. No validation action was required on this basis.
- The following sample results were flagged with an “I” by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive results for the compounds listed below were qualified as estimated (J) in the listed samples.
 - HFPO-DA* in sample Influent-02-20220620;
 - PFPeS and PFHxS in sample Influent-07-20220620;
 - PFOS and NMeFOSAA* in sample Influent-08-20220620;
 - PFHxS in sample Influent-11-20220620;
 - 6:2 FTS*, PFDA*, and NMeFOSAA* in sample Effluent-20220621;
 - PFHpS*, PFOS, and EtFOSA* in sample Biosolids A-20220622; and
 - PFBS, PFHpS*, and 8:2 FTS in sample Biosolids B-20220622.
- * Note that these results were also qualified as estimated (J) by the laboratory due to detection between the MDL and QL.
- The percent moisture for the biosolids samples was high (>70% moisture). The laboratory was contacted during previous rounds of validation review regarding this issue and stated that the biosolids samples were homogenized, indicating that a representative sample was extracted for PFAS analysis. No validation actions were taken on this basis.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Sample: Influent-02-20220620 **Lab ID: 10614143001** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	215 J-	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-07-20220620 **Lab ID: 10614143002** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	216 J-	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-08-20220620 **Lab ID: 10614143003** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	210 J-	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-11-20220620 **Lab ID: 10614143004** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	271 J-	mg/L	25.0	12.5	1		06/27/22 10:46		

Sample: Influent-18-20220620 **Lab ID: 10614143005** Collected: 06/20/22 23:59 Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	285 J-	mg/L	25.0	12.5	1		06/27/22 10:46		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS-Revised Report

Pace Project No.: 10614143

Sample: Effluent-20220621 **Lab ID: 10614143006** Collected: 06/20/22 23:59 ²¹ Received: 06/23/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	10.6 J-	mg/L	10.0	5.0	1		06/27/22 10:46		

Sample: Biosolids A-20220622 **Lab ID: 10614143008** Collected: 06/22/22 08:08 Received: 06/23/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974		Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	75.7	%	0.10	0.10	1		06/24/22 12:04		N2

Sample: Biosolids B-20220622 **Lab ID: 10614143009** Collected: 06/22/22 07:50 Received: 06/23/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974		Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	94.7	%	0.10	0.10	1		06/24/22 12:04		N2

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220620
 Lab Sample ID 10614143001
 Lab File ID B220715C_006
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 261mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	7.5 J	1.9	0.42	0.42	1	375-22-4		07/15/2022 20:40
PFPeA	4.2 J	1.9	0.42	0.42	1	2706-90-3		07/15/2022 20:40
HFPO-DA	1.2 IJ	1.9	0.51	0.51	1	13252-13-6		07/15/2022 20:40
PFBS	4.3 J	1.7	0.45	0.45	1	375-73-5		07/15/2022 20:40
PFHxA	6.3 J	1.9	0.42	0.42	1	307-24-4		07/15/2022 20:40
4:2 FTS	ND UJ	1.8	0.53	0.53	1	757124-72-4		07/15/2022 20:40
PFPeS	1.3 J	1.8	0.45	0.45	1	2706-91-4		07/15/2022 20:40
PFHpA	3.5 J	1.9	0.53	0.53	1	375-85-9		07/15/2022 20:40
DONA	R ND	1.8	0.49	0.49	1	919005-14-4		07/15/2022 20:40
PFHxS	17 J	1.7	0.49	0.49	1	355-46-4		07/15/2022 20:40
PFOA	7.3 J	1.9	0.56	0.56	1	335-67-1		07/15/2022 20:40
6:2 FTS	1.9 J	1.8	0.62	0.62	1	27619-97-2		07/15/2022 20:40
PFHpS	R ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 20:40
PFNA	R ND	1.9	0.71	0.71	1	375-95-1		07/15/2022 20:40
PFOSAm	R ND	1.9	0.78	0.78	1	754-91-6		07/15/2022 20:40
PFOS	16 J	1.8	0.52	0.52	1	1763-23-1		07/15/2022 20:40
MeFOSA	R ND	1.9	0.49	0.49	1	31506-32-8		07/15/2022 20:40
PFDA	1.2 J	1.9	0.54	0.54	1	335-76-2		07/15/2022 20:40
EtFOSAm	R ND	1.9	0.58	0.58	1	4151-50-2		07/15/2022 20:40
8:2 FTS	ND UJ	1.8	0.62	0.62	1	39108-34-4		07/15/2022 20:40
9-CI-PF3ON	R ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 20:40
PFNS	R ND	1.8	0.43	0.43	1	68259-12-1		07/15/2022 20:40
PFUnDA	R ND	1.9	0.52	0.52	1	2058-94-8		07/15/2022 20:40
NMeFOSAA	0.73 J	1.9	0.42	0.42	1	2355-31-9		07/15/2022 20:40
NEtFOSAA	1.7 J-J	1.9	0.53	0.53	1	2991-50-6		07/15/2022 20:40
PFDS	1.3 J-J	1.8	0.43	0.43	1	335-77-3		07/15/2022 20:40
PFDOA	R ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 20:40
MeFOSE	12 J	1.9	0.31	0.31	1	24448-09-7		07/15/2022 20:40
EtFOSE	R ND	1.9	0.48	0.48	1	1691-99-2		07/15/2022 20:40
11-CI-PF3OUdS	R ND	1.8	0.42	0.42	1	763051-92-9		07/15/2022 20:40
PFTTrDA	R ND	1.9	0.60	0.60	1	72629-94-8		07/15/2022 20:40
PFDoS	R ND	1.9	0.44	0.44	1	79780-39-5		07/15/2022 20:40
PFTDA	ND UJ	1.9	0.46	0.46	1	376-06-7		07/15/2022 20:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220620
 Lab Sample ID 10614143002
 Lab File ID B220715C_007
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 265mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	20 J	1.9	0.42	0.42	1	375-22-4		07/15/2022 21:00
PFPeA	7.0 J	1.9	0.41	0.41	1	2706-90-3		07/15/2022 21:00
HFPO-DA	1.8 J	1.9	0.50	0.50	1	13252-13-6		07/15/2022 21:00
PFBS	9.6 J	1.7	0.45	0.45	1	375-73-5		07/15/2022 21:00
PFHxA	9.6 J	1.9	0.41	0.41	1	307-24-4		07/15/2022 21:00
4:2 FTS	ND UJ	1.8	0.53	0.53	1	757124-72-4		07/15/2022 21:00
PFPeS	4.0 I J	1.8	0.45	0.45	1	2706-91-4		07/15/2022 21:00
PFHpA	2.8 J	1.9	0.52	0.52	1	375-85-9		07/15/2022 21:00
DONA	0.54 J	1.8	0.48	0.48	1	919005-14-4		07/15/2022 21:00
PFHxS	28 I J	1.7	0.48	0.48	1	355-46-4		07/15/2022 21:00
PFOA	9.1 J	1.9	0.55	0.55	1	335-67-1		07/15/2022 21:00
6:2 FTS	4.5 J	1.8	0.61	0.61	1	27619-97-2		07/15/2022 21:00
PFHpS	R ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 21:00
PFNA	1.0 J	1.9	0.70	0.70	1	375-95-1		07/15/2022 21:00
PFOSAm	R ND	1.9	0.77	0.77	1	754-91-6		07/15/2022 21:00
PFOS	12 J	1.7	0.52	0.52	1	1763-23-1		07/15/2022 21:00
MeFOSA	R ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 21:00
PFDA	R ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 21:00
EtFOSAm	R ND	1.9	0.57	0.57	1	4151-50-2		07/15/2022 21:00
8:2 FTS	R ND	1.8	0.62	0.62	1	39108-34-4		07/15/2022 21:00
9-CI-PF3ON	R ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 21:00
PFNS	R ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 21:00
PFUnDA	R ND	1.9	0.51	0.51	1	2058-94-8		07/15/2022 21:00
NMeFOSAA	1.8 J	1.9	0.41	0.41	1	2355-31-9		07/15/2022 21:00
NEtFOSAA	2.6 J	1.9	0.52	0.52	1	2991-50-6		07/15/2022 21:00
PFDS	R ND	1.8	0.42	0.42	1	335-77-3		07/15/2022 21:00
PFDOA	R ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 21:00
MeFOSE	9.0 J	1.9	0.31	0.31	1	24448-09-7		07/15/2022 21:00
EtFOSE	1.3 J	1.9	0.47	0.47	1	1691-99-2		07/15/2022 21:00
11-CI-PF3OUdS	R ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 21:00
PFTTrDA	R ND	1.9	0.59	0.59	1	72629-94-8		07/15/2022 21:00
PFDoS	R ND	1.8	0.43	0.43	1	79780-39-5		07/15/2022 21:00
PFTDA	R ND	1.9	0.45	0.45	1	376-06-7		07/15/2022 21:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220620
 Lab Sample ID 10614143003
 Lab File ID B220715C_008
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 251mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.0 J	2.0	0.44	0.44	1	375-22-4		07/15/2022 21:21
PFPeA	3.1 J	2.0	0.44	0.44	1	2706-90-3		07/15/2022 21:21
HFPO-DA	0.69 J	2.0	0.53	0.53	1	13252-13-6		07/15/2022 21:21
PFBS	3.1 J	1.8	0.47	0.47	1	375-73-5		07/15/2022 21:21
PFHxA	4.5 J	2.0	0.44	0.44	1	307-24-4		07/15/2022 21:21
4:2 FTS	ND UJ	1.9	0.56	0.56	1	757124-72-4		07/15/2022 21:21
PFPeS	R ND	1.9	0.47	0.47	1	2706-91-4		07/15/2022 21:21
PFHpA	1.4 J	2.0	0.55	0.55	1	375-85-9		07/15/2022 21:21
DONA	R ND	1.9	0.51	0.51	1	919005-14-4		07/15/2022 21:21
PFHxS	4.9 J	1.8	0.51	0.51	1	355-46-4		07/15/2022 21:21
PFOA	3.2 J	2.0	0.58	0.58	1	335-67-1		07/15/2022 21:21
6:2 FTS	1.2 J	1.9	0.64	0.64	1	27619-97-2		07/15/2022 21:21
PFHpS	R ND	1.9	0.41	0.41	1	375-92-8		07/15/2022 21:21
PFNA	ND UJ	2.0	0.74	0.74	1	375-95-1		07/15/2022 21:21
PFOSAm	R ND	2.0	0.82	0.82	1	754-91-6		07/15/2022 21:21
PFOS	4.3 I J	1.8	0.55	0.55	1	1763-23-1		07/15/2022 21:21
MeFOSA	R ND	2.0	0.51	0.51	1	31506-32-8		07/15/2022 21:21
PFDA	ND UJ	2.0	0.56	0.56	1	335-76-2		07/15/2022 21:21
EtFOSAm	R ND	2.0	0.61	0.61	1	4151-50-2		07/15/2022 21:21
8:2 FTS	ND UJ	1.9	0.65	0.65	1	39108-34-4		07/15/2022 21:21
9-CI-PF3ON	R ND	1.9	0.30	0.30	1	756426-58-1		07/15/2022 21:21
PFNS	R ND	1.9	0.44	0.44	1	68259-12-1		07/15/2022 21:21
PFUnDA	ND UJ	2.0	0.54	0.54	1	2058-94-8		07/15/2022 21:21
NMeFOSAA	0.53 IJ	2.0	0.43	0.43	1	2355-31-9		07/15/2022 21:21
NEtFOSAA	2.5 UJ	2.0	0.55	0.55	1	2991-50-6		07/15/2022 21:21
PFDS	R ND	1.9	0.45	0.45	1	335-77-3		07/15/2022 21:21
PFDOA	R ND	2.0	0.48	0.48	1	307-55-1		07/15/2022 21:21
MeFOSE	5.6 J	2.0	0.33	0.33	1	24448-09-7		07/15/2022 21:21
EtFOSE	0.79 J	2.0	0.50	0.50	1	1691-99-2		07/15/2022 21:21
11-CI-PF3OUdS	R ND	1.9	0.43	0.43	1	763051-92-9		07/15/2022 21:21
PFTTrDA	R ND	2.0	0.62	0.62	1	72629-94-8		07/15/2022 21:21
PFDoS	R ND	1.9	0.46	0.46	1	79780-39-5		07/15/2022 21:21
PFTDA	ND UJ	2.0	0.47	0.47	1	376-06-7		07/15/2022 21:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220620
 Lab Sample ID 10614143004
 Lab File ID B220715C_009
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 265mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.7 J	1.9	0.42	0.42	1	375-22-4		07/15/2022 21:41
PFPeA	3.7 J	1.9	0.41	0.41	1	2706-90-3		07/15/2022 21:41
HFPO-DA	0.92 J	1.9	0.50	0.50	1	13252-13-6		07/15/2022 21:41
PFBS	2.1 J	1.7	0.45	0.45	1	375-73-5		07/15/2022 21:41
PFHxA	4.4 J	1.9	0.41	0.41	1	307-24-4		07/15/2022 21:41
4:2 FTS	ND UJ	1.8	0.53	0.53	1	757124-72-4		07/15/2022 21:41
PFPeS	R ND	1.8	0.45	0.45	1	2706-91-4		07/15/2022 21:41
PFHpA	1.3 J	1.9	0.52	0.52	1	375-85-9		07/15/2022 21:41
DONA	R ND	1.8	0.48	0.48	1	919005-14-4		07/15/2022 21:41
PFHxS	6.4 I J	1.7	0.48	0.48	1	355-46-4		07/15/2022 21:41
PFOA	R ND	1.9	0.55	0.55	1	335-67-1		07/15/2022 21:41
6:2 FTS	1.7 J	1.8	0.61	0.61	1	27619-97-2		07/15/2022 21:41
PFHpS	R ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 21:41
PFNA	0.83 J	1.9	0.70	0.70	1	375-95-1		07/15/2022 21:41
PFOSAm	R ND	1.9	0.77	0.77	1	754-91-6		07/15/2022 21:41
PFOS	6.2 J	1.7	0.52	0.52	1	1763-23-1		07/15/2022 21:41
MeFOSA	R ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 21:41
PFDA	R ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 21:41
EtFOSAm	R ND	1.9	0.57	0.57	1	4151-50-2		07/15/2022 21:41
8:2 FTS	0.67 J	1.8	0.62	0.62	1	39108-34-4		07/15/2022 21:41
9-CI-PF3ON	R ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 21:41
PFNS	R ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 21:41
PFUnDA	R ND	1.9	0.51	0.51	1	2058-94-8		07/15/2022 21:41
NMeFOSAA	1.1 J	1.9	0.41	0.41	1	2355-31-9		07/15/2022 21:41
NEtFOSAA	1.5 J	1.9	0.52	0.52	1	2991-50-6		07/15/2022 21:41
PFDS	3.8 J	1.8	0.42	0.42	1	335-77-3		07/15/2022 21:41
PFDOA	0.72 J	1.9	0.46	0.46	1	307-55-1		07/15/2022 21:41
MeFOSE	14 J	1.9	0.31	0.31	1	24448-09-7		07/15/2022 21:41
EtFOSE	1.6 J	1.9	0.47	0.47	1	1691-99-2		07/15/2022 21:41
11-CI-PF3OUdS	R ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 21:41
PFTTrDA	R ND	1.9	0.59	0.59	1	72629-94-8		07/15/2022 21:41
PFDoS	1.3 J	1.8	0.43	0.43	1	79780-39-5		07/15/2022 21:41
PFTDA	ND UJ	1.9	0.45	0.45	1	376-06-7		07/15/2022 21:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220620
 Lab Sample ID 10614143005
 Lab File ID B220715C_010
 Matrix Industrial_Water
 Collected 06/20/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 264mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.8 J	1.9	0.42	0.42	1	375-22-4		07/15/2022 22:01
PFPeA	5.5 J	1.9	0.42	0.42	1	2706-90-3		07/15/2022 22:01
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		07/15/2022 22:01
PFBS	5.1	1.7	0.45	0.45	1	375-73-5		07/15/2022 22:01
PFHxA	6.7	1.9	0.42	0.42	1	307-24-4		07/15/2022 22:01
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		07/15/2022 22:01
PFPeS	1.8 J	1.8	0.45	0.45	1	2706-91-4		07/15/2022 22:01
PFHpA	2.2	1.9	0.52	0.52	1	375-85-9		07/15/2022 22:01
DONA	ND	1.8	0.49	0.49	1	919005-14-4		07/15/2022 22:01
PFHxS	14 J	1.7	0.48	0.48	1	355-46-4		07/15/2022 22:01
PFOA	6.5	1.9	0.55	0.55	1	335-67-1		07/15/2022 22:01
6:2 FTS	2.4	1.8	0.61	0.61	1	27619-97-2		07/15/2022 22:01
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		07/15/2022 22:01
PFNA	ND	1.9	0.70	0.70	1	375-95-1		07/15/2022 22:01
PFOSAm	ND UJ	1.9	0.78	0.78	1	754-91-6		07/15/2022 22:01
PFOS	9.2	1.8	0.52	0.52	1	1763-23-1		07/15/2022 22:01
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		07/15/2022 22:01
PFDA	ND	1.9	0.53	0.53	1	335-76-2		07/15/2022 22:01
EtFOSAm	ND R	1.9	0.58	0.58	1	4151-50-2		07/15/2022 22:01
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4		07/15/2022 22:01
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		07/15/2022 22:01
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		07/15/2022 22:01
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		07/15/2022 22:01
NMeFOSAA	0.94 J	1.9	0.41	0.41	1	2355-31-9		07/15/2022 22:01
NEtFOSAA	1.9 J	1.9	0.53	0.53	1	2991-50-6		07/15/2022 22:01
PFDS	ND	1.8	0.43	0.43	1	335-77-3		07/15/2022 22:01
PFDOA	ND UJ	1.9	0.46	0.46	1	307-55-1		07/15/2022 22:01
MeFOSE	5.7	1.9	0.31	0.31	1	24448-09-7		07/15/2022 22:01
EtFOSE	0.49 J	1.9	0.47	0.47	1	1691-99-2		07/15/2022 22:01
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		07/15/2022 22:01
PFTTrDA	ND UJ	1.9	0.59	0.59	1	72629-94-8		07/15/2022 22:01
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		07/15/2022 22:01
PFTDA	ND UJ	1.9	0.45	0.45	1	376-06-7		07/15/2022 22:01

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent-20220621
 Lab Sample ID 10614143006
 Lab File ID B220715C_011
 Matrix Industrial_Water
 Collected 06/21/2022 23:59
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 261mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.5 J	1.9	0.42	0.42	1	375-22-4		07/15/2022 22:21
PFPeA	14 J	1.9	0.42	0.42	1	2706-90-3		07/15/2022 22:21
HFPO-DA	ND R	1.9	0.51	0.51	1	13252-13-6		07/15/2022 22:21
PFBS	3.0 J	1.7	0.45	0.45	1	375-73-5		07/15/2022 22:21
PFHxA	16 J	1.9	0.42	0.42	1	307-24-4		07/15/2022 22:21
4:2 FTS	ND J	1.8	0.53	0.53	1	757124-72-4		07/15/2022 22:21
PFPeS	0.64 J	1.8	0.46	0.46	1	2706-91-4		07/15/2022 22:21
PFHpA	1.6 J	1.9	0.53	0.53	1	375-85-9		07/15/2022 22:21
DONA	ND UJ	1.8	0.49	0.49	1	919005-14-4		07/15/2022 22:21
PFHxS	6.5 J	1.7	0.49	0.49	1	355-46-4		07/15/2022 22:21
PFOA	7.2 J	1.9	0.56	0.56	1	335-67-1		07/15/2022 22:21
6:2 FTS	1.0 IJ	1.8	0.62	0.62	1	27619-97-2		07/15/2022 22:21
PFHpS	ND UJ	1.8	0.39	0.39	1	375-92-8		07/15/2022 22:21
PFNA	0.78 J	1.9	0.71	0.71	1	375-95-1		07/15/2022 22:21
PFOSAm	ND UJ	1.9	0.78	0.78	1	754-91-6		07/15/2022 22:21
PFOS	4.3 J	1.8	0.53	0.53	1	1763-23-1		07/15/2022 22:21
MeFOSA	ND R	1.9	0.49	0.49	1	31506-32-8		07/15/2022 22:21
PFDA	1.3 IJ	1.9	0.54	0.54	1	335-76-2		07/15/2022 22:21
EtFOSAm	ND R	1.9	0.58	0.58	1	4151-50-2		07/15/2022 22:21
8:2 FTS	ND UJ	1.8	0.63	0.63	1	39108-34-4		07/15/2022 22:21
9-CI-PF3ON	ND UJ	1.8	0.29	0.29	1	756426-58-1		07/15/2022 22:21
PFNS	ND UJ	1.8	0.43	0.43	1	68259-12-1		07/15/2022 22:21
PFUnDA	ND UJ	1.9	0.52	0.52	1	2058-94-8		07/15/2022 22:21
NMeFOSAA	0.94 IJ	1.9	0.42	0.42	1	2355-31-9		07/15/2022 22:21
NEtFOSAA	0.71 J	1.9	0.53	0.53	1	2991-50-6		07/15/2022 22:21
PFDS	ND UJ	1.8	0.43	0.43	1	335-77-3		07/15/2022 22:21
PFDOA	ND UJ	1.9	0.46	0.46	1	307-55-1		07/15/2022 22:21
MeFOSE	0.67 J	1.9	0.32	0.32	1	24448-09-7		07/15/2022 22:21
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		07/15/2022 22:21
11-CI-PF3OUdS	ND UJ	1.8	0.42	0.42	1	763051-92-9		07/15/2022 22:21
PFTTrDA	ND UJ	1.9	0.60	0.60	1	72629-94-8		07/15/2022 22:21
PFDoS	ND UJ	1.9	0.44	0.44	1	79780-39-5		07/15/2022 22:21
PFTDA	ND UJ	1.9	0.46	0.46	1	376-06-7		07/15/2022 22:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Equipment Blank 20220622
 Lab Sample ID 10614143007
 Lab File ID B220715C_012
 Matrix Industrial_Water
 Collected 06/22/2022 08:00
 Received 06/23/2022 08:50
 Extraction Date 07/13/2022 14:35

Total Amount Extracted 264mL
 Ical ID 220715B02
 CCal File B220715C_001
 Ending CCal File B220715C_013
 Blank File B220715C_003

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.6 J	1.9	0.42	0.42	1	375-22-4		07/15/2022 22:41
PFPeA	ND R	1.9	0.41	0.41	1	2706-90-3		07/15/2022 22:41
HFPO-DA	0.63 J	1.9	0.50	0.50	1	13252-13-6		07/15/2022 22:41
PFBS	0.48 J	1.7	0.45	0.45	1	375-73-5		07/15/2022 22:41
PFHxA	ND R	1.9	0.41	0.41	1	307-24-4		07/15/2022 22:41
4:2 FTS	ND R	1.8	0.53	0.53	1	757124-72-4		07/15/2022 22:41
PFPeS	ND R	1.8	0.45	0.45	1	2706-91-4		07/15/2022 22:41
PFHpA	ND R	1.9	0.52	0.52	1	375-85-9		07/15/2022 22:41
DONA	ND R	1.8	0.49	0.49	1	919005-14-4		07/15/2022 22:41
PFHxS	ND R	1.7	0.48	0.48	1	355-46-4		07/15/2022 22:41
PFOA	ND R	1.9	0.55	0.55	1	335-67-1		07/15/2022 22:41
6:2 FTS	ND R	1.8	0.61	0.61	1	27619-97-2		07/15/2022 22:41
PFHpS	ND UJ	1.8	0.39	0.39	1	375-92-8		07/15/2022 22:41
PFNA	ND R	1.9	0.70	0.70	1	375-95-1		07/15/2022 22:41
PFOSAm	ND R	1.9	0.77	0.77	1	754-91-6		07/15/2022 22:41
PFOS	ND UJ	1.8	0.52	0.52	1	1763-23-1		07/15/2022 22:41
MeFOSA	ND R	1.9	0.48	0.48	1	31506-32-8		07/15/2022 22:41
PFDA	ND UJ	1.9	0.53	0.53	1	335-76-2		07/15/2022 22:41
EtFOSAm	ND R	1.9	0.58	0.58	1	4151-50-2		07/15/2022 22:41
8:2 FTS	ND UJ	1.8	0.62	0.62	1	39108-34-4		07/15/2022 22:41
9-CI-PF3ON	ND UJ	1.8	0.29	0.29	1	756426-58-1		07/15/2022 22:41
PFNS	ND UJ	1.8	0.42	0.42	1	68259-12-1		07/15/2022 22:41
PFUnDA	ND UJ	1.9	0.51	0.51	1	2058-94-8		07/15/2022 22:41
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9		07/15/2022 22:41
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6		07/15/2022 22:41
PFDS	ND UJ	1.8	0.43	0.43	1	335-77-3		07/15/2022 22:41
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		07/15/2022 22:41
MeFOSE	ND R	1.9	0.31	0.31	1	24448-09-7		07/15/2022 22:41
EtFOSE	ND R	1.9	0.47	0.47	1	1691-99-2		07/15/2022 22:41
11-CI-PF3OUdS	ND UJ	1.8	0.41	0.41	1	763051-92-9		07/15/2022 22:41
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/15/2022 22:41
PFDoS	ND UJ	1.8	0.44	0.44	1	79780-39-5		07/15/2022 22:41
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		07/15/2022 22:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Biosolids A-20220622
 Lab Sample ID 10614143008
 Lab File ID Q220708B_023
 Matrix Solid
 Collected 06/22/2022 08:08
 Received 06/23/2022 08:50
 Extraction Date 07/05/2022 11:39

Total Amount Extracted 5.09g
 Percent Moisture 75.727%
 Dry Weight Extracted 1.23g
 Ical ID 220629B01
 CCal File Q220708B_017
 Ending CCal File Q220708B_024
 Blank File Q220708A_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.9 U	0.40	0.11	0.11	1	375-22-4		07/08/2022 22:02
PFPeA	8.7	0.40	0.12	0.12	1	2706-90-3		07/08/2022 22:02
HFPO-DA	ND	0.40	0.11	0.11	1	13252-13-6		07/08/2022 22:02
PFBS	0.97 U	0.36	0.11	0.11	1	375-73-5		07/08/2022 22:02
PFHxA	23	0.40	0.11	0.11	1	307-24-4		07/08/2022 22:02
4:2 FTS	ND	0.38	0.09	0.09	1	757124-72-4		07/08/2022 22:02
PFPeS	ND	0.38	0.09	0.09	1	2706-91-4		07/08/2022 22:02
PFHpA	1.3	0.40	0.14	0.14	1	375-85-9		07/08/2022 22:02
DONA	ND	0.38	0.15	0.15	1	919005-14-4		07/08/2022 22:02
PFHxS	0.81	0.37	0.08	0.08	1	355-46-4		07/08/2022 22:02
PFOA	21	0.40	0.13	0.13	1	335-67-1		07/08/2022 22:02
6:2 FTS	1.2	0.38	0.17	0.17	1	27619-97-2		07/08/2022 22:02
PFHpS	0.25 IJ	0.38	0.11	0.11	1	375-92-8		07/08/2022 22:02
PFNA	1.2	0.40	0.13	0.13	1	375-95-1		07/08/2022 22:02
PFOSAm	1.6	0.40	0.12	0.12	1	754-91-6		07/08/2022 22:02
PFOS	24 ID J	1.9	0.60	0.60	5	1763-23-1		07/08/2022 21:43
MeFOSA	0.17 J	0.40	0.11	0.11	1	31506-32-8		07/08/2022 22:02
PFDA	9.2	0.40	0.09	0.09	1	335-76-2		07/08/2022 22:02
EtFOSAm	0.30 IJ	0.40	0.10	0.10	1	4151-50-2		07/08/2022 22:02
8:2 FTS	1.0	0.39	0.18	0.18	1	39108-34-4		07/08/2022 22:02
9-CI-PF3ON	ND	0.38	0.10	0.10	1	756426-58-1		07/08/2022 22:02
PFNS	ND	0.39	0.14	0.14	1	68259-12-1		07/08/2022 22:02
PFUnDA	1.1	0.40	0.12	0.12	1	2058-94-8		07/08/2022 22:02
NMeFOSAA	28	0.40	0.11	0.11	1	2355-31-9		07/08/2022 22:02
NEtFOSAA	9.2	0.40	0.16	0.16	1	2991-50-6		07/08/2022 22:02
PFDS	1.5	0.39	0.11	0.11	1	335-77-3		07/08/2022 22:02
PFDOA	3.8	0.40	0.13	0.13	1	307-55-1		07/08/2022 22:02
MeFOSE	9.7	0.40	0.12	0.12	1	24448-09-7		07/08/2022 22:02
EtFOSE	3.4	0.40	0.13	0.13	1	1691-99-2		07/08/2022 22:02
11-CI-PF3OUdS	ND	0.38	0.10	0.10	1	763051-92-9		07/08/2022 22:02
PFTTrDA	0.50	0.40	0.13	0.13	1	72629-94-8		07/08/2022 22:02
PFDoS	ND	0.39	0.11	0.11	1	79780-39-5		07/08/2022 22:02
PFTDA	0.88	0.40	0.14	0.14	1	376-06-7		07/08/2022 22:02

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Biosolids B-20220622
 Lab Sample ID 10614143009
 Lab File ID Q220708A_009
 Matrix Solid
 Collected 06/22/2022 07:50
 Received 06/23/2022 08:50
 Extraction Date 07/05/2022 11:39

Total Amount Extracted 5.04g
 Percent Moisture 94.6556%
 Dry Weight Extracted 0.269g
 Ical ID 220629B01
 CCal File Q220708A_008
 Ending CCal File Q220708A_013
 Blank File Q220708A_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.9	0.53	0.53	1	375-22-4		07/08/2022 10:53
PFPeA	0.73 J	1.9	0.53	0.53	1	2706-90-3		07/08/2022 10:53
HFPO-DA	ND	1.9	0.52	0.52	1	13252-13-6		07/08/2022 10:53
PFBS	1.9 I J	1.6	0.49	0.49	1	375-73-5		07/08/2022 10:53
PFHxA	2.1	1.9	0.51	0.51	1	307-24-4		07/08/2022 10:53
4:2 FTS	ND	1.7	0.43	0.43	1	757124-72-4		07/08/2022 10:53
PFPeS	ND	1.7	0.45	0.45	1	2706-91-4		07/08/2022 10:53
PFHpA	ND	1.9	0.64	0.64	1	375-85-9		07/08/2022 10:53
DONA	ND	1.8	0.67	0.67	1	919005-14-4		07/08/2022 10:53
PFHxS	0.82	1.7	0.41	0.41	1	355-46-4		07/08/2022 10:53
PFOA	1.3	1.9	0.58	0.58	1	335-67-1		07/08/2022 10:53
6:2 FTS	ND	1.8	0.77	0.77	1	27619-97-2		07/08/2022 10:53
PFHpS	0.73 IJ	1.8	0.52	0.52	1	375-92-8		07/08/2022 10:53
PFNA	ND	1.9	0.58	0.58	1	375-95-1		07/08/2022 10:53
PFOSAm	0.81 J	1.9	0.55	0.55	1	754-91-6		07/08/2022 10:53
PFOS	7.5	1.7	0.55	0.55	1	1763-23-1		07/08/2022 10:53
MeFOSA	R ND	1.9	0.51	0.51	1	31506-32-8		07/08/2022 10:53
PFDA	3.9	1.9	0.42	0.42	1	335-76-2		07/08/2022 10:53
EtFOSAm	R ND	1.9	0.48	0.48	1	4151-50-2		07/08/2022 10:53
8:2 FTS	0.89 IJ J	1.8	0.82	0.82	1	39108-34-4		07/08/2022 10:53
9-CI-PF3ON	ND	1.7	0.47	0.47	1	756426-58-1		07/08/2022 10:53
PFNS	ND	1.8	0.64	0.64	1	68259-12-1		07/08/2022 10:53
PFUnDA	0.68 J	1.9	0.56	0.56	1	2058-94-8		07/08/2022 10:53
NMeFOSAA	8.8	1.9	0.52	0.52	1	2355-31-9		07/08/2022 10:53
NEtFOSAA	5.7	1.9	0.75	0.75	1	2991-50-6		07/08/2022 10:53
PFDS	1.5 J	1.8	0.52	0.52	1	335-77-3		07/08/2022 10:53
PFDOA	1.9	1.9	0.61	0.61	1	307-55-1		07/08/2022 10:53
MeFOSE	5.4 J+	1.9	0.56	0.56	1	24448-09-7		07/08/2022 10:53
EtFOSE	1.5 J	1.9	0.60	0.60	1	1691-99-2		07/08/2022 10:53
11-CI-PF3OUdS	ND	1.8	0.47	0.47	1	763051-92-9		07/08/2022 10:53
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		07/08/2022 10:53
PFDoS	ND	1.8	0.48	0.48	1	79780-39-5		07/08/2022 10:53
PFTDA	ND	1.9	0.64	0.64	1	376-06-7		07/08/2022 10:53

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

Sample Results

INFLUENT-02-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295101
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 12:55	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.67J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.60J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	4.00J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.20J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.23J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	13.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-02-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295101
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 12:55	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	417	ng/L	83	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	113	ng/L	45*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	112	ng/L	45*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	243	ng/L	97	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	221	ng/L	89	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	137	ng/L	55	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	145	ng/L	58	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	293	ng/L	117	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	285	ng/L	114	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	238	ng/L	95	50 - 150
67905-19-5-EIS	M2PFHxDA	250	173	ng/L	69	50 - 150
376-06-7-EIS	M2PFFTA	250	199	ng/L	79	50 - 150
13252-13-6-EIS	M3HFPODA	250	203	ng/L	81	50 - 150
375-73-5-EIS	M3PFBS	250	220	ng/L	88	50 - 150
355-46-4-EIS	M3PFHxS	250	223	ng/L	89	50 - 150
375-85-9-EIS	M4PFHpA	250	215	ng/L	86	50 - 150
307-24-4-EIS	M5PFHxA	250	214	ng/L	86	50 - 150
2706-90-3-EIS	M5PFPeA	250	207	ng/L	83	50 - 150
335-76-2-EIS	M6PFDA	250	215	ng/L	86	50 - 150
2058-94-8-EIS	M7PFUnA	250	232	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	183	ng/L	73	50 - 150
335-67-1-EIS	M8PFOA	250	213	ng/L	85	50 - 150
1763-23-1-EIS	M8PFOS	250	220	ng/L	88	50 - 150
375-95-1-EIS	M9PFNA	250	217	ng/L	87	50 - 150
375-22-4-EIS	MPFBA	250	202	ng/L	81	50 - 150
307-55-1-EIS	MPFDoA	250	222	ng/L	89	50 - 150

Sample Results

INFLUENT-02-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295101
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 00:51	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	20.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.59J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	8.92J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.02J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.93J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	29.2	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-02-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295101
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 00:51	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	546	ng/L	109	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	45.5	ng/L	18*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	56.9	ng/L	23*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	221	ng/L	88	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	234	ng/L	94	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	162	ng/L	65	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	150	ng/L	60	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	253	ng/L	101	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	257	ng/L	103	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	236	ng/L	94	50 - 150
67905-19-5-EIS	M2PFHxDA	250	225	ng/L	90	50 - 150
376-06-7-EIS	M2PFFTA	250	217	ng/L	87	50 - 150
13252-13-6-EIS	M3HFPODA	250	262	ng/L	105	50 - 150
375-73-5-EIS	M3PFBS	250	236	ng/L	94	50 - 150
355-46-4-EIS	M3PFHxS	250	236	ng/L	94	50 - 150
375-85-9-EIS	M4PFHpA	250	240	ng/L	96	50 - 150
307-24-4-EIS	M5PFHxA	250	241	ng/L	96	50 - 150
2706-90-3-EIS	M5PFPeA	250	237	ng/L	95	50 - 150
335-76-2-EIS	M6PFDA	250	241	ng/L	96	50 - 150
2058-94-8-EIS	M7PFUnA	250	232	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	201	ng/L	80	50 - 150
335-67-1-EIS	M8PFOA	250	238	ng/L	95	50 - 150
1763-23-1-EIS	M8PFOS	250	235	ng/L	94	50 - 150
375-95-1-EIS	M9PFNA	250	236	ng/L	94	50 - 150
375-22-4-EIS	MPFBA	250	227	ng/L	91	50 - 150
307-55-1-EIS	MPFDoA	250	224	ng/L	90	50 - 150

Sample Results

INFLUENT-07-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295102
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:12	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.06J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	5.58J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.40J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	6.10J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.34J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.82J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	13.8	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-07-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295102
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:12	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	428	ng/L	86	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	145	ng/L	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	141	ng/L	56	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	249	ng/L	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	229	ng/L	92	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	123	ng/L	49*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	132	ng/L	53	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	323	ng/L	129	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	291	ng/L	116	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	241	ng/L	96	50 - 150
67905-19-5-EIS	M2PFHxDA	250	178	ng/L	71	50 - 150
376-06-7-EIS	M2PFFTA	250	195	ng/L	78	50 - 150
13252-13-6-EIS	M3HFPODA	250	201	ng/L	80	50 - 150
375-73-5-EIS	M3PFBS	250	226	ng/L	90	50 - 150
355-46-4-EIS	M3PFHxS	250	226	ng/L	90	50 - 150
375-85-9-EIS	M4PFHpA	250	224	ng/L	90	50 - 150
307-24-4-EIS	M5PFHxA	250	219	ng/L	88	50 - 150
2706-90-3-EIS	M5PFPeA	250	212	ng/L	85	50 - 150
335-76-2-EIS	M6PFDA	250	221	ng/L	88	50 - 150
2058-94-8-EIS	M7PFUnA	250	232	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	172	ng/L	69	50 - 150
335-67-1-EIS	M8PFOA	250	224	ng/L	90	50 - 150
1763-23-1-EIS	M8PFOS	250	220	ng/L	88	50 - 150
375-95-1-EIS	M9PFNA	250	225	ng/L	90	50 - 150
375-22-4-EIS	MPFBA	250	204	ng/L	81	50 - 150
307-55-1-EIS	MPFDoA	250	222	ng/L	89	50 - 150

Sample Results

INFLUENT-07-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295102
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA R	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA R	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.99J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	29.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.69J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.76J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	14.4	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.64J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.50J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.43J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	40.8	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-07-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295102
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	567	ng/L	113	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	16	ng/L	6*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	20.7	ng/L	8*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	202	ng/L	81	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	233	ng/L	93	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	137	ng/L	55	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	128	ng/L	51	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	255	ng/L	102	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	218	ng/L	87	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	239	ng/L	96	50 - 150
67905-19-5-EIS	M2PFHxDA	250	146	ng/L	58	50 - 150
376-06-7-EIS	M2PFATA	250	187	ng/L	75	50 - 150
13252-13-6-EIS	M3HFPODA	250	270	ng/L	108	50 - 150
375-73-5-EIS	M3PFBS	250	229	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	228	ng/L	91	50 - 150
375-85-9-EIS	M4PFHpA	250	233	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	231	ng/L	92	50 - 150
2706-90-3-EIS	M5PFPeA	250	231	ng/L	93	50 - 150
335-76-2-EIS	M6PFDA	250	236	ng/L	94	50 - 150
2058-94-8-EIS	M7PFUnA	250	230	ng/L	92	50 - 150
754-91-6-EIS	M8FOSA	250	198	ng/L	79	50 - 150
335-67-1-EIS	M8PFOA	250	230	ng/L	92	50 - 150
1763-23-1-EIS	M8PFOS	250	227	ng/L	91	50 - 150
375-95-1-EIS	M9PFNA	250	232	ng/L	93	50 - 150
375-22-4-EIS	MPFBA	250	221	ng/L	88	50 - 150
307-55-1-EIS	MPFDoA	250	213	ng/L	85	50 - 150

Sample Results

INFLUENT-08-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295103
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:27	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	3.15J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.25J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.10U	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	11.9	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-08-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295103
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:27	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	397	ng/L	79	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	121	ng/L	48*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	126	ng/L	50	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	248	ng/L	99	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	207	ng/L	83	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	94.5	ng/L	38*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	104	ng/L	42*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	271	ng/L	109	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	275	ng/L	110	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	243	ng/L	97	50 - 150
67905-19-5-EIS	M2PFHxDA	250	128	ng/L	51	50 - 150
376-06-7-EIS	M2PFFTA	250	134	ng/L	54	50 - 150
13252-13-6-EIS	M3HFPODA	250	200	ng/L	80	50 - 150
375-73-5-EIS	M3PFBS	250	216	ng/L	87	50 - 150
355-46-4-EIS	M3PFHxS	250	216	ng/L	87	50 - 150
375-85-9-EIS	M4PFHpA	250	206	ng/L	82	50 - 150
307-24-4-EIS	M5PFHxA	250	203	ng/L	81	50 - 150
2706-90-3-EIS	M5PFPeA	250	201	ng/L	80	50 - 150
335-76-2-EIS	M6PFDA	250	206	ng/L	82	50 - 150
2058-94-8-EIS	M7PFUnA	250	218	ng/L	87	50 - 150
754-91-6-EIS	M8FOSA	250	173	ng/L	69	50 - 150
335-67-1-EIS	M8PFOA	250	207	ng/L	83	50 - 150
1763-23-1-EIS	M8PFOS	250	211	ng/L	84	50 - 150
375-95-1-EIS	M9PFNA	250	208	ng/L	83	50 - 150
375-22-4-EIS	MPFBA	250	198	ng/L	79	50 - 150
307-55-1-EIS	MPFDoA	250	194	ng/L	78	50 - 150

Sample Results

INFLUENT-08-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295103
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:20	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	21.1	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.0	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	10.8	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.79J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.90U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.27J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	32.6	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-08-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295103
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:20	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	575	ng/L	115	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	89.3	ng/L	36*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	99.3	ng/L	40*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	209	ng/L	84	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	235	ng/L	94	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	176	ng/L	70	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	167	ng/L	67	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	267	ng/L	107	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	216	ng/L	86	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	236	ng/L	94	50 - 150
67905-19-5-EIS	M2PFHxDA	250	167	ng/L	67	50 - 150
376-06-7-EIS	M2PFFTA	250	210	ng/L	84	50 - 150
13252-13-6-EIS	M3HFPODA	250	282	ng/L	113	50 - 150
375-73-5-EIS	M3PFBS	250	246	ng/L	99	50 - 150
355-46-4-EIS	M3PFHxS	250	239	ng/L	96	50 - 150
375-85-9-EIS	M4PFHpA	250	244	ng/L	97	50 - 150
307-24-4-EIS	M5PFHxA	250	248	ng/L	99	50 - 150
2706-90-3-EIS	M5PFPeA	250	243	ng/L	97	50 - 150
335-76-2-EIS	M6PFDA	250	240	ng/L	96	50 - 150
2058-94-8-EIS	M7PFUnA	250	234	ng/L	94	50 - 150
754-91-6-EIS	M8FOSA	250	206	ng/L	82	50 - 150
335-67-1-EIS	M8PFOA	250	241	ng/L	97	50 - 150
1763-23-1-EIS	M8PFOS	250	233	ng/L	93	50 - 150
375-95-1-EIS	M9PFNA	250	239	ng/L	96	50 - 150
375-22-4-EIS	MPFBA	250	240	ng/L	96	50 - 150
307-55-1-EIS	MPFDoA	250	222	ng/L	89	50 - 150

Sample Results

INFLUENT-11-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295104
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:42	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	3.06J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.12J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.10U	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	19.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-11-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295104
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:42	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	444	ng/L	89	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	129	ng/L	51	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	122	ng/L	49*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	249	ng/L	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	222	ng/L	89	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	129	ng/L	52	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	128	ng/L	51	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	291	ng/L	116	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	293	ng/L	117	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	232	ng/L	93	50 - 150
67905-19-5-EIS	M2PFHxDA	250	155	ng/L	62	50 - 150
376-06-7-EIS	M2PFFTA	250	176	ng/L	70	50 - 150
13252-13-6-EIS	M3HFPODA	250	202	ng/L	81	50 - 150
375-73-5-EIS	M3PFBS	250	229	ng/L	91	50 - 150
355-46-4-EIS	M3PFHxS	250	227	ng/L	91	50 - 150
375-85-9-EIS	M4PFHpA	250	224	ng/L	90	50 - 150
307-24-4-EIS	M5PFHxA	250	219	ng/L	88	50 - 150
2706-90-3-EIS	M5PFPeA	250	212	ng/L	85	50 - 150
335-76-2-EIS	M6PFDA	250	213	ng/L	85	50 - 150
2058-94-8-EIS	M7PFUnA	250	233	ng/L	93	50 - 150
754-91-6-EIS	M8FOSA	250	169	ng/L	67	50 - 150
335-67-1-EIS	M8PFOA	250	225	ng/L	90	50 - 150
1763-23-1-EIS	M8PFOS	250	218	ng/L	87	50 - 150
375-95-1-EIS	M9PFNA	250	225	ng/L	90	50 - 150
375-22-4-EIS	MPFBA	250	204	ng/L	82	50 - 150
307-55-1-EIS	MPFDoA	250	212	ng/L	85	50 - 150

Sample Results

INFLUENT-11-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295104
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:35	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	22.6	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.4	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	11.4	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.61J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.90U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.46J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	31.4	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-11-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295104
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:35	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	454	ng/L	91	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	190	ng/L	76	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	185	ng/L	74	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	197	ng/L	79	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	219	ng/L	88	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	170	ng/L	68	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	179	ng/L	72	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	247	ng/L	99	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	235	ng/L	94	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	231	ng/L	92	50 - 150
67905-19-5-EIS	M2PFHxDA	250	243	ng/L	97	50 - 150
376-06-7-EIS	M2PFATA	250	221	ng/L	88	50 - 150
13252-13-6-EIS	M3HFPODA	250	247	ng/L	99	50 - 150
375-73-5-EIS	M3PFBS	250	231	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	230	ng/L	92	50 - 150
375-85-9-EIS	M4PFHpA	250	215	ng/L	86	50 - 150
307-24-4-EIS	M5PFHxA	250	215	ng/L	86	50 - 150
2706-90-3-EIS	M5PFPeA	250	212	ng/L	85	50 - 150
335-76-2-EIS	M6PFDA	250	223	ng/L	89	50 - 150
2058-94-8-EIS	M7PFUnA	250	230	ng/L	92	50 - 150
754-91-6-EIS	M8FOSA	250	191	ng/L	76	50 - 150
335-67-1-EIS	M8PFOA	250	218	ng/L	87	50 - 150
1763-23-1-EIS	M8PFOS	250	228	ng/L	91	50 - 150
375-95-1-EIS	M9PFNA	250	218	ng/L	87	50 - 150
375-22-4-EIS	MPFBA	250	208	ng/L	83	50 - 150
307-55-1-EIS	MPFDoA	250	221	ng/L	88	50 - 150

Sample Results

INFLUENT-18-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295105
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:56	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.53J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	4.43J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.98J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	5.37J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.25J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	3.03J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	16.5	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-18-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295105
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 13:56	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	456	ng/L	91	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	143	ng/L	57	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	139	ng/L	56	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	308	ng/L	123	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	255	ng/L	102	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	139	ng/L	56	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	138	ng/L	55	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	369	ng/L	148	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	346	ng/L	138	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	270	ng/L	108	50 - 150
67905-19-5-EIS	M2PFHxDA	250	151	ng/L	60	50 - 150
376-06-7-EIS	M2PFFTA	250	195	ng/L	78	50 - 150
13252-13-6-EIS	M3HFPODA	250	194	ng/L	77	50 - 150
375-73-5-EIS	M3PFBS	250	235	ng/L	94	50 - 150
355-46-4-EIS	M3PFHxS	250	236	ng/L	95	50 - 150
375-85-9-EIS	M4PFHpA	250	232	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	232	ng/L	93	50 - 150
2706-90-3-EIS	M5PFPeA	250	220	ng/L	88	50 - 150
335-76-2-EIS	M6PFDA	250	232	ng/L	93	50 - 150
2058-94-8-EIS	M7PFUnA	250	255	ng/L	102	50 - 150
754-91-6-EIS	M8FOSA	250	180	ng/L	72	50 - 150
335-67-1-EIS	M8PFOA	250	235	ng/L	94	50 - 150
1763-23-1-EIS	M8PFOS	250	224	ng/L	90	50 - 150
375-95-1-EIS	M9PFNA	250	234	ng/L	94	50 - 150
375-22-4-EIS	MPFBA	250	209	ng/L	83	50 - 150
307-55-1-EIS	MPFDoA	250	243	ng/L	97	50 - 150

Sample Results

INFLUENT-18-20220620	Collect Date 06/20/2022 23:59	Lab ID 22206295105
	Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:50	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA R	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE R	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.07J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	27.1	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.51J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.23J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	13.1	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.76J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.23J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	43.7	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT-18-20220620	Collect Date	06/20/2022 23:59	Lab ID	22206295105
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 01:50	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	544	ng/L	109	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	1.52	ng/L	.6*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	3.76	ng/L	2*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	197	ng/L	79	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	217	ng/L	87	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	26.8	ng/L	11*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	21.5	ng/L	9*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	260	ng/L	104	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	219	ng/L	88	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	223	ng/L	89	50 - 150
67905-19-5-EIS	M2PFHxDA	250	19.3	ng/L	8*	50 - 150
376-06-7-EIS	M2PFATA	250	100	ng/L	40*	50 - 150
13252-13-6-EIS	M3HFPODA	250	269	ng/L	108	50 - 150
375-73-5-EIS	M3PFBS	250	230	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	234	ng/L	94	50 - 150
375-85-9-EIS	M4PFHpA	250	235	ng/L	94	50 - 150
307-24-4-EIS	M5PFHxA	250	237	ng/L	95	50 - 150
2706-90-3-EIS	M5PFPeA	250	229	ng/L	92	50 - 150
335-76-2-EIS	M6PFDA	250	226	ng/L	90	50 - 150
2058-94-8-EIS	M7PFUnA	250	210	ng/L	84	50 - 150
754-91-6-EIS	M8FOSA	250	181	ng/L	72	50 - 150
335-67-1-EIS	M8PFOA	250	233	ng/L	93	50 - 150
1763-23-1-EIS	M8PFOS	250	224	ng/L	90	50 - 150
375-95-1-EIS	M9PFNA	250	228	ng/L	91	50 - 150
375-22-4-EIS	MPFBA	250	221	ng/L	88	50 - 150
307-55-1-EIS	MPFDoA	250	179	ng/L	71	50 - 150

Sample Results

EFFLUENT-20220621	²¹	Collect Date 06/20/2022 23:59	Lab ID 22206295106
		Receive Date 06/29/2022 09:28	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 14:11	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	6.18J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.98J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.84J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	5.17J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT-20220621	²¹ Collect Date	06/20/2022 23:59	Lab ID	22206295106
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 18:19	744481	PFAS Top Assay QSM B15 (Pre)	1	07/03/22 14:11	744597	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	448	ng/L	90	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	176	ng/L	70	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	171	ng/L	68	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	223	ng/L	89	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	219	ng/L	88	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	164	ng/L	66	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	179	ng/L	72	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	283	ng/L	113	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	273	ng/L	109	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	249	ng/L	100	50 - 150
67905-19-5-EIS	M2PFHxDA	250	206	ng/L	82	50 - 150
376-06-7-EIS	M2PFFTA	250	200	ng/L	80	50 - 150
13252-13-6-EIS	M3HFPODA	250	232	ng/L	93	50 - 150
375-73-5-EIS	M3PFBS	250	230	ng/L	92	50 - 150
355-46-4-EIS	M3PFHxS	250	231	ng/L	92	50 - 150
375-85-9-EIS	M4PFHpA	250	232	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	230	ng/L	92	50 - 150
2706-90-3-EIS	M5PFPeA	250	228	ng/L	91	50 - 150
335-76-2-EIS	M6PFDA	250	217	ng/L	87	50 - 150
2058-94-8-EIS	M7PFUnA	250	227	ng/L	91	50 - 150
754-91-6-EIS	M8FOSA	250	196	ng/L	78	50 - 150
335-67-1-EIS	M8PFOA	250	230	ng/L	92	50 - 150
1763-23-1-EIS	M8PFOS	250	221	ng/L	88	50 - 150
375-95-1-EIS	M9PFNA	250	228	ng/L	91	50 - 150
375-22-4-EIS	MPFBA	250	225	ng/L	90	50 - 150
307-55-1-EIS	MPFDoA	250	224	ng/L	90	50 - 150

Sample Results

EFFLUENT-20220621	²¹ Collect Date	06/20/2022 23:59	Lab ID	22206295106
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 02:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	16.7U	16.7	50.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	9.25J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	6.61J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.90U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	3.36J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	8.37J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT-20220621	²¹ Collect Date	06/20/2022 23:59	Lab ID	22206295106
	Receive Date	06/29/2022 09:28	Matrix	Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 12:30	744694	PFAS Top Assay QSM B15 (Post)	1	07/07/22 02:05	744833	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	583	ng/L	117	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	86.4	ng/L	35*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	120	ng/L	48*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	228	ng/L		50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	259	ng/L	104	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	179	ng/L	72	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	169	ng/L	68	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	269	ng/L	108	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	249	ng/L	99	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	263	ng/L	105	50 - 150
67905-19-5-EIS	M2PFHxDA	250	256	ng/L	103	50 - 150
376-06-7-EIS	M2PFFTA	250	228	ng/L	91	50 - 150
13252-13-6-EIS	M3HFPODA	250	278	ng/L	111	50 - 150
375-73-5-EIS	M3PFBS	250	248	ng/L	99	50 - 150
355-46-4-EIS	M3PFHxS	250	250	ng/L	100	50 - 150
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150
307-24-4-EIS	M5PFHxA	250	254	ng/L	101	50 - 150
2706-90-3-EIS	M5PFPeA	250	252	ng/L	101	50 - 150
335-76-2-EIS	M6PFDA	250	259	ng/L	104	50 - 150
2058-94-8-EIS	M7PFUnA	250	255	ng/L	102	50 - 150
754-91-6-EIS	M8FOSA	250	233	ng/L	93	50 - 150
335-67-1-EIS	M8PFOA	250	252	ng/L	101	50 - 150
1763-23-1-EIS	M8PFOS	250	249	ng/L	100	50 - 150
375-95-1-EIS	M9PFNA	250	254	ng/L	101	50 - 150
375-22-4-EIS	MPFBA	250	226	ng/L	90	50 - 150
307-55-1-EIS	MPFDoA	250	237	ng/L	95	50 - 150

Sample Results

BIOSOLIDS A-20220622	Collect Date	06/22/2022 08:08	Lab ID	22206295107
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:29	745316	SLR2	75.68

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.079U	0.079	3.93	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.197U	0.197	3.93	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	0.511J	0.236	3.93	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.443J	0.118	3.93	ug/Kg
756426-58-1	9Cl-PF3ONS	0.118U	0.118	3.93	ug/Kg
919005-14-4	ADONA	0.039U	0.039	3.93	ug/Kg
4151-50-2	NEtFOSA	0.157U	0.157	3.93	ug/Kg
2991-50-6	NEtFOSAA	3.14J	0.118	3.93	ug/Kg
1691-99-2	NEtFOSE	1.07J	0.118	3.93	ug/Kg
31506-32-8	NMeFOSA	0.157U	0.157	3.93	ug/Kg
2355-31-9	NMeFOSAA	10.3	0.079	3.93	ug/Kg
24448-09-7	NMeFOSE	3.81J	0.118	3.93	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.550U	0.550	7.86	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.234J	0.079	3.93	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	1.74J	0.157	3.93	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.574J	0.118	3.93	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	3.48J	0.157	3.93	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.33J	0.079	3.93	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.167J	0.079	3.93	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.433J	0.079	3.93	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.353J	0.118	3.93	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	8.43	0.079	3.93	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.118U	0.118	3.93	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.442J	0.079	3.93	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.497J	0.079	3.93	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.74J	0.197	3.93	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	7.81	0.315	3.93	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.079U	0.079	3.93	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	3.15J	0.079	3.93	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.354J	0.079	3.93	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.212J	0.118	3.93	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.485J	0.079	3.93	ug/Kg

Sample Results

BIOSOLIDS A-20220622	Collect Date	06/22/2022 08:08	Lab ID	22206295107
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:29	745316	SLR2	75.68

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	2.14J	0.118	3.93	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	95.6	25.4	ug/Kg	27*	50 - 150
335-67-1-SUR	MPFOA	4.78	4.36	ug/Kg	91	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.6	23	ug/Kg	24*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.6	95.2	ug/Kg	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.6	103	ug/Kg	108	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.6	48	ug/Kg	50	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.6	41.4	ug/Kg	43*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.6	158	ug/Kg	165*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.6	134	ug/Kg	141	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.6	179	ug/Kg	187*	50 - 150
67905-19-5-EIS	M2PFHxDA	95.6	46.6	ug/Kg	49*	50 - 150
376-06-7-EIS	M2PFtA	95.6	72.9	ug/Kg	76	50 - 150
13252-13-6-EIS	M3HFPODA	95.6	73.3	ug/Kg	77	50 - 150
375-73-5-EIS	M3PFBS	95.6	89.8	ug/Kg	94	50 - 150
355-46-4-EIS	M3PFHxS	95.6	84.1	ug/Kg	88	50 - 150
375-85-9-EIS	M4PFHpA	95.6	92.3	ug/Kg	97	50 - 150
307-24-4-EIS	M5PFHxA	95.6	95.6	ug/Kg	100	50 - 150
2706-90-3-EIS	M5PFPeA	95.6	90.8	ug/Kg	95	50 - 150
335-76-2-EIS	M6PFDA	95.6	95.8	ug/Kg	100	50 - 150
2058-94-8-EIS	M7PFUnA	95.6	96.8	ug/Kg	101	50 - 150
754-91-6-EIS	M8FOSA	95.6	66.4	ug/Kg	69	50 - 150
335-67-1-EIS	M8PFOA	95.6	99.5	ug/Kg	104	50 - 150
1763-23-1-EIS	M8PFOS	95.6	86.1	ug/Kg	90	50 - 150
375-95-1-EIS	M9PFNA	95.6	95.1	ug/Kg	100	50 - 150
375-22-4-EIS	MPFBA	95.6	76.8	ug/Kg	80	50 - 150
307-55-1-EIS	MPFDoA	95.6	78.6	ug/Kg	82	50 - 150

Sample Results

BIOSOLIDS A-20220622	Collect Date 06/22/2022 08:08	Lab ID 22206295107
	Receive Date 06/29/2022 09:28	Matrix Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 03:49	744833	SXA	75.68

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.079U	0.079	3.97	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.198U	0.198	3.97	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	0.238U	0.238	3.97	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.119U	0.119	3.97	ug/Kg
756426-58-1	9Cl-PF3ONS	0.119U	0.119	3.97	ug/Kg
919005-14-4	ADONA	0.040U	0.040	3.97	ug/Kg
4151-50-2	NEtFOSA	0.159U	0.159	3.97	ug/Kg
2991-50-6	NEtFOSAA	0.119U	0.119	3.97	ug/Kg
1691-99-2	NEtFOSE	0.119U	0.119	3.97	ug/Kg
31506-32-8	NMeFOSA	0.159U	0.159	3.97	ug/Kg
2355-31-9	NMeFOSAA	0.079U	0.079	3.97	ug/Kg
24448-09-7	NMeFOSE	0.119U	0.119	3.97	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.556U	0.556	7.94	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.204J	0.079	3.97	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	15.0	0.159	3.97	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.212J	0.119	3.97	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	1.73J	0.159	3.97	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	0.615J	0.079	3.97	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.079U	0.079	3.97	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.30J	0.079	3.97	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.322J	0.119	3.97	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	6.31	0.079	3.97	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.119U	0.119	3.97	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	1.41J	0.079	3.97	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.079U	0.079	3.97	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.56J	0.198	3.97	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	6.76	0.318	3.97	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.079U	0.079	3.97	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	8.91	0.079	3.97	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.188J	0.079	3.97	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.189J	0.119	3.97	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.602J	0.079	3.97	ug/Kg

Sample Results

BIOSOLIDS A-20220622	Collect Date	06/22/2022 08:08	Lab ID	22206295107
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 03:49	744833	SXA	75.68

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.119U	0.119	3.97	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.83	4.17	ug/Kg	86	50 - 150
4151-50-2-EIS	d-NEtFOSA	96.5	37.8	ug/Kg	39*	50 - 150
31506-32-8-EIS	d-NMeFOSA	96.5	41.9	ug/Kg	43*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	96.5	81.7	ug/Kg	85	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	96.5	89.8	ug/Kg	93	50 - 150
24448-09-7-EIS	d7-NMeFOSE	96.5	66.1	ug/Kg	69	50 - 150
1691-99-2-EIS	d9-NEtFOSE	96.5	67.1	ug/Kg	70	50 - 150
757124-72-4-EIS	M2 4:2 FTS	96.5	93.9	ug/Kg	97	50 - 150
27619-97-2-EIS	M2 6:2 FTS	96.5	83.5	ug/Kg	86	50 - 150
39108-34-4-EIS	M2 8:2 FTS	96.5	90.4	ug/Kg	94	50 - 150
67905-19-5-EIS	M2PFHxDA	96.5	50.7	ug/Kg	52	50 - 150
376-06-7-EIS	M2PFFTA	96.5	71.4	ug/Kg	74	50 - 150
13252-13-6-EIS	M3HFPODA	96.5	106	ug/Kg	110	50 - 150
375-73-5-EIS	M3PFBS	96.5	89.1	ug/Kg	92	50 - 150
355-46-4-EIS	M3PFHxS	96.5	90.3	ug/Kg	94	50 - 150
375-85-9-EIS	M4PFHpA	96.5	90.3	ug/Kg	94	50 - 150
307-24-4-EIS	M5PFHxA	96.5	90.5	ug/Kg	94	50 - 150
2706-90-3-EIS	M5PFPeA	96.5	89.5	ug/Kg	93	50 - 150
335-76-2-EIS	M6PFDA	96.5	91.4	ug/Kg	95	50 - 150
2058-94-8-EIS	M7PFUnA	96.5	91.9	ug/Kg	95	50 - 150
754-91-6-EIS	M8FOSA	96.5	79.2	ug/Kg	82	50 - 150
335-67-1-EIS	M8PFOA	96.5	90.7	ug/Kg	94	50 - 150
1763-23-1-EIS	M8PFOS	96.5	90.2	ug/Kg	93	50 - 150
375-95-1-EIS	M9PFNA	96.5	89.9	ug/Kg	93	50 - 150
375-22-4-EIS	MPFBA	96.5	88	ug/Kg	91	50 - 150
307-55-1-EIS	MPFDoA	96.5	83.1	ug/Kg	86	50 - 150

Sample Results

BIOSOLIDS B-20220622	Collect Date 06/22/2022 07:50	Lab ID 22206295108
	Receive Date 06/29/2022 09:28	Matrix Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:44	745316	SLR2	94.43

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.352U	0.352	17.6	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.880U	0.880	17.6	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	1.06U	1.06	17.6	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.852J	0.528	17.6	ug/Kg
756426-58-1	9Cl-PF3ONS	0.528U	0.528	17.6	ug/Kg
919005-14-4	ADONA	0.176U	0.176	17.6	ug/Kg
4151-50-2	NEtFOSA R	0.704U	0.704	17.6	ug/Kg
2991-50-6	NEtFOSAA	1.96J	0.528	17.6	ug/Kg
1691-99-2	NEtFOSE	0.746J	0.528	17.6	ug/Kg
31506-32-8	NMeFOSA R	0.704U	0.704	17.6	ug/Kg
2355-31-9	NMeFOSAA	3.55J	0.352	17.6	ug/Kg
24448-09-7	NMeFOSE	2.53J	0.528	17.6	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.47U	2.47	35.2	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.352U	0.352	17.6	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	0.704U	0.704	17.6	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.730J	0.528	17.6	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	1.59J	0.704	17.6	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	0.787J	0.352	17.6	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.352U	0.352	17.6	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.352U	0.352	17.6	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.74J	0.528	17.6	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	1.01J	0.352	17.6	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.528U	0.528	17.6	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.352U	0.352	17.6	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.352U	0.352	17.6	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.77J	0.880	17.6	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	1.41U	1.41	17.6	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.352U	0.352	17.6	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.352U	0.352	17.6	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.352U	0.352	17.6	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.528U	0.528	17.6	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.370J	0.352	17.6	ug/Kg

Sample Results

BIOSOLIDS B-20220622	Collect Date	06/22/2022 07:50	Lab ID	22206295108
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
06/30/22 17:30	744482	PFAS Top Assay QSM B15 (Pre)	1	07/13/22 19:44	745316	SLR2	94.43

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.528U	0.528	17.6	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	98	5.5	ug/Kg	6*	50 - 150
335-67-1-SUR	MPFOA	4.9	4.12	ug/Kg	84	50 - 150
31506-32-8-EIS	d-NMeFOSA	98	6.37	ug/Kg	7*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	98	81.3	ug/Kg	83	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	98	105	ug/Kg	107	50 - 150
24448-09-7-EIS	d7-NMeFOSE	98	29.1	ug/Kg	30*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	98	23.2	ug/Kg	24*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	98	125	ug/Kg	128	50 - 150
27619-97-2-EIS	M2 6:2 FTS	98	120	ug/Kg	122	50 - 150
39108-34-4-EIS	M2 8:2 FTS	98	122	ug/Kg	125	50 - 150
67905-19-5-EIS	M2PFHxDA	98	52.8	ug/Kg	54	50 - 150
376-06-7-EIS	M2PFFTA	98	70.7	ug/Kg	72	50 - 150
13252-13-6-EIS	M3HFPODA	98	74.2	ug/Kg	76	50 - 150
375-73-5-EIS	M3PFBS	98	83.5	ug/Kg	85	50 - 150
355-46-4-EIS	M3PFHxS	98	78.4	ug/Kg	80	50 - 150
375-85-9-EIS	M4PFHpA	98	85.9	ug/Kg	88	50 - 150
307-24-4-EIS	M5PFHxA	98	86.4	ug/Kg	88	50 - 150
2706-90-3-EIS	M5PFPeA	98	83	ug/Kg	85	50 - 150
335-76-2-EIS	M6PFDA	98	95.1	ug/Kg	97	50 - 150
2058-94-8-EIS	M7PFUnA	98	91.1	ug/Kg	93	50 - 150
754-91-6-EIS	M8FOSA	98	50.4	ug/Kg	51	50 - 150
335-67-1-EIS	M8PFOA	98	89.9	ug/Kg	92	50 - 150
1763-23-1-EIS	M8PFOS	98	86.6	ug/Kg	88	50 - 150
375-95-1-EIS	M9PFNA	98	90.2	ug/Kg	92	50 - 150
375-22-4-EIS	MPFBA	98	78	ug/Kg	80	50 - 150
307-55-1-EIS	MPFDoA	98	76.3	ug/Kg	78	50 - 150

Sample Results

BIOSOLIDS B-20220622	Collect Date 06/22/2022 07:50	Lab ID 22206295108
	Receive Date 06/29/2022 09:28	Matrix Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 04:03	744833	SXA	94.43

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.343U	0.343	17.2	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.859U	0.859	17.2	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	1.03U	1.03	17.2	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.515U	0.515	17.2	ug/Kg
756426-58-1	9Cl-PF3ONS	0.515U	0.515	17.2	ug/Kg
919005-14-4	ADONA	0.172U	0.172	17.2	ug/Kg
4151-50-2	NEtFOSA	0.687U	0.687	17.2	ug/Kg
2991-50-6	NEtFOSAA	0.515U	0.515	17.2	ug/Kg
1691-99-2	NEtFOSE	0.515U	0.515	17.2	ug/Kg
31506-32-8	NMeFOSA	0.687U	0.687	17.2	ug/Kg
2355-31-9	NMeFOSAA	0.343U	0.343	17.2	ug/Kg
24448-09-7	NMeFOSE	0.515U	0.515	17.2	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.40U	2.40	34.3	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.343U	0.343	17.2	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	5.59J--- UJ	0.687	17.2	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.515U	0.515	17.2	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	0.687U	0.687	17.2	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	0.343U	0.343	17.2	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.343U	0.343	17.2	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.68J	0.343	17.2	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.515U	0.515	17.2	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	1.95J-- UJ	0.343	17.2	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.515U	0.515	17.2	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.699J	0.343	17.2	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.343U	0.343	17.2	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.06J	0.859	17.2	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	2.17J	1.37	17.2	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.343U	0.343	17.2	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	4.30J-- UJ	0.343	17.2	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.343U	0.343	17.2	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.515U	0.515	17.2	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.343U	0.343	17.2	ug/Kg

Sample Results

BIOSOLIDS B-20220622	Collect Date	06/22/2022 07:50	Lab ID	22206295108
	Receive Date	06/29/2022 09:28	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
07/05/22 13:50	744695	PFAS Top Assay QSM B15 (Post)	1	07/07/22 04:03	744833	SXA	94.43

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.515U	0.515	17.2	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.78	4.01	ug/Kg	84	50 - 150
4151-50-2-EIS	d-NEtFOSA	95.6	24.5	ug/Kg	26*	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.6	27.1	ug/Kg	28*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.6	80.9	ug/Kg	85	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.6	85.3	ug/Kg	89	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.6	60.4	ug/Kg	63	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.6	60.1	ug/Kg	63	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.6	94.3	ug/Kg	99	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.6	89.8	ug/Kg	94	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.6	86.6	ug/Kg	91	50 - 150
67905-19-5-EIS	M2PFHxDA	95.6	89.9	ug/Kg	94	50 - 150
376-06-7-EIS	M2PFFTA	95.6	86.3	ug/Kg	90	50 - 150
13252-13-6-EIS	M3HFPODA	95.6	106	ug/Kg	111	50 - 150
375-73-5-EIS	M3PFBS	95.6	92.4	ug/Kg	97	50 - 150
355-46-4-EIS	M3PFHxS	95.6	92.2	ug/Kg	96	50 - 150
375-85-9-EIS	M4PFHpA	95.6	90.7	ug/Kg	95	50 - 150
307-24-4-EIS	M5PFHxA	95.6	89.9	ug/Kg	94	50 - 150
2706-90-3-EIS	M5PFPeA	95.6	89.5	ug/Kg	94	50 - 150
335-76-2-EIS	M6PFDA	95.6	92.3	ug/Kg	96	50 - 150
2058-94-8-EIS	M7PFUnA	95.6	91.7	ug/Kg	96	50 - 150
754-91-6-EIS	M8FOSA	95.6	73.3	ug/Kg	77	50 - 150
335-67-1-EIS	M8PFOA	95.6	92.2	ug/Kg	96	50 - 150
1763-23-1-EIS	M8PFOS	95.6	89	ug/Kg	93	50 - 150
375-95-1-EIS	M9PFNA	95.6	91	ug/Kg	95	50 - 150
375-22-4-EIS	MPFBA	95.6	87.4	ug/Kg	91	50 - 150
307-55-1-EIS	MPFDoA	95.6	87.9	ug/Kg	92	50 - 150

July 2022

Data Quality and Usability Review – July 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 9/9/2022

Madison Metropolitan Sewerage District (MMSD) collected influent and effluent samples at the Nine Springs wastewater treatment plant on July 18 and 19, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10617957.

Samples included in this review are listed below:

- Influent-02-20220718
- Influent-07-20220718
- Influent-08-20220718
- Influent-11-20220718
- Influent-18-20220718
- Effluent 20220719

Each sample was analyzed for the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;

- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization with the exception of the nondetect results for MeFOSA and EtFOSA in sample Effluent 202207018 which were rejected due to significantly low isotopically labeled surrogate recoveries; this issue has a major impact on the data usability.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The data package was found to be complete as received from the laboratory.
- The cooler temperature upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the method blanks.
- No field blank samples were collected with this sample set.
- All samples were extracted and/or prepared and analyzed within the holding time with the following exception.
 - Samples Influent-02-20220718, Influent-07-20220718, Influent-08-20220718, Influent-11-20220718, and Influent-18-20220718 were analyzed three days outside of the seven day holding time for TSS. The positive results for TSS in these samples were qualified as estimated (J-) with a potential low bias.
- The LCS percent recoveries (%Rs) for all analytes were within QC limits.
- MS/MSD analyses were not performed on a sample in this data set.
- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent-02-20220718	d7-N-MeFOSE	9	10-150	The positive result for MeFOSE in sample Influent-02-20220718 was qualified as estimated (J).
	13C2_6:2FTS	169	25-150	The positive result for 6:2 FTS in sample Influent-02-20220718 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-07-20220718	13C2_4:2FTS	173	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	175		The positive result for 6:2 FTS in sample Influent-07-20220718 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-08-20220718	13C2_4:2FTS	157	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	178		The positive result for 6:2 FTS in sample Influent-08-20220718 was qualified as estimated (J).

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent-11-20220718	13C2_6:2FTS	177	25-150	The positive result for 6:2 FTS in sample Influent-11-20220718 was qualified as estimated (J).
	d3-MeFOSAA	23		The positive result for NMeFOSAA in sample Influent-11-20220718 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-18-20220718	13C2_4:2FTS	185	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	185		The positive result for 6:2 FTS in sample Influent-18-20220718 was qualified as estimated (J).
Effluent 20220719	d3-N-MeFOSA	9	10-150	The nondetect results for MeFOSA and EtFOSA were rejected (R) in sample Effluent 202207018 due to significantly low (<10%) %Rs.
	d5-N-EtFOSA	8		

- A field duplicate pair was not collected with this sample set.
- Laboratory duplicate analyses were not performed on a sample from this data set.
- The discussion related to the PFAS analyses indicated that no samples were centrifuged during this event. The laboratory was contacted during validation and confirmed this statement. No validation actions were required on this basis.
- Sample QLs were within the ranges of QLs suggested in the SAB of 2-5 ng/L for individual PFAS. There were no dilutions performed on the samples in this data set.
- The limits of quantitation (LOQs) for TSS in samples Influent-02-20220718, Influent-07-20220718, Influent-08-20220718, Influent-11-20220718, and Influent-18-20220718 were 2x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in these samples. No validation action was required on this basis.
- The results for PFHxS in sample Influent-02-20220718 and PFOS in sample Influent-08-20220718 were flagged with an "I" by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive results for PFHxS in sample Influent-02-20220718 and PFOS in sample Influent-08-20220718 were qualified as estimated (J).
- The internal standard (also referred to as injection internal standard by Pace) 13C4_PFOs (42%) recovered below the acceptance limits (50-150%) in sample Influent-11-20220718. However, since internal standards are not used to quantitate any sample results, no validation actions were taken on this basis.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10617957

Sample: Influent-02-20220718									
		Lab ID: 10617957001	Collected: 07/18/22 23:59	Received: 07/21/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	270 J-	mg/L	20.0	10.0	1		07/28/22 08:42		--H5--
Sample: Influent-07-20220718									
		Lab ID: 10617957002	Collected: 07/18/22 23:59	Received: 07/21/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	250 J-	mg/L	20.0	10.0	1		07/28/22 08:42		--H5--
Sample: Influent-08-20220718									
		Lab ID: 10617957003	Collected: 07/18/22 23:59	Received: 07/21/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	251 J-	mg/L	20.0	10.0	1		07/28/22 08:42		--H5--
Sample: Influent-11-20220718									
		Lab ID: 10617957004	Collected: 07/18/22 23:59	Received: 07/21/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	314 J-	mg/L	20.0	10.0	1		07/28/22 08:42		--H5--
Sample: Influent-18-20220718									
		Lab ID: 10617957005	Collected: 07/18/22 23:59	Received: 07/21/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	269 J-	mg/L	20.0	10.0	1		07/28/22 08:42		--H5--

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10617957

Sample: Effluent 20220719 **Lab ID: 10617957006** Collected: 07/19/22 23:59 Received: 07/21/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		07/26/22 13:58		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220718
 Lab Sample ID 10617957001
 Lab File ID B220811C_020
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 261mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.1	1.9	0.42	0.42	1	375-22-4		08/12/2022 04:30
PFPeA	3.9	1.9	0.42	0.42	1	2706-90-3		08/12/2022 04:30
HFPO-DA	ND	1.9	0.51	0.51	1	13252-13-6		08/12/2022 04:30
PFBS	2.7	1.7	0.45	0.45	1	375-73-5		08/12/2022 04:30
PFHxA	4.2	1.9	0.42	0.42	1	307-24-4		08/12/2022 04:30
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		08/12/2022 04:30
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		08/12/2022 04:30
PFHpA	1.5 J	1.9	0.53	0.53	1	375-85-9		08/12/2022 04:30
DONA	ND	1.8	0.49	0.49	1	919005-14-4		08/12/2022 04:30
PFHxS	4.1 I J	1.7	0.49	0.49	1	355-46-4		08/12/2022 04:30
PFOA	3.3	1.9	0.56	0.56	1	335-67-1		08/12/2022 04:30
6:2 FTS	0.85 J-J	1.8	0.62	0.62	1	27619-97-2		08/12/2022 04:30
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		08/12/2022 04:30
PFNA	ND	1.9	0.71	0.71	1	375-95-1		08/12/2022 04:30
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		08/12/2022 04:30
PFOS	5.4	1.8	0.53	0.53	1	1763-23-1		08/12/2022 04:30
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		08/12/2022 04:30
PFDA	ND	1.9	0.54	0.54	1	335-76-2		08/12/2022 04:30
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		08/12/2022 04:30
8:2 FTS	ND	1.8	0.63	0.63	1	39108-34-4		08/12/2022 04:30
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		08/12/2022 04:30
PFNS	ND	1.8	0.43	0.43	1	68259-12-1		08/12/2022 04:30
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8		08/12/2022 04:30
NMeFOSAA	0.52 J	1.9	0.42	0.42	1	2355-31-9		08/12/2022 04:30
NEtFOSAA	0.73 J	1.9	0.53	0.53	1	2991-50-6		08/12/2022 04:30
PFDS	ND	1.9	0.43	0.43	1	335-77-3		08/12/2022 04:30
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		08/12/2022 04:30
MeFOSE	29 J	1.9	0.32	0.32	1	24448-09-7		08/12/2022 04:30
EtFOSE	ND	1.9	0.48	0.48	1	1691-99-2		08/12/2022 04:30
11-CI-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9		08/12/2022 04:30
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		08/12/2022 04:30
PFDoS	ND	1.9	0.44	0.44	1	79780-39-5		08/12/2022 04:30
PFTDA	ND	1.9	0.46	0.46	1	376-06-7		08/12/2022 04:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220718
 Lab Sample ID 10617957002
 Lab File ID B220811C_021
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 251mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	2.0	0.44	0.44	1	375-22-4		08/12/2022 04:50
PFPeA	5.4	2.0	0.44	0.44	1	2706-90-3		08/12/2022 04:50
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6		08/12/2022 04:50
PFBS	5.3	1.8	0.47	0.47	1	375-73-5		08/12/2022 04:50
PFHxA	11	2.0	0.44	0.44	1	307-24-4		08/12/2022 04:50
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4		08/12/2022 04:50
PFPeS	1.1 J	1.9	0.47	0.47	1	2706-91-4		08/12/2022 04:50
PFHpA	2.7	2.0	0.55	0.55	1	375-85-9		08/12/2022 04:50
DONA	ND	1.9	0.51	0.51	1	919005-14-4		08/12/2022 04:50
PFHxS	11	1.8	0.51	0.51	1	355-46-4		08/12/2022 04:50
PFOA	6.3	2.0	0.58	0.58	1	335-67-1		08/12/2022 04:50
6:2 FTS	1.8 J--J	1.9	0.64	0.64	1	27619-97-2		08/12/2022 04:50
PFHpS	ND	1.9	0.41	0.41	1	375-92-8		08/12/2022 04:50
PFNA	ND	2.0	0.74	0.74	1	375-95-1		08/12/2022 04:50
PFOSAm	ND	2.0	0.81	0.81	1	754-91-6		08/12/2022 04:50
PFOS	5.6	1.8	0.55	0.55	1	1763-23-1		08/12/2022 04:50
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8		08/12/2022 04:50
PFDA	ND	2.0	0.56	0.56	1	335-76-2		08/12/2022 04:50
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2		08/12/2022 04:50
8:2 FTS	0.91 J	1.9	0.65	0.65	1	39108-34-4		08/12/2022 04:50
9-CI-PF3ON	ND	1.9	0.30	0.30	1	756426-58-1		08/12/2022 04:50
PFNS	ND	1.9	0.44	0.44	1	68259-12-1		08/12/2022 04:50
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8		08/12/2022 04:50
NMeFOSAA	2.0 J	2.0	0.43	0.43	1	2355-31-9		08/12/2022 04:50
NEtFOSAA	1.5 J	2.0	0.55	0.55	1	2991-50-6		08/12/2022 04:50
PFDS	ND	1.9	0.45	0.45	1	335-77-3		08/12/2022 04:50
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		08/12/2022 04:50
MeFOSE	27	2.0	0.33	0.33	1	24448-09-7		08/12/2022 04:50
EtFOSE	0.59 J	2.0	0.49	0.49	1	1691-99-2		08/12/2022 04:50
11-CI-PF3OUdS	ND	1.9	0.43	0.43	1	763051-92-9		08/12/2022 04:50
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		08/12/2022 04:50
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5		08/12/2022 04:50
PFTDA	ND	2.0	0.47	0.47	1	376-06-7		08/12/2022 04:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220718
 Lab Sample ID 10617957003
 Lab File ID B220815A_068
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 256mL
 Ical ID 220810B02
 CCal File B220815A_062
 Ending CCal File B220815A_075
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.0	2.0	0.43	0.43	1	375-22-4		08/16/2022 11:26
PFPeA	3.4	2.0	0.43	0.43	1	2706-90-3		08/16/2022 11:26
HFPO-DA	ND	2.0	0.52	0.52	1	13252-13-6		08/16/2022 11:26
PFBS	2.1	1.7	0.46	0.46	1	375-73-5		08/16/2022 11:26
PFHxA	4.6	2.0	0.43	0.43	1	307-24-4		08/16/2022 11:26
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		08/16/2022 11:26
PFPeS	ND	1.8	0.46	0.46	1	2706-91-4		08/16/2022 11:26
PFHpA	1.1 J	2.0	0.54	0.54	1	375-85-9		08/16/2022 11:26
DONA	ND	1.8	0.50	0.50	1	919005-14-4		08/16/2022 11:26
PFHxS	3.2	1.8	0.50	0.50	1	355-46-4		08/16/2022 11:26
PFOA	2.5	2.0	0.57	0.57	1	335-67-1		08/16/2022 11:26
6:2 FTS	2.3 J	1.9	0.63	0.63	1	27619-97-2		08/16/2022 11:26
PFHpS	ND	1.9	0.40	0.40	1	375-92-8		08/16/2022 11:26
PFNA	ND	2.0	0.72	0.72	1	375-95-1		08/16/2022 11:26
PFOSAm	ND	2.0	0.80	0.80	1	754-91-6		08/16/2022 11:26
PFOS	2.5 I J	1.8	0.53	0.53	1	1763-23-1		08/16/2022 11:26
MeFOSA	ND	2.0	0.50	0.50	1	31506-32-8		08/16/2022 11:26
PFDA	ND	2.0	0.55	0.55	1	335-76-2		08/16/2022 11:26
EtFOSAm	ND	2.0	0.59	0.59	1	4151-50-2		08/16/2022 11:26
8:2 FTS	0.74 J	1.9	0.64	0.64	1	39108-34-4		08/16/2022 11:26
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		08/16/2022 11:26
PFNS	ND	1.9	0.44	0.44	1	68259-12-1		08/16/2022 11:26
PFUnDA	ND	2.0	0.53	0.53	1	2058-94-8		08/16/2022 11:26
NMeFOSAA	0.68 J	2.0	0.42	0.42	1	2355-31-9		08/16/2022 11:26
NEtFOSAA	3.9	2.0	0.54	0.54	1	2991-50-6		08/16/2022 11:26
PFDS	ND	1.9	0.44	0.44	1	335-77-3		08/16/2022 11:26
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		08/16/2022 11:26
MeFOSE	1.8 J	2.0	0.32	0.32	1	24448-09-7		08/16/2022 11:26
EtFOSE	0.59 J	2.0	0.49	0.49	1	1691-99-2		08/16/2022 11:26
11-CI-PF3OUdS	ND	1.8	0.43	0.43	1	763051-92-9		08/16/2022 11:26
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		08/16/2022 11:26
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		08/16/2022 11:26
PFTDA	ND	2.0	0.46	0.46	1	376-06-7		08/16/2022 11:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220718
 Lab Sample ID 10617957004
 Lab File ID B220815A_069
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 266mL
 Ical ID 220810B02
 CCal File B220815A_062
 Ending CCal File B220815A_075
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	1.0 J	1.9	0.41	0.41	1	375-22-4		08/16/2022 11:46
PFPeA	2.3	1.9	0.41	0.41	1	2706-90-3		08/16/2022 11:46
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		08/16/2022 11:46
PFBS	1.8	1.7	0.44	0.44	1	375-73-5		08/16/2022 11:46
PFHxA	4.0	1.9	0.41	0.41	1	307-24-4		08/16/2022 11:46
4:2 FTS	ND	1.8	0.52	0.52	1	757124-72-4		08/16/2022 11:46
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4		08/16/2022 11:46
PFHpA	0.78 J	1.9	0.52	0.52	1	375-85-9		08/16/2022 11:46
DONA	ND	1.8	0.48	0.48	1	919005-14-4		08/16/2022 11:46
PFHxS	2.5	1.7	0.48	0.48	1	355-46-4		08/16/2022 11:46
PFOA	2.2	1.9	0.55	0.55	1	335-67-1		08/16/2022 11:46
6:2 FTS	5.1 J	1.8	0.61	0.61	1	27619-97-2		08/16/2022 11:46
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		08/16/2022 11:46
PFNA	ND	1.9	0.69	0.69	1	375-95-1		08/16/2022 11:46
PFOSAm	ND	1.9	0.77	0.77	1	754-91-6		08/16/2022 11:46
PFOS	1.9	1.7	0.51	0.51	1	1763-23-1		08/16/2022 11:46
MeFOSA	ND	1.9	0.48	0.48	1	31506-32-8		08/16/2022 11:46
PFDA	ND	1.9	0.53	0.53	1	335-76-2		08/16/2022 11:46
EtFOSAm	ND	1.9	0.57	0.57	1	4151-50-2		08/16/2022 11:46
8:2 FTS	0.89 J	1.8	0.61	0.61	1	39108-34-4		08/16/2022 11:46
9-CI-PF3ON	ND	1.7	0.29	0.29	1	756426-58-1		08/16/2022 11:46
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		08/16/2022 11:46
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		08/16/2022 11:46
NMeFOSAA	0.80 J-- J	1.9	0.41	0.41	1	2355-31-9		08/16/2022 11:46
NEtFOSAA	0.54 J	1.9	0.52	0.52	1	2991-50-6		08/16/2022 11:46
PFDS	ND	1.8	0.42	0.42	1	335-77-3		08/16/2022 11:46
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		08/16/2022 11:46
MeFOSE	2.5	1.9	0.31	0.31	1	24448-09-7		08/16/2022 11:46
EtFOSE	0.50 J	1.9	0.47	0.47	1	1691-99-2		08/16/2022 11:46
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		08/16/2022 11:46
PFTTrDA	ND	1.9	0.58	0.58	1	72629-94-8		08/16/2022 11:46
PFDoS	ND	1.8	0.43	0.43	1	79780-39-5		08/16/2022 11:46
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		08/16/2022 11:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220718
 Lab Sample ID 10617957005
 Lab File ID B220811C_024
 Matrix Industrial_Water
 Collected 07/18/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 263mL
 Ical ID 220810B02
 CCal File B220811C_014
 Ending CCal File B220811C_025
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	1.9	0.42	0.42	1	375-22-4		08/12/2022 05:50
PFPeA	5.8	1.9	0.42	0.42	1	2706-90-3		08/12/2022 05:50
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6		08/12/2022 05:50
PFBS	5.6	1.7	0.45	0.45	1	375-73-5		08/12/2022 05:50
PFHxA	8.6	1.9	0.42	0.42	1	307-24-4		08/12/2022 05:50
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4		08/12/2022 05:50
PFPeS	1.5 J	1.8	0.45	0.45	1	2706-91-4		08/12/2022 05:50
PFHpA	2.4	1.9	0.52	0.52	1	375-85-9		08/12/2022 05:50
DONA	ND	1.8	0.49	0.49	1	919005-14-4		08/12/2022 05:50
PFHxS	15	1.7	0.48	0.48	1	355-46-4		08/12/2022 05:50
PFOA	7.6	1.9	0.56	0.56	1	335-67-1		08/12/2022 05:50
6:2 FTS	2.7 J	1.8	0.61	0.61	1	27619-97-2		08/12/2022 05:50
PFHpS	ND	1.8	0.39	0.39	1	375-92-8		08/12/2022 05:50
PFNA	ND	1.9	0.70	0.70	1	375-95-1		08/12/2022 05:50
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6		08/12/2022 05:50
PFOS	7.6	1.8	0.52	0.52	1	1763-23-1		08/12/2022 05:50
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8		08/12/2022 05:50
PFDA	ND	1.9	0.54	0.54	1	335-76-2		08/12/2022 05:50
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2		08/12/2022 05:50
8:2 FTS	1.0 J	1.8	0.62	0.62	1	39108-34-4		08/12/2022 05:50
9-CI-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1		08/12/2022 05:50
PFNS	ND	1.8	0.42	0.42	1	68259-12-1		08/12/2022 05:50
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8		08/12/2022 05:50
NMeFOSAA	1.0 J	1.9	0.41	0.41	1	2355-31-9		08/12/2022 05:50
NEtFOSAA	1.7 J	1.9	0.53	0.53	1	2991-50-6		08/12/2022 05:50
PFDS	ND	1.8	0.43	0.43	1	335-77-3		08/12/2022 05:50
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		08/12/2022 05:50
MeFOSE	24	1.9	0.31	0.31	1	24448-09-7		08/12/2022 05:50
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2		08/12/2022 05:50
11-CI-PF3OUdS	ND	1.8	0.41	0.41	1	763051-92-9		08/12/2022 05:50
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		08/12/2022 05:50
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5		08/12/2022 05:50
PFTDA	ND	1.9	0.45	0.45	1	376-06-7		08/12/2022 05:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220719
 Lab Sample ID 10617957006
 Lab File ID B220811C_026
 Matrix Industrial_Water
 Collected 07/19/2022 23:59
 Received 07/21/2022 08:50
 Extraction Date 07/28/2022 19:30

Total Amount Extracted 256mL
 Ical ID 220810B02
 CCal File B220811C_025
 Ending CCal File B220811C_035
 Blank File B220811C_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.9	2.0	0.43	0.43	1	375-22-4		08/12/2022 06:30
PFPeA	20	2.0	0.43	0.43	1	2706-90-3		08/12/2022 06:30
HFPO-DA	ND	2.0	0.52	0.52	1	13252-13-6		08/12/2022 06:30
PFBS	3.0	1.7	0.46	0.46	1	375-73-5		08/12/2022 06:30
PFHxA	17	2.0	0.43	0.43	1	307-24-4		08/12/2022 06:30
4:2 FTS	ND	1.8	0.54	0.54	1	757124-72-4		08/12/2022 06:30
PFPeS	0.55 J	1.8	0.46	0.46	1	2706-91-4		08/12/2022 06:30
PFHpA	1.8 J	2.0	0.54	0.54	1	375-85-9		08/12/2022 06:30
DONA	ND	1.8	0.50	0.50	1	919005-14-4		08/12/2022 06:30
PFHxS	7.0	1.8	0.50	0.50	1	355-46-4		08/12/2022 06:30
PFOA	8.2	2.0	0.57	0.57	1	335-67-1		08/12/2022 06:30
6:2 FTS	1.5 J	1.9	0.63	0.63	1	27619-97-2		08/12/2022 06:30
PFHpS	ND	1.9	0.40	0.40	1	375-92-8		08/12/2022 06:30
PFNA	ND	2.0	0.72	0.72	1	375-95-1		08/12/2022 06:30
PFOSAm	ND	2.0	0.80	0.80	1	754-91-6		08/12/2022 06:30
PFOS	4.5	1.8	0.53	0.53	1	1763-23-1		08/12/2022 06:30
MeFOSA	R ND	2.0	0.50	0.50	1	31506-32-8		08/12/2022 06:30
PFDA	1.7 J	2.0	0.55	0.55	1	335-76-2		08/12/2022 06:30
EtFOSAm	R ND	2.0	0.59	0.59	1	4151-50-2		08/12/2022 06:30
8:2 FTS	ND	1.9	0.64	0.64	1	39108-34-4		08/12/2022 06:30
9-CI-PF3ON	ND	1.8	0.30	0.30	1	756426-58-1		08/12/2022 06:30
PFNS	ND	1.9	0.43	0.43	1	68259-12-1		08/12/2022 06:30
PFUnDA	ND	2.0	0.53	0.53	1	2058-94-8		08/12/2022 06:30
NMeFOSAA	1.4 J	2.0	0.42	0.42	1	2355-31-9		08/12/2022 06:30
NEtFOSAA	0.72 J	2.0	0.54	0.54	1	2991-50-6		08/12/2022 06:30
PFDS	ND	1.9	0.44	0.44	1	335-77-3		08/12/2022 06:30
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		08/12/2022 06:30
MeFOSE	ND	2.0	0.32	0.32	1	24448-09-7		08/12/2022 06:30
EtFOSE	ND	2.0	0.48	0.48	1	1691-99-2		08/12/2022 06:30
11-CI-PF3OUdS	ND	1.8	0.43	0.43	1	763051-92-9		08/12/2022 06:30
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		08/12/2022 06:30
PFDoS	ND	1.9	0.45	0.45	1	79780-39-5		08/12/2022 06:30
PFTDA	ND	2.0	0.46	0.46	1	376-06-7		08/12/2022 06:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

August 2022

Data Quality and Usability Review – August 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 10/5/2022

Madison Metropolitan Sewerage District (MMSD) collected influent and effluent samples at the Nine Springs wastewater treatment plant on August 15 and 16, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10622043.

Samples included in this review are listed below:

- Influent-02-20220815
- Influent-07-20220815
- Influent-08-20220815
- Influent-11-20220815
- Influent-18-20220815
- Effluent 20220816

Each sample was analyzed for the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;

- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization with the exception of the nondetect results for MeFOSA in samples Influent-07-20220815 and Influent-18-20220815 which were rejected due to significantly low isotopically labeled surrogate recoveries; this issue has a major impact on the data usability.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The data package was found to be complete as received from the laboratory.
- The cooler temperature upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the method blanks.
- No field blank samples were collected with this sample set.
- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS percent recoveries (%Rs) for all analytes were within QC limits.
- MS/MSD analyses were not performed on a sample in this data set.
- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent-02-20220815	13C2_4:2FTS	344	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	206		
	13C2_6:2FTS	338		The positive result for 6:2 FTS in sample Influent-02-20220815 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-07-20220815	13C2_4:2FTS	343	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	334		
	13C2_8:2FTS	172		The positive results for 6:2 FTS and 8:2 FTS in sample Influent-07-20220815 were already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
	d3-N-MeFOSA	9	10-150	The nondetect result for MeFOSA was rejected (R) in sample Influent-07-20220815 due to significantly low (<10%) %R.
Influent-08-20220815	13C2_4:2FTS	354	25-150	No validation actions were required on this basis since 4:2 FTS and 6:2 FTS were not detected in this sample.
	13C2_6:2FTS	320		
	13C2_8:2FTS	203		The positive result for 8:2 FTS in sample Influent-08-20220815 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-11-20220815	13C2_4:2FTS	298	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	316		
	13C2_8:2FTS	169		The positive results for 6:2 FTS and 8:2 FTS in sample Influent-11-20220815 were already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent-18-20220815	13C2_4:2FTS	341	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	303		The positive result for 6:2 FTS in sample Influent-18-20220815 was qualified as estimated (J).
Influent-18-20220815	13C2_8:2FTS	181	25-150	The positive result for 8:2 FTS in sample Influent-18-20220815 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
	d3-N-MeFOSA	8	10-150	The nondetect result for MeFOSA was rejected (R) in sample Influent-18-20220815 due to significantly low (<10%) %R.
Effluent 20220816	13C2_4:2FTS	292	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	163		
	13C2_6:2FTS	224		The positive result for 6:2 FTS in sample Effluent 20220816 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.

- A field duplicate pair was not collected with this sample set.
- Laboratory duplicate analyses were not performed on a sample from this data set.
- The laboratory stated that no samples were centrifuged for the PFAS analysis during this event. No validation actions were required on this basis.
- The method blank QLs were within the ranges of QLs suggested in the SAB of 2-5 ng/L for individual PFAS. There were no dilutions performed on the samples in this data set; however, select sample QLs were slightly greater than 2 ng/L (2.1-2.2 ng/L) based on the amount of sample volume provided for extraction.
- The limits of quantitation (LOQs) for TSS in samples Influent-07-20220815, Influent-08-20220815, Influent-11-20220815, and Influent-18-20220815 were 1.67x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in these samples. No validation action was required on this basis.
- The results for the following PFAS in the samples listed below were flagged with an "I" by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive results for the PFAS in the samples listed below were qualified as estimated (J).
 - PFPeS*, PFHxS, and PFDoS in sample Influent-02-20220815;
 - PFPeS*, PFDS*, and PFDoS in sample Influent-07-20220815;
 - PFHxA, PFHxS, PFOS, 8:2 FTS*, and PFDoS in sample Influent-08-20220815;
 - PFHxA, PFHxS, PFOS, and PFDoS* in sample Influent-11-20220815; and
 - PFDoS in sample Influent-18-20220815.
- * These results were also qualified as estimated (J) by the laboratory due to detection < the QL.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10622043

Sample: Influent-02-20220815									
		Lab ID: 10622043001	Collected: 08/15/22 23:59	Received: 08/18/22 13:00	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	260	mg/L	10.0	5.0	1		08/22/22 11:55		
Sample: Influent-07-20220815									
		Lab ID: 10622043002	Collected: 08/15/22 23:59	Received: 08/18/22 13:00	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	208	mg/L	16.7	8.3	1		08/22/22 11:55		
Sample: Influent-08-20220815									
		Lab ID: 10622043003	Collected: 08/15/22 23:59	Received: 08/18/22 13:00	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	206	mg/L	16.7	8.3	1		08/22/22 11:55		
Sample: Influent-11-20220815									
		Lab ID: 10622043004	Collected: 08/15/22 23:59	Received: 08/18/22 13:00	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	251	mg/L	16.7	8.3	1		08/22/22 11:55		
Sample: Influent-18-20220815									
		Lab ID: 10622043005	Collected: 08/15/22 23:59	Received: 08/18/22 13:00	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	238	mg/L	16.7	8.3	1		08/22/22 11:55		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10622043

Sample: Effluent 20220816 **Lab ID: 10622043006** Collected: 08/16/22 23:59 Received: 08/18/22 13:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	<5.0	mg/L	10.0	5.0	1		08/23/22 18:21		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02-20220815
 Lab Sample ID 10622043001-R
 Lab File ID B220922A_005
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 234mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.6	2.1	0.53	0.53	1	375-22-4		09/22/2022 12:51
PFPeA	4.1	2.1	0.88	0.88	1	2706-90-3		09/22/2022 12:51
HFPO-DA	ND	2.1	0.53	0.53	1	13252-13-6		09/22/2022 12:51
PFBS	2.5	1.9	0.52	0.52	1	375-73-5		09/22/2022 12:51
PFHxA	4.3	2.1	0.97	0.97	1	307-24-4		09/22/2022 12:51
4:2 FTS	ND	2.0	0.50	0.50	1	757124-72-4		09/22/2022 12:51
PFPeS	0.77 I J J	2.0	0.64	0.64	1	2706-91-4		09/22/2022 12:51
PFHpA	1.5 J	2.1	0.74	0.74	1	375-85-9		09/22/2022 12:51
DONA	ND	2.0	0.98	0.98	1	919005-14-4		09/22/2022 12:51
PFHxS	5.2 I J	1.9	0.57	0.57	1	355-46-4		09/22/2022 12:51
PFOA	3.3	2.1	0.92	0.92	1	335-67-1		09/22/2022 12:51
6:2 FTS	1.1 J J	2.0	0.72	0.72	1	27619-97-2		09/22/2022 12:51
PFHpS	ND	2.0	0.71	0.71	1	375-92-8		09/22/2022 12:51
PFNA	ND	2.1	0.85	0.85	1	375-95-1		09/22/2022 12:51
PFOSAm	ND	2.1	0.77	0.77	1	754-91-6		09/22/2022 12:51
PFOS	5.8	2.0	0.71	0.71	1	1763-23-1		09/22/2022 12:51
MeFOSA	ND	2.1	0.59	0.59	1	31506-32-8		09/22/2022 12:51
PFDA	ND	2.1	0.65	0.65	1	335-76-2		09/22/2022 12:51
EtFOSAm	ND	2.1	0.61	0.61	1	4151-50-2		09/22/2022 12:51
8:2 FTS	ND	2.1	0.54	0.54	1	39108-34-4		09/22/2022 12:51
9-CI-PF3ON	ND	2.0	0.50	0.50	1	756426-58-1		09/22/2022 12:51
PFNS	ND	2.1	0.63	0.63	1	68259-12-1		09/22/2022 12:51
PFUnDA	ND	2.1	0.52	0.52	1	2058-94-8		09/22/2022 12:51
NMeFOSAA	ND	2.1	0.74	0.74	1	2355-31-9		09/22/2022 12:51
NEtFOSAA	ND	2.1	0.87	0.87	1	2991-50-6		09/22/2022 12:51
PFDS	ND	2.1	0.69	0.69	1	335-77-3		09/22/2022 12:51
PFDOA	ND	2.1	0.51	0.51	1	307-55-1		09/22/2022 12:51
MeFOSE	1.3 J	2.1	0.56	0.56	1	24448-09-7		09/22/2022 12:51
EtFOSE	1.4 J	2.1	0.95	0.95	1	1691-99-2		09/22/2022 12:51
11-CI-PF3OUdS	ND	2.0	0.59	0.59	1	763051-92-9		09/22/2022 12:51
PFTTrDA	ND	2.1	0.67	0.67	1	72629-94-8		09/22/2022 12:51
PFDoS	2.5 I J	2.1	0.63	0.63	1	79780-39-5		09/22/2022 12:51
PFTDA	ND	2.1	0.64	0.64	1	376-06-7		09/22/2022 12:51

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07-20220815
 Lab Sample ID 10622043002-R
 Lab File ID B220922A_007
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 223mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	12	2.2	0.56	0.56	1	375-22-4		09/22/2022 13:31
PFPeA	5.9	2.2	0.92	0.92	1	2706-90-3		09/22/2022 13:31
HFPO-DA	ND	2.2	0.55	0.55	1	13252-13-6		09/22/2022 13:31
PFBS	7.7	2.0	0.54	0.54	1	375-73-5		09/22/2022 13:31
PFHxA	10	2.2	1.0	1.0	1	307-24-4		09/22/2022 13:31
4:2 FTS	ND	2.1	0.52	0.52	1	757124-72-4		09/22/2022 13:31
PFPeS	1.5 I J J	2.1	0.68	0.68	1	2706-91-4		09/22/2022 13:31
PFHpA	2.8	2.2	0.77	0.77	1	375-85-9		09/22/2022 13:31
DONA	ND	2.1	1.0	1.0	1	919005-14-4		09/22/2022 13:31
PFHxS	11	2.0	0.60	0.60	1	355-46-4		09/22/2022 13:31
PFOA	6.9	2.2	0.97	0.97	1	335-67-1		09/22/2022 13:31
6:2 FTS	2.1 J J	2.1	0.76	0.76	1	27619-97-2		09/22/2022 13:31
PFHpS	ND	2.1	0.75	0.75	1	375-92-8		09/22/2022 13:31
PFNA	ND	2.2	0.89	0.89	1	375-95-1		09/22/2022 13:31
PFOSAm	ND	2.2	0.81	0.81	1	754-91-6		09/22/2022 13:31
PFOS	6.7	2.1	0.75	0.75	1	1763-23-1		09/22/2022 13:31
MeFOSA	R ND	2.2	0.62	0.62	1	31506-32-8		09/22/2022 13:31
PFDA	ND	2.2	0.68	0.68	1	335-76-2		09/22/2022 13:31
EtFOSAm	ND	2.2	0.64	0.64	1	4151-50-2		09/22/2022 13:31
8:2 FTS	0.57 J J	2.2	0.57	0.57	1	39108-34-4		09/22/2022 13:31
9-CI-PF3ON	ND	2.1	0.53	0.53	1	756426-58-1		09/22/2022 13:31
PFNS	ND	2.2	0.66	0.66	1	68259-12-1		09/22/2022 13:31
PFUnDA	ND	2.2	0.54	0.54	1	2058-94-8		09/22/2022 13:31
NMeFOSAA	1.5 J	2.2	0.78	0.78	1	2355-31-9		09/22/2022 13:31
NEtFOSAA	1.5 J	2.2	0.91	0.91	1	2991-50-6		09/22/2022 13:31
PFDS	1.1 I J J	2.2	0.72	0.72	1	335-77-3		09/22/2022 13:31
PFDOA	ND	2.2	0.54	0.54	1	307-55-1		09/22/2022 13:31
MeFOSE	2.1 J	2.2	0.59	0.59	1	24448-09-7		09/22/2022 13:31
EtFOSE	ND	2.2	1.00	1.00	1	1691-99-2		09/22/2022 13:31
11-CI-PF3OUdS	ND	2.1	0.62	0.62	1	763051-92-9		09/22/2022 13:31
PFTTrDA	ND	2.2	0.70	0.70	1	72629-94-8		09/22/2022 13:31
PFDoS	3.0 I J	2.2	0.66	0.66	1	79780-39-5		09/22/2022 13:31
PFTDA	ND	2.2	0.67	0.67	1	376-06-7		09/22/2022 13:31

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08-20220815
 Lab Sample ID 10622043003-R
 Lab File ID B220922A_009
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 244mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	10.0	2.1	0.51	0.51	1	375-22-4		09/22/2022 14:11
PFPeA	3.8	2.1	0.84	0.84	1	2706-90-3		09/22/2022 14:11
HFPO-DA	ND	2.1	0.51	0.51	1	13252-13-6		09/22/2022 14:11
PFBS	3.1	1.8	0.50	0.50	1	375-73-5		09/22/2022 14:11
PFHxA	4.7 I J	2.1	0.93	0.93	1	307-24-4		09/22/2022 14:11
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		09/22/2022 14:11
PFPeS	ND	1.9	0.62	0.62	1	2706-91-4		09/22/2022 14:11
PFHpA	1.00 J	2.1	0.71	0.71	1	375-85-9		09/22/2022 14:11
DONA	ND	1.9	0.94	0.94	1	919005-14-4		09/22/2022 14:11
PFHxS	4.7 I J	1.9	0.54	0.54	1	355-46-4		09/22/2022 14:11
PFOA	2.4	2.1	0.88	0.88	1	335-67-1		09/22/2022 14:11
6:2 FTS	ND	1.9	0.69	0.69	1	27619-97-2		09/22/2022 14:11
PFHpS	ND	1.9	0.69	0.69	1	375-92-8		09/22/2022 14:11
PFNA	ND	2.1	0.81	0.81	1	375-95-1		09/22/2022 14:11
PFOSAm	ND	2.1	0.74	0.74	1	754-91-6		09/22/2022 14:11
PFOS	3.4 I J	1.9	0.68	0.68	1	1763-23-1		09/22/2022 14:11
MeFOSA	ND	2.1	0.57	0.57	1	31506-32-8		09/22/2022 14:11
PFDA	ND	2.1	0.62	0.62	1	335-76-2		09/22/2022 14:11
EtFOSAm	ND	2.1	0.59	0.59	1	4151-50-2		09/22/2022 14:11
8:2 FTS	0.65 IJ J	2.0	0.52	0.52	1	39108-34-4		09/22/2022 14:11
9-CI-PF3ON	ND	1.9	0.48	0.48	1	756426-58-1		09/22/2022 14:11
PFNS	ND	2.0	0.60	0.60	1	68259-12-1		09/22/2022 14:11
PFUnDA	ND	2.1	0.50	0.50	1	2058-94-8		09/22/2022 14:11
NMeFOSAA	0.75 J	2.1	0.71	0.71	1	2355-31-9		09/22/2022 14:11
NEtFOSAA	0.86 J	2.1	0.84	0.84	1	2991-50-6		09/22/2022 14:11
PFDS	ND	2.0	0.66	0.66	1	335-77-3		09/22/2022 14:11
PFDOA	ND	2.1	0.49	0.49	1	307-55-1		09/22/2022 14:11
MeFOSE	1.5 J	2.1	0.53	0.53	1	24448-09-7		09/22/2022 14:11
EtFOSE	ND	2.1	0.91	0.91	1	1691-99-2		09/22/2022 14:11
11-CI-PF3OUdS	ND	1.9	0.57	0.57	1	763051-92-9		09/22/2022 14:11
PFTTrDA	ND	2.1	0.64	0.64	1	72629-94-8		09/22/2022 14:11
PFDoS	2.4 I J	2.0	0.61	0.61	1	79780-39-5		09/22/2022 14:11
PFTDA	ND	2.1	0.62	0.62	1	376-06-7		09/22/2022 14:11

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11-20220815
 Lab Sample ID 10622043004-R
 Lab File ID B220922A_011
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 248mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.0	2.0	0.50	0.50	1	375-22-4		09/22/2022 14:51
PFPeA	2.4	2.0	0.83	0.83	1	2706-90-3		09/22/2022 14:51
HFPO-DA	ND	2.0	0.50	0.50	1	13252-13-6		09/22/2022 14:51
PFBS	2.4	1.8	0.49	0.49	1	375-73-5		09/22/2022 14:51
PFHxA	3.9 I J	2.0	0.92	0.92	1	307-24-4		09/22/2022 14:51
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		09/22/2022 14:51
PFPeS	ND	1.9	0.61	0.61	1	2706-91-4		09/22/2022 14:51
PFHpA	0.99 J	2.0	0.69	0.69	1	375-85-9		09/22/2022 14:51
DONA	ND	1.9	0.93	0.93	1	919005-14-4		09/22/2022 14:51
PFHxS	3.0 I J	1.8	0.54	0.54	1	355-46-4		09/22/2022 14:51
PFOA	2.4	2.0	0.87	0.87	1	335-67-1		09/22/2022 14:51
6:2 FTS	0.71 J J	1.9	0.68	0.68	1	27619-97-2		09/22/2022 14:51
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		09/22/2022 14:51
PFNA	ND	2.0	0.80	0.80	1	375-95-1		09/22/2022 14:51
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		09/22/2022 14:51
PFOS	3.2 I J	1.9	0.67	0.67	1	1763-23-1		09/22/2022 14:51
MeFOSA	ND	2.0	0.56	0.56	1	31506-32-8		09/22/2022 14:51
PFDA	0.64 J	2.0	0.61	0.61	1	335-76-2		09/22/2022 14:51
EtFOSAm	ND	2.0	0.58	0.58	1	4151-50-2		09/22/2022 14:51
8:2 FTS	1.7 J J	1.9	0.51	0.51	1	39108-34-4		09/22/2022 14:51
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		09/22/2022 14:51
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		09/22/2022 14:51
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		09/22/2022 14:51
NMeFOSAA	ND	2.0	0.70	0.70	1	2355-31-9		09/22/2022 14:51
NEtFOSAA	ND	2.0	0.82	0.82	1	2991-50-6		09/22/2022 14:51
PFDS	ND	1.9	0.65	0.65	1	335-77-3		09/22/2022 14:51
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		09/22/2022 14:51
MeFOSE	1.3 J	2.0	0.53	0.53	1	24448-09-7		09/22/2022 14:51
EtFOSE	ND	2.0	0.90	0.90	1	1691-99-2		09/22/2022 14:51
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		09/22/2022 14:51
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		09/22/2022 14:51
PFDoS	1.8 I J J	2.0	0.60	0.60	1	79780-39-5		09/22/2022 14:51
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		09/22/2022 14:51

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18-20220815
 Lab Sample ID 10622043005-R
 Lab File ID B220922A_013
 Matrix Industrial_Water
 Collected 08/15/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 249mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	2.0	0.50	0.50	1	375-22-4		09/22/2022 15:31
PFPeA	5.8	2.0	0.82	0.82	1	2706-90-3		09/22/2022 15:31
HFPO-DA	ND	2.0	0.50	0.50	1	13252-13-6		09/22/2022 15:31
PFBS	7.3	1.8	0.49	0.49	1	375-73-5		09/22/2022 15:31
PFHxA	8.4	2.0	0.91	0.91	1	307-24-4		09/22/2022 15:31
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		09/22/2022 15:31
PFPeS	2.0	1.9	0.60	0.60	1	2706-91-4		09/22/2022 15:31
PFHpA	2.4	2.0	0.69	0.69	1	375-85-9		09/22/2022 15:31
DONA	ND	1.9	0.92	0.92	1	919005-14-4		09/22/2022 15:31
PFHxS	17	1.8	0.53	0.53	1	355-46-4		09/22/2022 15:31
PFOA	7.7	2.0	0.86	0.86	1	335-67-1		09/22/2022 15:31
6:2 FTS	2.5 J	1.9	0.68	0.68	1	27619-97-2		09/22/2022 15:31
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		09/22/2022 15:31
PFNA	ND	2.0	0.80	0.80	1	375-95-1		09/22/2022 15:31
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		09/22/2022 15:31
PFOS	9.9	1.9	0.67	0.67	1	1763-23-1		09/22/2022 15:31
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		09/22/2022 15:31
PFDA	ND	2.0	0.61	0.61	1	335-76-2		09/22/2022 15:31
EtFOSAm	ND	2.0	0.58	0.58	1	4151-50-2		09/22/2022 15:31
8:2 FTS	0.56 J-J	1.9	0.51	0.51	1	39108-34-4		09/22/2022 15:31
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		09/22/2022 15:31
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		09/22/2022 15:31
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		09/22/2022 15:31
NMeFOSAA	1.2 J	2.0	0.70	0.70	1	2355-31-9		09/22/2022 15:31
NEtFOSAA	1.6 J	2.0	0.82	0.82	1	2991-50-6		09/22/2022 15:31
PFDS	ND	1.9	0.64	0.64	1	335-77-3		09/22/2022 15:31
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		09/22/2022 15:31
MeFOSE	1.4 J	2.0	0.52	0.52	1	24448-09-7		09/22/2022 15:31
EtFOSE	ND	2.0	0.89	0.89	1	1691-99-2		09/22/2022 15:31
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		09/22/2022 15:31
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		09/22/2022 15:31
PFDoS	3.4 I J	1.9	0.59	0.59	1	79780-39-5		09/22/2022 15:31
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		09/22/2022 15:31

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220816
 Lab Sample ID 10622043006-R
 Lab File ID B220922A_015
 Matrix Industrial_Water
 Collected 08/16/2022 23:59
 Received 08/18/2022 13:00
 Extraction Date 09/09/2022 16:07

Total Amount Extracted 224mL
 Ical ID 220916A02
 CCal File B220922A_003
 Ending CCal File B220922A_017
 Blank File B220916B_012

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	8.8	2.2	0.56	0.56	1	375-22-4		09/22/2022 16:11
PFPeA	18	2.2	0.92	0.92	1	2706-90-3		09/22/2022 16:11
HFPO-DA	ND	2.2	0.55	0.55	1	13252-13-6		09/22/2022 16:11
PFBS	2.4	2.0	0.54	0.54	1	375-73-5		09/22/2022 16:11
PFHxA	16	2.2	1.0	1.0	1	307-24-4		09/22/2022 16:11
4:2 FTS	ND	2.1	0.52	0.52	1	757124-72-4		09/22/2022 16:11
PFPeS	ND	2.1	0.67	0.67	1	2706-91-4		09/22/2022 16:11
PFHpA	1.8 J	2.2	0.77	0.77	1	375-85-9		09/22/2022 16:11
DONA	ND	2.1	1.0	1.0	1	919005-14-4		09/22/2022 16:11
PFHxS	5.8	2.0	0.59	0.59	1	355-46-4		09/22/2022 16:11
PFOA	7.8	2.2	0.96	0.96	1	335-67-1		09/22/2022 16:11
6:2 FTS	0.83 J J	2.1	0.75	0.75	1	27619-97-2		09/22/2022 16:11
PFHpS	ND	2.1	0.74	0.74	1	375-92-8		09/22/2022 16:11
PFNA	ND	2.2	0.89	0.89	1	375-95-1		09/22/2022 16:11
PFOSAm	ND	2.2	0.80	0.80	1	754-91-6		09/22/2022 16:11
PFOS	3.3	2.1	0.74	0.74	1	1763-23-1		09/22/2022 16:11
MeFOSA	ND	2.2	0.62	0.62	1	31506-32-8		09/22/2022 16:11
PFDA	1.3 J	2.2	0.68	0.68	1	335-76-2		09/22/2022 16:11
EtFOSAm	ND	2.2	0.64	0.64	1	4151-50-2		09/22/2022 16:11
8:2 FTS	ND	2.1	0.56	0.56	1	39108-34-4		09/22/2022 16:11
9-CI-PF3ON	ND	2.1	0.52	0.52	1	756426-58-1		09/22/2022 16:11
PFNS	ND	2.1	0.65	0.65	1	68259-12-1		09/22/2022 16:11
PFUnDA	ND	2.2	0.54	0.54	1	2058-94-8		09/22/2022 16:11
NMeFOSAA	1.2 J	2.2	0.77	0.77	1	2355-31-9		09/22/2022 16:11
NEtFOSAA	ND	2.2	0.91	0.91	1	2991-50-6		09/22/2022 16:11
PFDS	ND	2.2	0.71	0.71	1	335-77-3		09/22/2022 16:11
PFDOA	ND	2.2	0.54	0.54	1	307-55-1		09/22/2022 16:11
MeFOSE	ND	2.2	0.58	0.58	1	24448-09-7		09/22/2022 16:11
EtFOSE	ND	2.2	0.99	0.99	1	1691-99-2		09/22/2022 16:11
11-CI-PF3OUdS	ND	2.1	0.62	0.62	1	763051-92-9		09/22/2022 16:11
PFTTrDA	ND	2.2	0.69	0.69	1	72629-94-8		09/22/2022 16:11
PFDoS	ND	2.2	0.66	0.66	1	79780-39-5		09/22/2022 16:11
PFTDA	ND	2.2	0.67	0.67	1	376-06-7		09/22/2022 16:11

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

September 2022

Data Quality and Usability Review – September 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 11/17/2022

Madison Metropolitan Sewerage District (MMSD) collected influent, effluent, and biosolids samples at the Nine Springs wastewater treatment plant on September 12, 13, and 14, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10625564 (revised 11/10/22).

Samples included in this review are listed below:

- Influent-02 20220912
- Influent-07 20220912
- Influent-08 20220912
- Influent-11 20220912
- Influent-18 20220912
- Effluent 20220913
- Biosolids A 20220914
- Biosolids B 20220914
- EB-01 20220914

Each sample was analyzed for the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D
Total Solids*	ASTM D2974*

Notes:

* The laboratory does not hold NELAC/TNI accreditation for total solids.

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization with the exception of the nondetect results for MeFOSA and EtFOSA in sample Biosolids B 20220914 which were rejected due to significantly low isotopically labeled surrogate recoveries; this issue has a major impact on the data usability.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The revised data package was found to be complete as received from the laboratory.
- The cooler temperature upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A note on the chain-of-custody (COC) indicated that flow was higher than normal and that the samples may be diluted with rainwater due to large rain event. No validation actions were taken on this basis.
- The effluent sample was not listed on the original COC. A revised COC was provided with this sample added.
- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the method blanks.
- One equipment blank (EB-01 20220914) was collected and analyzed for PFAS. Target analytes were not detected in the equipment blank.
- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS percent recoveries (%Rs) for all analytes were within QC limits.
- MS/MSD analyses were performed on sample Effluent 20220913 for PFAS. All criteria were met.
- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent-02 20220912	13C2_4:2FTS	263	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample. The positive result for 6:2 FTS in sample Influent-02 20220912 was qualified as estimated (J).
	13C2_8:2FTS	187		
	13C2_6:2FTS	332		
Influent-07 20220912	13C2_4:2FTS	283	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample. The positive result for 6:2 FTS in sample Influent-07 20220912 was qualified as estimated (J). The positive result for 8:2 FTS in sample Influent-07 20220912 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
	13C2_6:2FTS	330		
	13C2_8:2FTS	209		
Influent-08 20220912	13C2_4:2FTS	261	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	205		
Influent-08 20220912	13C2_6:2FTS	313	25-150	The positive result for 6:2 FTS in sample Influent-08 20220912 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent-11 20220912	13C2_4:2FTS	249	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	190		
	13C2_6:2FTS	322		The positive result for 6:2 FTS in sample Influent-11 20220912 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent-18 20220912	13C2_4:2FTS	268	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	333		The positive result for 6:2 FTS in sample Influent-18 20220912 was qualified as estimated (J).
	13C2_8:2FTS	197		The positive result for 8:2 FTS in sample Influent-18 20220912 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Biosolids A 20220914	13C2_4:2FTS	181	25-150	No validation actions were required on this basis since 4:2 FTS was not detected in this sample.
	13C2_6:2FTS	178		The positive results for 6:2 FTS, PFDoA, and PFTTrDA, PFTDA in sample Biosolids A 20220914 were qualified as estimated (J).
	13C2_PFD _o A	21		
	13C2_PFTeDA	18	10-150	The positive results for MeFOSA and EtFOSA in sample Biosolids A 20220914 were already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
	d3-N-MeFOSA	7		
	d5-N-EtFOSA	5		
Biosolids B 20220914	13C2_4:2FTS	196	25-150	No validation actions were required on this basis since 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in this sample.
	13C2_6:2FTS	188		
	13C2_8:2FTS	151		
	d3-N-MeFOSA	2	10-150	The nondetect results for MeFOSA and EtFOSA were rejected (R) in sample Biosolids B 20220914 due to significantly low (<10%) %Rs.
	d5-N-EtFOSA	4		
Effluent 20220913	13C2_4:2FTS	229	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	164		
	13C2_6:2FTS	236		The positive result for 6:2 FTS in sample Effluent 20220913 was qualified as estimated (J).

It should be noted that the laboratory only reported a %R for 13C5_PFHxA from the diluted analysis of sample Biosolids A 20220914; there is no impact on data usability due to this issue since this isotopically labeled surrogate was only used to quantitate PFHxA, which was the only target analyte reported from the diluted analysis of this sample. No validation actions were required on this basis.

- A field duplicate pair was not collected with this sample set.
- Laboratory duplicate analyses were not performed on a sample from this data set.
- The laboratory stated that no samples were centrifuged for the PFAS analysis during this event. No validation actions were required on this basis.
- Select sample QLs were outside of the ranges of QLs suggested in the SAB of 2-5 ng/L and 1-5 ug/kg per individual PFAS due to sample volume and/or low total solids.

- The limit of quantitation (LOQ) for TSS in sample Influent-18 20220912 was 2x higher than the associated method blank likely due to a reduced volume used in the sample analysis. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in this sample. No validation action was required on this basis.
 - Sample Biosolids A 20220914 was diluted 5-fold due to the concentration of PFHxA which likely exceeded the calibration range in the undiluted analysis. The laboratory combined the results of the diluted and undiluted analyses in order to report all compounds within calibration range and with the lowest possible QLs. No other dilutions were performed on the samples in this data set.
 - The results for the following PFAS in the samples listed below were flagged with an “I” by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive results for the PFAS in the samples listed below were qualified as estimated (J).
 - PFPeS in samples Influent-02 20220912*, Influent-07 20220912*, Influent-18 20220912, and Effluent 20220913*;
 - PFOS in sample Influent-08 20220912;
 - PFHxS and PFOS in sample Influent-11 20220912;
 - MeFOSA* in sample Biosolids A 20220914; and
 - PFBS* and PFDoS* in sample Biosolids B 20220914.
- * These results were also qualified as estimated (J) by the laboratory due to detection < the QL.
- The percent moisture for the biosolids samples was high (>70% moisture). The laboratory was contacted during previous rounds of validation review regarding this issue and stated that the biosolids samples were homogenized, indicating that a representative sample was extracted for PFAS analysis. No validation actions were taken on this basis.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS
Pace Project No.: 10625564

Sample: Influent-02 20220912									
		Lab ID: 10625564001	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	152	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-07 20220912									
		Lab ID: 10625564002	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	178	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-08 20220912									
		Lab ID: 10625564003	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	185	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-11 20220912									
		Lab ID: 10625564004	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	212	mg/L	10.0	5.0	1		09/16/22 12:08		
Sample: Influent-18 20220912									
		Lab ID: 10625564005	Collected: 09/12/22 11:59	Received: 09/15/22 08:50	Matrix: Water				
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	175	mg/L	20.0	10.0	1		09/16/22 12:08		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10625564

Sample: Biosolids A 20220914 **Lab ID: 10625564006** Collected: 09/14/22 08:28 Received: 09/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	69.0	%	0.10	0.10	1		09/28/22 15:27		N2

Sample: Biosolids B 20220914 **Lab ID: 10625564007** Collected: 09/14/22 08:35 Received: 09/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	94.7	%	0.10	0.10	1		09/28/22 15:27		N2

Sample: Effluent 20220913 **Lab ID: 10625564009** Collected: 09/13/22 11:59 Received: 09/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids	Analytical Method: SM 2540D Pace Analytical Services - Minneapolis								
Total Suspended Solids	<5.0	mg/L	10.0	5.0	1		09/19/22 12:07		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-02 20220912
 Lab Sample ID 10625564001
 Lab File ID B221012C_027
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 249mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	7.1	2.0	0.50	0.50	1	375-22-4		10/13/2022 02:26
PFPeA	7.3	2.0	0.82	0.82	1	2706-90-3		10/13/2022 02:26
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		10/13/2022 02:26
PFBS	4.6	1.8	0.49	0.49	1	375-73-5		10/13/2022 02:26
PFHxA	6.6	2.0	0.91	0.91	1	307-24-4		10/13/2022 02:26
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		10/13/2022 02:26
PFPeS	0.68 IJ- J	1.9	0.60	0.60	1	2706-91-4		10/13/2022 02:26
PFHpA	2.4	2.0	0.69	0.69	1	375-85-9		10/13/2022 02:26
DONA	ND	1.9	0.92	0.92	1	919005-14-4		10/13/2022 02:26
PFHxS	5.4	1.8	0.53	0.53	1	355-46-4		10/13/2022 02:26
PFOA	5.1	2.0	0.86	0.86	1	335-67-1		10/13/2022 02:26
6:2 FTS	2.2 J	1.9	0.68	0.68	1	27619-97-2		10/13/2022 02:26
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		10/13/2022 02:26
PFNA	ND	2.0	0.80	0.80	1	375-95-1		10/13/2022 02:26
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		10/13/2022 02:26
PFOS	12	1.9	0.67	0.67	1	1763-23-1		10/13/2022 02:26
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		10/13/2022 02:26
PFDA	0.67 J	2.0	0.61	0.61	1	335-76-2		10/13/2022 02:26
EtFOSAm	ND	2.0	0.58	0.58	1	4151-50-2		10/13/2022 02:26
8:2 FTS	ND	1.9	0.51	0.51	1	39108-34-4		10/13/2022 02:26
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		10/13/2022 02:26
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		10/13/2022 02:26
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		10/13/2022 02:26
NMeFOSAA	ND	2.0	0.70	0.70	1	2355-31-9		10/13/2022 02:26
NEtFOSAA	ND	2.0	0.82	0.82	1	2991-50-6		10/13/2022 02:26
PFDS	ND	1.9	0.64	0.64	1	335-77-3		10/13/2022 02:26
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		10/13/2022 02:26
MeFOSE	ND	2.0	0.52	0.52	1	24448-09-7		10/13/2022 02:26
EtFOSE	ND	2.0	0.89	0.89	1	1691-99-2		10/13/2022 02:26
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		10/13/2022 02:26
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		10/13/2022 02:26
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		10/13/2022 02:26
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		10/13/2022 02:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-07 20220912
 Lab Sample ID 10625564002
 Lab File ID B221012C_028
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 244mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	20	2.0	0.51	0.51	1	375-22-4		10/13/2022 02:46
PFPeA	17	2.0	0.84	0.84	1	2706-90-3		10/13/2022 02:46
HFPO-DA	ND	2.0	0.51	0.51	1	13252-13-6		10/13/2022 02:46
PFBS	9.0	1.8	0.50	0.50	1	375-73-5		10/13/2022 02:46
PFHxA	28	2.0	0.93	0.93	1	307-24-4		10/13/2022 02:46
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		10/13/2022 02:46
PFPeS	1.3 I J J	1.9	0.62	0.62	1	2706-91-4		10/13/2022 02:46
PFHpA	6.7	2.0	0.71	0.71	1	375-85-9		10/13/2022 02:46
DONA	ND	1.9	0.94	0.94	1	919005-14-4		10/13/2022 02:46
PFHxS	14	1.9	0.54	0.54	1	355-46-4		10/13/2022 02:46
PFOA	16	2.0	0.88	0.88	1	335-67-1		10/13/2022 02:46
6:2 FTS	3.8 J	1.9	0.69	0.69	1	27619-97-2		10/13/2022 02:46
PFHpS	ND	1.9	0.68	0.68	1	375-92-8		10/13/2022 02:46
PFNA	1.8 J	2.0	0.81	0.81	1	375-95-1		10/13/2022 02:46
PFOSAm	ND	2.0	0.73	0.73	1	754-91-6		10/13/2022 02:46
PFOS	16	1.9	0.68	0.68	1	1763-23-1		10/13/2022 02:46
MeFOSA	ND	2.0	0.57	0.57	1	31506-32-8		10/13/2022 02:46
PFDA	2.2	2.0	0.62	0.62	1	335-76-2		10/13/2022 02:46
EtFOSAm	1.2 J	2.0	0.59	0.59	1	4151-50-2		10/13/2022 02:46
8:2 FTS	0.65 J--J	2.0	0.52	0.52	1	39108-34-4		10/13/2022 02:46
9-CI-PF3ON	ND	1.9	0.48	0.48	1	756426-58-1		10/13/2022 02:46
PFNS	ND	2.0	0.60	0.60	1	68259-12-1		10/13/2022 02:46
PFUnDA	ND	2.0	0.50	0.50	1	2058-94-8		10/13/2022 02:46
NMeFOSAA	4.4	2.0	0.71	0.71	1	2355-31-9		10/13/2022 02:46
NEtFOSAA	3.4	2.0	0.83	0.83	1	2991-50-6		10/13/2022 02:46
PFDS	ND	2.0	0.66	0.66	1	335-77-3		10/13/2022 02:46
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		10/13/2022 02:46
MeFOSE	2.1	2.0	0.53	0.53	1	24448-09-7		10/13/2022 02:46
EtFOSE	ND	2.0	0.91	0.91	1	1691-99-2		10/13/2022 02:46
11-CI-PF3OUdS	ND	1.9	0.57	0.57	1	763051-92-9		10/13/2022 02:46
PFTTrDA	ND	2.0	0.64	0.64	1	72629-94-8		10/13/2022 02:46
PFDoS	ND	2.0	0.61	0.61	1	79780-39-5		10/13/2022 02:46
PFTDA	ND	2.0	0.61	0.61	1	376-06-7		10/13/2022 02:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-08 20220912
 Lab Sample ID 10625564003
 Lab File ID B221012C_029
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 264mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	6.6	1.9	0.47	0.47	1	375-22-4		10/13/2022 03:06
PFPeA	18	1.9	0.78	0.78	1	2706-90-3		10/13/2022 03:06
HFPO-DA	ND	1.9	0.47	0.47	1	13252-13-6		10/13/2022 03:06
PFBS	3.3	1.7	0.46	0.46	1	375-73-5		10/13/2022 03:06
PFHxA	7.0	1.9	0.86	0.86	1	307-24-4		10/13/2022 03:06
4:2 FTS	ND	1.8	0.44	0.44	1	757124-72-4		10/13/2022 03:06
PFPeS	ND	1.8	0.57	0.57	1	2706-91-4		10/13/2022 03:06
PFHpA	1.8 J	1.9	0.65	0.65	1	375-85-9		10/13/2022 03:06
DONA	ND	1.8	0.87	0.87	1	919005-14-4		10/13/2022 03:06
PFHxS	3.7	1.7	0.50	0.50	1	355-46-4		10/13/2022 03:06
PFOA	3.4	1.9	0.81	0.81	1	335-67-1		10/13/2022 03:06
6:2 FTS	0.73 J--J	1.8	0.64	0.64	1	27619-97-2		10/13/2022 03:06
PFHpS	ND	1.8	0.63	0.63	1	375-92-8		10/13/2022 03:06
PFNA	ND	1.9	0.75	0.75	1	375-95-1		10/13/2022 03:06
PFOSAm	ND	1.9	0.68	0.68	1	754-91-6		10/13/2022 03:06
PFOS	8.6 I J	1.8	0.63	0.63	1	1763-23-1		10/13/2022 03:06
MeFOSA	ND	1.9	0.52	0.52	1	31506-32-8		10/13/2022 03:06
PFDA	0.58 J	1.9	0.58	0.58	1	335-76-2		10/13/2022 03:06
EtFOSAm	ND	1.9	0.54	0.54	1	4151-50-2		10/13/2022 03:06
8:2 FTS	ND	1.8	0.48	0.48	1	39108-34-4		10/13/2022 03:06
9-CI-PF3ON	ND	1.8	0.44	0.44	1	756426-58-1		10/13/2022 03:06
PFNS	ND	1.8	0.55	0.55	1	68259-12-1		10/13/2022 03:06
PFUnDA	ND	1.9	0.46	0.46	1	2058-94-8		10/13/2022 03:06
NMeFOSAA	ND	1.9	0.66	0.66	1	2355-31-9		10/13/2022 03:06
NEtFOSAA	1.3 J	1.9	0.77	0.77	1	2991-50-6		10/13/2022 03:06
PFDS	ND	1.8	0.61	0.61	1	335-77-3		10/13/2022 03:06
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		10/13/2022 03:06
MeFOSE	1.0 J	1.9	0.49	0.49	1	24448-09-7		10/13/2022 03:06
EtFOSE	ND	1.9	0.84	0.84	1	1691-99-2		10/13/2022 03:06
11-CI-PF3OUdS	ND	1.8	0.53	0.53	1	763051-92-9		10/13/2022 03:06
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		10/13/2022 03:06
PFDoS	ND	1.8	0.56	0.56	1	79780-39-5		10/13/2022 03:06
PFTDA	ND	1.9	0.57	0.57	1	376-06-7		10/13/2022 03:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-11 20220912
 Lab Sample ID 10625564004
 Lab File ID B221012C_030
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 245mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.3	2.0	0.51	0.51	1	375-22-4		10/13/2022 03:26
PFPeA	6.7	2.0	0.84	0.84	1	2706-90-3		10/13/2022 03:26
HFPO-DA	ND	2.0	0.50	0.50	1	13252-13-6		10/13/2022 03:26
PFBS	2.9	1.8	0.49	0.49	1	375-73-5		10/13/2022 03:26
PFHxA	6.4	2.0	0.93	0.93	1	307-24-4		10/13/2022 03:26
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		10/13/2022 03:26
PFPeS	ND	1.9	0.61	0.61	1	2706-91-4		10/13/2022 03:26
PFHpA	1.4 J	2.0	0.70	0.70	1	375-85-9		10/13/2022 03:26
DONA	ND	1.9	0.94	0.94	1	919005-14-4		10/13/2022 03:26
PFHxS	2.5 I J	1.9	0.54	0.54	1	355-46-4		10/13/2022 03:26
PFOA	3.4	2.0	0.88	0.88	1	335-67-1		10/13/2022 03:26
6:2 FTS	0.84 J--J	1.9	0.69	0.69	1	27619-97-2		10/13/2022 03:26
PFHpS	ND	1.9	0.68	0.68	1	375-92-8		10/13/2022 03:26
PFNA	ND	2.0	0.81	0.81	1	375-95-1		10/13/2022 03:26
PFOSAm	ND	2.0	0.73	0.73	1	754-91-6		10/13/2022 03:26
PFOS	7.3 I J	1.9	0.68	0.68	1	1763-23-1		10/13/2022 03:26
MeFOSA	ND	2.0	0.56	0.56	1	31506-32-8		10/13/2022 03:26
PFDA	0.68 J	2.0	0.62	0.62	1	335-76-2		10/13/2022 03:26
EtFOSAm	ND	2.0	0.59	0.59	1	4151-50-2		10/13/2022 03:26
8:2 FTS	ND	2.0	0.51	0.51	1	39108-34-4		10/13/2022 03:26
9-CI-PF3ON	ND	1.9	0.48	0.48	1	756426-58-1		10/13/2022 03:26
PFNS	ND	2.0	0.60	0.60	1	68259-12-1		10/13/2022 03:26
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		10/13/2022 03:26
NMeFOSAA	0.81 J	2.0	0.71	0.71	1	2355-31-9		10/13/2022 03:26
NEtFOSAA	ND	2.0	0.83	0.83	1	2991-50-6		10/13/2022 03:26
PFDS	ND	2.0	0.65	0.65	1	335-77-3		10/13/2022 03:26
PFDOA	ND	2.0	0.49	0.49	1	307-55-1		10/13/2022 03:26
MeFOSE	1.3 J	2.0	0.53	0.53	1	24448-09-7		10/13/2022 03:26
EtFOSE	ND	2.0	0.91	0.91	1	1691-99-2		10/13/2022 03:26
11-CI-PF3OUdS	ND	1.9	0.57	0.57	1	763051-92-9		10/13/2022 03:26
PFTTrDA	ND	2.0	0.63	0.63	1	72629-94-8		10/13/2022 03:26
PFDoS	ND	2.0	0.60	0.60	1	79780-39-5		10/13/2022 03:26
PFTDA	ND	2.0	0.61	0.61	1	376-06-7		10/13/2022 03:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent-18 20220912
 Lab Sample ID 10625564005
 Lab File ID B221012C_031
 Matrix Industrial_Water
 Collected 09/12/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 241mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	15	2.1	0.52	0.52	1	375-22-4		10/13/2022 03:46
PFPeA	13	2.1	0.85	0.85	1	2706-90-3		10/13/2022 03:46
HFPO-DA	ND	2.1	0.51	0.51	1	13252-13-6		10/13/2022 03:46
PFBS	10	1.8	0.50	0.50	1	375-73-5		10/13/2022 03:46
PFHxA	16	2.1	0.94	0.94	1	307-24-4		10/13/2022 03:46
4:2 FTS	ND	1.9	0.48	0.48	1	757124-72-4		10/13/2022 03:46
PFPeS	2.2 I J	1.9	0.62	0.62	1	2706-91-4		10/13/2022 03:46
PFHpA	5.0	2.1	0.71	0.71	1	375-85-9		10/13/2022 03:46
DONA	ND	2.0	0.95	0.95	1	919005-14-4		10/13/2022 03:46
PFHxS	18	1.9	0.55	0.55	1	355-46-4		10/13/2022 03:46
PFOA	12	2.1	0.89	0.89	1	335-67-1		10/13/2022 03:46
6:2 FTS	4.8 J	2.0	0.70	0.70	1	27619-97-2		10/13/2022 03:46
PFHpS	ND	2.0	0.69	0.69	1	375-92-8		10/13/2022 03:46
PFNA	ND	2.1	0.82	0.82	1	375-95-1		10/13/2022 03:46
PFOSAm	ND	2.1	0.74	0.74	1	754-91-6		10/13/2022 03:46
PFOS	14	1.9	0.69	0.69	1	1763-23-1		10/13/2022 03:46
MeFOSA	ND	2.1	0.57	0.57	1	31506-32-8		10/13/2022 03:46
PFDA	ND	2.1	0.63	0.63	1	335-76-2		10/13/2022 03:46
EtFOSAm	ND	2.1	0.59	0.59	1	4151-50-2		10/13/2022 03:46
8:2 FTS	0.55 J J	2.0	0.52	0.52	1	39108-34-4		10/13/2022 03:46
9-CI-PF3ON	ND	1.9	0.49	0.49	1	756426-58-1		10/13/2022 03:46
PFNS	ND	2.0	0.61	0.61	1	68259-12-1		10/13/2022 03:46
PFUnDA	ND	2.1	0.50	0.50	1	2058-94-8		10/13/2022 03:46
NMeFOSAA	2.3	2.1	0.72	0.72	1	2355-31-9		10/13/2022 03:46
NEtFOSAA	3.4	2.1	0.84	0.84	1	2991-50-6		10/13/2022 03:46
PFDS	ND	2.0	0.66	0.66	1	335-77-3		10/13/2022 03:46
PFDOA	ND	2.1	0.50	0.50	1	307-55-1		10/13/2022 03:46
MeFOSE	1.4 J	2.1	0.54	0.54	1	24448-09-7		10/13/2022 03:46
EtFOSE	ND	2.1	0.92	0.92	1	1691-99-2		10/13/2022 03:46
11-CI-PF3OUdS	ND	2.0	0.58	0.58	1	763051-92-9		10/13/2022 03:46
PFTTrDA	ND	2.1	0.64	0.64	1	72629-94-8		10/13/2022 03:46
PFDoS	ND	2.0	0.61	0.61	1	79780-39-5		10/13/2022 03:46
PFTDA	ND	2.1	0.62	0.62	1	376-06-7		10/13/2022 03:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Biosolids A 20220914
 Lab Sample ID 10625564006
 Lab File ID B221004B_025
 Matrix Solid
 Collected 09/14/2022 08:28
 Received 09/15/2022 08:50
 Extraction Date 09/22/2022 16:00

Total Amount Extracted 5.17g
 Percent Moisture 68.99%
 Dry Weight Extracted 1.60g
 Ical ID 221003A02
 CCal File B221004B_024
 Ending CCal File B221004B_027
 Blank File B221004B_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	0.31	0.088	0.088	1	375-22-4		10/05/2022 04:44
PFPeA	17	0.31	0.089	0.089	1	2706-90-3		10/05/2022 04:44
HFPO-DA	ND	0.31	0.087	0.087	1	13252-13-6		10/05/2022 04:44
PFBS	1.6	0.28	0.082	0.082	1	375-73-5		10/05/2022 04:44
PFHxA	42 ✓	1.6	0.43	0.43	5	307-24-4		10/18/2022 04:17
4:2 FTS	ND	0.29	0.072	0.072	1	757124-72-4		10/05/2022 04:44
PFPeS	ND	0.29	0.075	0.075	1	2706-91-4		10/05/2022 04:44
PFHpA	4.9	0.31	0.11	0.11	1	375-85-9		10/05/2022 04:44
DONA	ND	0.29	0.11	0.11	1	919005-14-4		10/05/2022 04:44
PFHxS	1.0	0.28	0.068	0.068	1	355-46-4		10/05/2022 04:44
PFOA	24	0.31	0.097	0.097	1	335-67-1		10/05/2022 04:44
6:2 FTS	2.4 J	0.30	0.13	0.13	1	27619-97-2		10/05/2022 04:44
PFHpS	0.19 J	0.30	0.087	0.087	1	375-92-8		10/05/2022 04:44
PFNA	1.4	0.31	0.097	0.097	1	375-95-1		10/05/2022 04:44
PFOSAm	0.97	0.31	0.092	0.092	1	754-91-6		10/05/2022 04:44
PFOS	14	0.29	0.092	0.092	1	1763-23-1		10/05/2022 04:44
MeFOSA	0.096 ✓ J	0.31	0.085	0.085	1	31506-32-8		10/05/2022 04:44
PFDA	12	0.31	0.071	0.071	1	335-76-2		10/05/2022 04:44
EtFOSAm	0.18 ✓ J	0.31	0.080	0.080	1	4151-50-2		10/05/2022 04:44
8:2 FTS	1.1	0.30	0.14	0.14	1	39108-34-4		10/05/2022 04:44
9-CI-PF3ON	ND	0.29	0.078	0.078	1	756426-58-1		10/05/2022 04:44
PFNS	ND	0.30	0.11	0.11	1	68259-12-1		10/05/2022 04:44
PFUnDA	1.3	0.31	0.094	0.094	1	2058-94-8		10/05/2022 04:44
NMeFOSAA	31	0.31	0.088	0.088	1	2355-31-9		10/05/2022 04:44
NEtFOSAA	7.9	0.31	0.13	0.13	1	2991-50-6		10/05/2022 04:44
PFDS	1.7	0.30	0.088	0.088	1	335-77-3		10/05/2022 04:44
PFDOA	3.8 J	0.31	0.10	0.10	1	307-55-1		10/05/2022 04:44
MeFOSE	5.1	0.31	0.094	0.094	1	24448-09-7		10/05/2022 04:44
EtFOSE	2.4	0.31	0.10	0.10	1	1691-99-2		10/05/2022 04:44
11-CI-PF3OUdS	ND	0.29	0.079	0.079	1	763051-92-9		10/05/2022 04:44
PFTTrDA	0.74 J	0.31	0.099	0.099	1	72629-94-8		10/05/2022 04:44
PFDoS	ND	0.30	0.081	0.081	1	79780-39-5		10/05/2022 04:44
PFTDA	1.1 J	0.31	0.11	0.11	1	376-06-7		10/05/2022 04:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Biosolids B 20220914
 Lab Sample ID 10625564007
 Lab File ID B221004B_026
 Matrix Solid
 Collected 09/14/2022 08:35
 Received 09/15/2022 08:50
 Extraction Date 09/22/2022 16:00

Total Amount Extracted 5.42g
 Percent Moisture 94.67%
 Dry Weight Extracted 0.289g
 Ical ID 221003A02
 CCal File B221004B_024
 Ending CCal File B221004B_027
 Blank File B221004B_005

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	MDL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	1.7	0.49	0.49	1	375-22-4		10/05/2022 05:04
PFPeA	0.69 J	1.7	0.49	0.49	1	2706-90-3		10/05/2022 05:04
HFPO-DA	ND	1.7	0.48	0.48	1	13252-13-6		10/05/2022 05:04
PFBS	1.2 I/J	1.5	0.46	0.46	1	375-73-5		10/05/2022 05:04
PFHxA	2.4	1.7	0.48	0.48	1	307-24-4		10/05/2022 05:04
4:2 FTS	ND	1.6	0.40	0.40	1	757124-72-4		10/05/2022 05:04
PFPeS	ND	1.6	0.42	0.42	1	2706-91-4		10/05/2022 05:04
PFHpA	ND	1.7	0.60	0.60	1	375-85-9		10/05/2022 05:04
DONA	ND	1.6	0.63	0.63	1	919005-14-4		10/05/2022 05:04
PFHxS	2.0	1.6	0.38	0.38	1	355-46-4		10/05/2022 05:04
PFOA	1.4 J	1.7	0.54	0.54	1	335-67-1		10/05/2022 05:04
6:2 FTS	ND	1.6	0.72	0.72	1	27619-97-2		10/05/2022 05:04
PFHpS	ND	1.6	0.48	0.48	1	375-92-8		10/05/2022 05:04
PFNA	0.56 J	1.7	0.54	0.54	1	375-95-1		10/05/2022 05:04
PFOSAm	0.52 J	1.7	0.51	0.51	1	754-91-6		10/05/2022 05:04
PFOS	8.7	1.6	0.51	0.51	1	1763-23-1		10/05/2022 05:04
MeFOSA	R ND	1.7	0.47	0.47	1	31506-32-8		10/05/2022 05:04
PFDA	4.6	1.7	0.39	0.39	1	335-76-2		10/05/2022 05:04
EtFOSAm	R ND	1.7	0.44	0.44	1	4151-50-2		10/05/2022 05:04
8:2 FTS	ND	1.7	0.76	0.76	1	39108-34-4		10/05/2022 05:04
9-CI-PF3ON	ND	1.6	0.43	0.43	1	756426-58-1		10/05/2022 05:04
PFNS	ND	1.7	0.60	0.60	1	68259-12-1		10/05/2022 05:04
PFUnDA	1.0 J	1.7	0.52	0.52	1	2058-94-8		10/05/2022 05:04
NMeFOSAA	13	1.7	0.49	0.49	1	2355-31-9		10/05/2022 05:04
NEtFOSAA	6.7	1.7	0.70	0.70	1	2991-50-6		10/05/2022 05:04
PFDS	1.8	1.7	0.49	0.49	1	335-77-3		10/05/2022 05:04
PFDOA	3.6	1.7	0.57	0.57	1	307-55-1		10/05/2022 05:04
MeFOSE	6.9	1.7	0.52	0.52	1	24448-09-7		10/05/2022 05:04
EtFOSE	2.1	1.7	0.56	0.56	1	1691-99-2		10/05/2022 05:04
11-CI-PF3OUdS	ND	1.6	0.44	0.44	1	763051-92-9		10/05/2022 05:04
PFTTrDA	0.57 J	1.7	0.55	0.55	1	72629-94-8		10/05/2022 05:04
PFDoS	0.89 I/J	1.7	0.45	0.45	1	79780-39-5		10/05/2022 05:04
PFTDA	0.82 J	1.7	0.59	0.59	1	376-06-7		10/05/2022 05:04

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID EB-01 20220914
 Lab Sample ID 10625564008
 Lab File ID B221012C_032
 Matrix Industrial_Water
 Collected 09/14/2022 08:20
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 254mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	0.49	0.49	1	375-22-4		10/13/2022 04:06
PFPeA	ND	2.0	0.81	0.81	1	2706-90-3		10/13/2022 04:06
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		10/13/2022 04:06
PFBS	ND	1.7	0.48	0.48	1	375-73-5		10/13/2022 04:06
PFHxA	ND	2.0	0.89	0.89	1	307-24-4		10/13/2022 04:06
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		10/13/2022 04:06
PFPeS	ND	1.8	0.59	0.59	1	2706-91-4		10/13/2022 04:06
PFHpA	ND	2.0	0.68	0.68	1	375-85-9		10/13/2022 04:06
DONA	ND	1.9	0.90	0.90	1	919005-14-4		10/13/2022 04:06
PFHxS	ND	1.8	0.52	0.52	1	355-46-4		10/13/2022 04:06
PFOA	ND	2.0	0.85	0.85	1	335-67-1		10/13/2022 04:06
6:2 FTS	ND	1.9	0.66	0.66	1	27619-97-2		10/13/2022 04:06
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/13/2022 04:06
PFNA	ND	2.0	0.78	0.78	1	375-95-1		10/13/2022 04:06
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		10/13/2022 04:06
PFOS	ND	1.8	0.65	0.65	1	1763-23-1		10/13/2022 04:06
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		10/13/2022 04:06
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/13/2022 04:06
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		10/13/2022 04:06
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		10/13/2022 04:06
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		10/13/2022 04:06
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/13/2022 04:06
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/13/2022 04:06
NMeFOSAA	ND	2.0	0.68	0.68	1	2355-31-9		10/13/2022 04:06
NEtFOSAA	ND	2.0	0.80	0.80	1	2991-50-6		10/13/2022 04:06
PFDS	ND	1.9	0.63	0.63	1	335-77-3		10/13/2022 04:06
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		10/13/2022 04:06
MeFOSE	ND	2.0	0.51	0.51	1	24448-09-7		10/13/2022 04:06
EtFOSE	ND	2.0	0.87	0.87	1	1691-99-2		10/13/2022 04:06
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		10/13/2022 04:06
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		10/13/2022 04:06
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		10/13/2022 04:06
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/13/2022 04:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20220913
 Lab Sample ID 10625564009
 Lab File ID B221012C_033
 Matrix Industrial_Water
 Collected 09/13/2022 11:59
 Received 09/15/2022 08:50
 Extraction Date 10/10/2022 13:47

Total Amount Extracted 259mL
 Ical ID 221003A02
 CCal File B221012C_026
 Ending CCal File B221013A_003
 Blank File B221012C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	13	1.9	0.48	0.48	1	375-22-4		10/13/2022 04:26
PFPeA	31	1.9	0.79	0.79	1	2706-90-3		10/13/2022 04:26
HFPO-DA	ND	1.9	0.48	0.48	1	13252-13-6		10/13/2022 04:26
PFBS	6.4	1.7	0.47	0.47	1	375-73-5		10/13/2022 04:26
PFHxA	26	1.9	0.88	0.88	1	307-24-4		10/13/2022 04:26
4:2 FTS	ND	1.8	0.45	0.45	1	757124-72-4		10/13/2022 04:26
PFPeS	0.79 I+J	1.8	0.58	0.58	1	2706-91-4		10/13/2022 04:26
PFHpA	3.9	1.9	0.66	0.66	1	375-85-9		10/13/2022 04:26
DONA	ND	1.8	0.89	0.89	1	919005-14-4		10/13/2022 04:26
PFHxS	9.6	1.8	0.51	0.51	1	355-46-4		10/13/2022 04:26
PFOA	11	1.9	0.83	0.83	1	335-67-1		10/13/2022 04:26
6:2 FTS	2.6 J	1.8	0.65	0.65	1	27619-97-2		10/13/2022 04:26
PFHpS	ND	1.8	0.64	0.64	1	375-92-8		10/13/2022 04:26
PFNA	0.97 J	1.9	0.77	0.77	1	375-95-1		10/13/2022 04:26
PFOSAm	ND	1.9	0.69	0.69	1	754-91-6		10/13/2022 04:26
PFOS	5.9	1.8	0.64	0.64	1	1763-23-1		10/13/2022 04:26
MeFOSA	ND	1.9	0.53	0.53	1	31506-32-8		10/13/2022 04:26
PFDA	1.4 J	1.9	0.59	0.59	1	335-76-2		10/13/2022 04:26
EtFOSAm	ND	1.9	0.55	0.55	1	4151-50-2		10/13/2022 04:26
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/13/2022 04:26
9-CI-PF3ON	ND	1.8	0.45	0.45	1	756426-58-1		10/13/2022 04:26
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		10/13/2022 04:26
PFUnDA	ND	1.9	0.47	0.47	1	2058-94-8		10/13/2022 04:26
NMeFOSAA	1.2 J	1.9	0.67	0.67	1	2355-31-9		10/13/2022 04:26
NEtFOSAA	ND	1.9	0.79	0.79	1	2991-50-6		10/13/2022 04:26
PFDS	ND	1.9	0.62	0.62	1	335-77-3		10/13/2022 04:26
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		10/13/2022 04:26
MeFOSE	ND	1.9	0.50	0.50	1	24448-09-7		10/13/2022 04:26
EtFOSE	ND	1.9	0.86	0.86	1	1691-99-2		10/13/2022 04:26
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		10/13/2022 04:26
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		10/13/2022 04:26
PFDoS	ND	1.9	0.57	0.57	1	79780-39-5		10/13/2022 04:26
PFTDA	ND	1.9	0.58	0.58	1	376-06-7		10/13/2022 04:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

October 2022

Data Quality and Usability Review – October 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 12/2/2022

Madison Metropolitan Sewerage District (MMSD) collected influent and effluent samples at the Nine Springs wastewater treatment plant on October 10 and 11, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10629584.

Samples included in this review are listed below:

- Influent 02 20221010
- Influent 07 20221010
- Influent 08 20221010
- Influent 11 20221010
- Influent 18 20221010
- Effluent 20221011

Each sample was analyzed for the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;

- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization with the exception of the nondetect result for EtFOSE in sample Influent 18 20221010 which was rejected due to significantly low isotopically labeled surrogate recovery; this issue has a major impact on the data usability.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The data package was found to be complete as received from the laboratory.
- The cooler temperature upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.

- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the method blanks.
- No field blank samples were collected with this sample set.
- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS percent recoveries (%Rs) for all analytes were within QC limits.
- MS/MSD analyses were performed on sample Influent 02 20221010 for PFAS. The MS %Rs and MS/MSD relative percent differences were within the acceptance limits (50-150% and 30%, respectively). The MSD %Rs for EtFOSE (175%), PFTrDA (160%), and PFDoS (153%) were above the acceptance limits (50-150%). PFTrDA and PFDoS were not detected in sample Influent 02 20221010; therefore, no qualification was required for PFTrDA and PFDoS on this basis. The positive result for EtFOSE was already qualified as estimated (J) in sample Influent 02 20221010 due to detection < the QL; thus, no further qualification was required for EtFOSE.
- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent 02 20221010	13C2_4:2FTS	301	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	237		
	13C2_6:2FTS	374		
	d9-N-EtFOSE	5	10-150	The positive results for 6:2 FTS and EtFOSE in sample Influent 02 20221010 were already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent 07 20221010	13C2_4:2FTS	319	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	221		
	13C2_6:2FTS	384		
	d9-N-EtFOSE	5	10-150	The positive results for 6:2 FTS and EtFOSE in sample Influent 07 20221010 were already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent 08 20221010	13C2_4:2FTS	302	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	185		
	13C2_6:2FTS	375		
	d9-N-EtFOSE	4	10-150	The positive results for 6:2 FTS and EtFOSE in sample Influent 08 20221010 were already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
	13C8_PFOSA	24	25-150	The nondetect result for PFOSA was qualified as estimated (UJ) in sample Influent 08 20221010.
Influent 11 20221010	13C2_4:2FTS	317	25-150	No validation actions were required on this basis since 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in this sample.
	13C2_6:2FTS	383		
	13C2_8:2FTS	254		
	d9-N-EtFOSE	6	10-150	The positive result for EtFOSE in sample Influent 11 20221010 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent 18 20221010	13C2_4:2FTS	332	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	216		
	13C2_6:2FTS	390		
	d9-N-EtFOSE	6	10-150	The nondetect result for EtFOSE was rejected (R) in sample Influent 18 20221010 due to significantly low (<10%) %R.
Effluent 20221011	13C2_4:2FTS	247	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	215		
	13C2_6:2FTS	222		

- A field duplicate pair was not collected with this sample set.
 - Laboratory duplicate analyses were not performed on a sample from this data set.
 - The discussion related to the total PFAS analyses in the laboratory narrative noted that all samples required centrifugation prior to extraction due to excessive solids present in the samples. The laboratory stated that centrifugation was performed following the laboratory's PFAS Aqueous Centrifuge Protocol; samples were spiked with isotopically labeled surrogates and centrifuged for 10 minutes. Sample bottles were rinsed with methanol and the bottle rinsate was added to the elution. Samples were concentrated to <1mL and were reconstituted to 1mL using methanol by transfer pipet. No qualification was applied to the results based on these laboratory observations.
 - The QLs were within the ranges of QLs suggested in the SAB of 2-5 ng/L for individual PFAS.
 - The limits of quantitation (LOQs) for TSS in samples Influent 02 20221010, Influent 07 20221010, Influent 08 20221010, Influent 11 20221010, and Influent 18 20221010 were 1.43-2x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in these samples. No validation action was required on this basis.
 - The results for the following PFAS in the samples listed below were flagged with an "I" by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive results for the PFAS in the samples listed below were qualified as estimated (J).
 - PFHxA, PFPeS*, PFHxS, and PFOS in sample Influent 02 20221010;
 - PFHxA, PFHxS, and PFOS in samples Influent 08 20221010 and Influent 11 20221010; and
 - PFPeS* in sample Influent 18 20221010.
- * These results were also qualified as estimated (J) by the laboratory due to detection < the QL.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10629584

Sample: Influent 02 20221010 **Lab ID: 10629584001** Collected: 10/10/22 23:59 Received: 10/13/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	247	mg/L	14.3	7.1	1		10/14/22 10:32		

Sample: Influent 07 20221010 **Lab ID: 10629584002** Collected: 10/10/22 23:59 Received: 10/13/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	175	mg/L	16.7	8.3	1		10/14/22 12:13		

Sample: Influent 08 20221010 **Lab ID: 10629584003** Collected: 10/10/22 23:59 Received: 10/13/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	243	mg/L	20.0	10.0	1		10/14/22 12:13		

Sample: Influent 11 20221010 **Lab ID: 10629584004** Collected: 10/10/22 23:59 Received: 10/13/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	224	mg/L	20.0	10.0	1		10/14/22 12:13		

Sample: Influent 18 20221010 **Lab ID: 10629584005** Collected: 10/10/22 23:59 Received: 10/13/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	193	mg/L	20.0	10.0	1		10/14/22 12:13		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10629584

Sample: Effluent 20221011 **Lab ID: 10629584006** Collected: 10/11/22 23:59 Received: 10/13/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Pace Analytical Services - Minneapolis									
Total Suspended Solids	<5.0	mg/L	10.0	5.0	1		10/14/22 13:59		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 02 20221010
 Lab Sample ID 10629584001
 Lab File ID B221025B_037
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 255mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.4	2.0	0.49	0.49	1	375-22-4		10/26/2022 03:25
PFPeA	4.1	2.0	0.81	0.81	1	2706-90-3		10/26/2022 03:25
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		10/26/2022 03:25
PFBS	2.5	1.7	0.48	0.48	1	375-73-5		10/26/2022 03:25
PFHxA	3.8 I J	2.0	0.89	0.89	1	307-24-4		10/26/2022 03:25
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		10/26/2022 03:25
PFPeS	0.61 I J J	1.8	0.59	0.59	1	2706-91-4		10/26/2022 03:25
PFHpA	1.3 J	2.0	0.68	0.68	1	375-85-9		10/26/2022 03:25
DONA	ND	1.9	0.90	0.90	1	919005-14-4		10/26/2022 03:25
PFHxS	4.6 I J	1.8	0.52	0.52	1	355-46-4		10/26/2022 03:25
PFOA	3.0	2.0	0.84	0.84	1	335-67-1		10/26/2022 03:25
6:2 FTS	1.6 J J J	1.9	0.66	0.66	1	27619-97-2		10/26/2022 03:25
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/26/2022 03:25
PFNA	ND	2.0	0.78	0.78	1	375-95-1		10/26/2022 03:25
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		10/26/2022 03:25
PFOS	7.0 I J	1.8	0.65	0.65	1	1763-23-1		10/26/2022 03:25
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		10/26/2022 03:25
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/26/2022 03:25
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		10/26/2022 03:25
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/26/2022 03:25
9-Cl-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		10/26/2022 03:25
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/26/2022 03:25
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/26/2022 03:25
NMeFOSAA	ND	2.0	0.68	0.68	1	2355-31-9		10/26/2022 03:25
NEtFOSAA	4.3	2.0	0.80	0.80	1	2991-50-6		10/26/2022 03:25
PFDS	ND	1.9	0.63	0.63	1	335-77-3		10/26/2022 03:25
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		10/26/2022 03:25
MeFOSE	1.2 J	2.0	0.51	0.51	1	24448-09-7		10/26/2022 03:25
EtFOSE	1.3 J J J	2.0	0.87	0.87	1	1691-99-2		10/26/2022 03:25
11-Cl-PF3OUdS	ND	1.8	0.55	0.55	1	763051-92-9		10/26/2022 03:25
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		10/26/2022 03:25
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		10/26/2022 03:25
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 03:25

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 07 20221010
 Lab Sample ID 10629584002
 Lab File ID B221025B_038
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 252mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	14	2.0	0.49	0.49	1	375-22-4		10/26/2022 03:45
PFPeA	7.7	2.0	0.81	0.81	1	2706-90-3		10/26/2022 03:45
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		10/26/2022 03:45
PFBS	5.2	1.8	0.48	0.48	1	375-73-5		10/26/2022 03:45
PFHxA	13	2.0	0.90	0.90	1	307-24-4		10/26/2022 03:45
4:2 FTS	ND	1.9	0.46	0.46	1	757124-72-4		10/26/2022 03:45
PFPeS	1.4 J	1.9	0.60	0.60	1	2706-91-4		10/26/2022 03:45
PFHpA	2.5	2.0	0.68	0.68	1	375-85-9		10/26/2022 03:45
DONA	ND	1.9	0.91	0.91	1	919005-14-4		10/26/2022 03:45
PFHxS	12	1.8	0.53	0.53	1	355-46-4		10/26/2022 03:45
PFOA	6.6	2.0	0.85	0.85	1	335-67-1		10/26/2022 03:45
6:2 FTS	1.7 J--J	1.9	0.67	0.67	1	27619-97-2		10/26/2022 03:45
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/26/2022 03:45
PFNA	ND	2.0	0.79	0.79	1	375-95-1		10/26/2022 03:45
PFOSAm	ND	2.0	0.71	0.71	1	754-91-6		10/26/2022 03:45
PFOS	7.5	1.8	0.66	0.66	1	1763-23-1		10/26/2022 03:45
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		10/26/2022 03:45
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/26/2022 03:45
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		10/26/2022 03:45
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		10/26/2022 03:45
9-Cl-PF3ON	ND	1.8	0.47	0.47	1	756426-58-1		10/26/2022 03:45
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/26/2022 03:45
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/26/2022 03:45
NMeFOSAA	1.2 J	2.0	0.69	0.69	1	2355-31-9		10/26/2022 03:45
NEtFOSAA	1.2 J	2.0	0.81	0.81	1	2991-50-6		10/26/2022 03:45
PFDS	ND	1.9	0.64	0.64	1	335-77-3		10/26/2022 03:45
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		10/26/2022 03:45
MeFOSE	2.6	2.0	0.52	0.52	1	24448-09-7		10/26/2022 03:45
EtFOSE	2.0 J--J	2.0	0.88	0.88	1	1691-99-2		10/26/2022 03:45
11-Cl-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		10/26/2022 03:45
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		10/26/2022 03:45
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		10/26/2022 03:45
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 03:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 08 20221010
 Lab Sample ID 10629584003
 Lab File ID B221025B_039
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 252mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.1	2.0	0.49	0.49	1	375-22-4		10/26/2022 04:06
PFPeA	3.2	2.0	0.81	0.81	1	2706-90-3		10/26/2022 04:06
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		10/26/2022 04:06
PFBS	1.4 J	1.8	0.48	0.48	1	375-73-5		10/26/2022 04:06
PFHxA	3.5 I J	2.0	0.90	0.90	1	307-24-4		10/26/2022 04:06
4:2 FTS	ND	1.9	0.46	0.46	1	757124-72-4		10/26/2022 04:06
PFPeS	ND	1.9	0.60	0.60	1	2706-91-4		10/26/2022 04:06
PFHpA	0.76 J	2.0	0.68	0.68	1	375-85-9		10/26/2022 04:06
DONA	ND	1.9	0.91	0.91	1	919005-14-4		10/26/2022 04:06
PFHxS	3.3 I J	1.8	0.53	0.53	1	355-46-4		10/26/2022 04:06
PFOA	2.2	2.0	0.85	0.85	1	335-67-1		10/26/2022 04:06
6:2 FTS	0.83 J-- J	1.9	0.67	0.67	1	27619-97-2		10/26/2022 04:06
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		10/26/2022 04:06
PFNA	ND	2.0	0.79	0.79	1	375-95-1		10/26/2022 04:06
PFOSAm	ND UJ	2.0	0.71	0.71	1	754-91-6		10/26/2022 04:06
PFOS	8.6 I J	1.8	0.66	0.66	1	1763-23-1		10/26/2022 04:06
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		10/26/2022 04:06
PFDA	ND	2.0	0.60	0.60	1	335-76-2		10/26/2022 04:06
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		10/26/2022 04:06
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		10/26/2022 04:06
9-Cl-PF3ON	ND	1.8	0.47	0.47	1	756426-58-1		10/26/2022 04:06
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		10/26/2022 04:06
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		10/26/2022 04:06
NMeFOSAA	ND	2.0	0.69	0.69	1	2355-31-9		10/26/2022 04:06
NEtFOSAA	ND	2.0	0.81	0.81	1	2991-50-6		10/26/2022 04:06
PFDS	ND	1.9	0.64	0.64	1	335-77-3		10/26/2022 04:06
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		10/26/2022 04:06
MeFOSE	2.6	2.0	0.52	0.52	1	24448-09-7		10/26/2022 04:06
EtFOSE	1.5 J-- J	2.0	0.88	0.88	1	1691-99-2		10/26/2022 04:06
11-Cl-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		10/26/2022 04:06
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		10/26/2022 04:06
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		10/26/2022 04:06
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 04:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Page 1 of 2

Client Sample ID Influent 11 20221010
 Lab Sample ID 10629584004
 Lab File ID B221025B_040
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 258mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	3.7	1.9	0.48	0.48	1	375-22-4		10/26/2022 04:26
PFPeA	4.4	1.9	0.79	0.79	1	2706-90-3		10/26/2022 04:26
HFPO-DA	ND	1.9	0.48	0.48	1	13252-13-6		10/26/2022 04:26
PFBS	2.4	1.7	0.47	0.47	1	375-73-5		10/26/2022 04:26
PFHxA	4.3 I J	1.9	0.88	0.88	1	307-24-4		10/26/2022 04:26
4:2 FTS	ND	1.8	0.45	0.45	1	757124-72-4		10/26/2022 04:26
PFPeS	ND	1.8	0.58	0.58	1	2706-91-4		10/26/2022 04:26
PFHpA	0.96 J	1.9	0.67	0.67	1	375-85-9		10/26/2022 04:26
DONA	ND	1.8	0.89	0.89	1	919005-14-4		10/26/2022 04:26
PFHxS	4.0 I J	1.8	0.51	0.51	1	355-46-4		10/26/2022 04:26
PFOA	2.0	1.9	0.83	0.83	1	335-67-1		10/26/2022 04:26
6:2 FTS	ND	1.8	0.65	0.65	1	27619-97-2		10/26/2022 04:26
PFHpS	ND	1.8	0.65	0.65	1	375-92-8		10/26/2022 04:26
PFNA	ND	1.9	0.77	0.77	1	375-95-1		10/26/2022 04:26
PFOSAm	ND	1.9	0.69	0.69	1	754-91-6		10/26/2022 04:26
PFOS	4.3 I J	1.8	0.64	0.64	1	1763-23-1		10/26/2022 04:26
MeFOSA	ND	1.9	0.53	0.53	1	31506-32-8		10/26/2022 04:26
PFDA	ND	1.9	0.59	0.59	1	335-76-2		10/26/2022 04:26
EtFOSAm	ND	1.9	0.56	0.56	1	4151-50-2		10/26/2022 04:26
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/26/2022 04:26
9-Cl-PF3ON	ND	1.8	0.45	0.45	1	756426-58-1		10/26/2022 04:26
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		10/26/2022 04:26
PFUnDA	ND	1.9	0.47	0.47	1	2058-94-8		10/26/2022 04:26
NMeFOSAA	ND	1.9	0.67	0.67	1	2355-31-9		10/26/2022 04:26
NEtFOSAA	ND	1.9	0.79	0.79	1	2991-50-6		10/26/2022 04:26
PFDS	ND	1.9	0.62	0.62	1	335-77-3		10/26/2022 04:26
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		10/26/2022 04:26
MeFOSE	2.0	1.9	0.50	0.50	1	24448-09-7		10/26/2022 04:26
EtFOSE	1.0 J-- J	1.9	0.86	0.86	1	1691-99-2		10/26/2022 04:26
11-Cl-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		10/26/2022 04:26
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		10/26/2022 04:26
PFDoS	ND	1.9	0.57	0.57	1	79780-39-5		10/26/2022 04:26
PFTDA	ND	1.9	0.58	0.58	1	376-06-7		10/26/2022 04:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 18 20221010
 Lab Sample ID 10629584005
 Lab File ID B221025B_041
 Matrix Industrial_Water
 Collected 10/10/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 256mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	11	2.0	0.49	0.49	1	375-22-4		10/26/2022 04:46
PFPeA	6.8	2.0	0.80	0.80	1	2706-90-3		10/26/2022 04:46
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		10/26/2022 04:46
PFBS	4.6	1.7	0.47	0.47	1	375-73-5		10/26/2022 04:46
PFHxA	7.5	2.0	0.89	0.89	1	307-24-4		10/26/2022 04:46
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		10/26/2022 04:46
PFPeS	1.8 I J	1.8	0.59	0.59	1	2706-91-4		10/26/2022 04:46
PFHpA	2.2	2.0	0.67	0.67	1	375-85-9		10/26/2022 04:46
DONA	ND	1.8	0.90	0.90	1	919005-14-4		10/26/2022 04:46
PFHxS	15	1.8	0.52	0.52	1	355-46-4		10/26/2022 04:46
PFOA	6.8	2.0	0.84	0.84	1	335-67-1		10/26/2022 04:46
6:2 FTS	2.3 J	1.9	0.66	0.66	1	27619-97-2		10/26/2022 04:46
PFHpS	ND	1.9	0.65	0.65	1	375-92-8		10/26/2022 04:46
PFNA	ND	2.0	0.78	0.78	1	375-95-1		10/26/2022 04:46
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		10/26/2022 04:46
PFOS	9.6	1.8	0.65	0.65	1	1763-23-1		10/26/2022 04:46
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		10/26/2022 04:46
PFDA	ND	2.0	0.59	0.59	1	335-76-2		10/26/2022 04:46
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		10/26/2022 04:46
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		10/26/2022 04:46
9-Cl-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		10/26/2022 04:46
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		10/26/2022 04:46
PFUnDA	ND	2.0	0.47	0.47	1	2058-94-8		10/26/2022 04:46
NMeFOSAA	1.0 J	2.0	0.68	0.68	1	2355-31-9		10/26/2022 04:46
NEtFOSAA	1.4 J	2.0	0.79	0.79	1	2991-50-6		10/26/2022 04:46
PFDS	ND	1.9	0.63	0.63	1	335-77-3		10/26/2022 04:46
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		10/26/2022 04:46
MeFOSE	2.4	2.0	0.51	0.51	1	24448-09-7		10/26/2022 04:46
EtFOSE	R ND	2.0	0.87	0.87	1	1691-99-2		10/26/2022 04:46
11-Cl-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		10/26/2022 04:46
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		10/26/2022 04:46
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		10/26/2022 04:46
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		10/26/2022 04:46

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone: 612.607.1700
 Fax: 612.607.6444
 www.pacelabs.com

Sample Analysis Summary
 PFAS by Isotope Dilution

Page 1 of 2

Client Sample ID Effluent 20221011
 Lab Sample ID 10629584006
 Lab File ID B221025B_042
 Matrix Industrial_Water
 Collected 10/11/2022 23:59
 Received 10/13/2022 08:50
 Extraction Date 10/20/2022 15:36

Total Amount Extracted 261mL
 Ical ID 221024A02
 CCal File B221025B_036
 Ending CCal File B221025B_045
 Blank File B221025B_026

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	9.6	1.9	0.48	0.48	1	375-22-4		10/26/2022 05:06
PFPeA	20	1.9	0.79	0.79	1	2706-90-3		10/26/2022 05:06
HFPO-DA	ND	1.9	0.47	0.47	1	13252-13-6		10/26/2022 05:06
PFBS	2.3	1.7	0.46	0.46	1	375-73-5		10/26/2022 05:06
PFHxA	17	1.9	0.87	0.87	1	307-24-4		10/26/2022 05:06
4:2 FTS	ND	1.8	0.45	0.45	1	757124-72-4		10/26/2022 05:06
PFPeS	ND	1.8	0.58	0.58	1	2706-91-4		10/26/2022 05:06
PFHpA	2.1	1.9	0.66	0.66	1	375-85-9		10/26/2022 05:06
DONA	ND	1.8	0.88	0.88	1	919005-14-4		10/26/2022 05:06
PFHxS	7.1	1.7	0.51	0.51	1	355-46-4		10/26/2022 05:06
PFOA	8.5	1.9	0.82	0.82	1	335-67-1		10/26/2022 05:06
6:2 FTS	0.88 J-J	1.8	0.65	0.65	1	27619-97-2		10/26/2022 05:06
PFHpS	ND	1.8	0.64	0.64	1	375-92-8		10/26/2022 05:06
PFNA	1.3 J	1.9	0.76	0.76	1	375-95-1		10/26/2022 05:06
PFOSAm	ND	1.9	0.69	0.69	1	754-91-6		10/26/2022 05:06
PFOS	5.2	1.8	0.64	0.64	1	1763-23-1		10/26/2022 05:06
MeFOSA	ND	1.9	0.53	0.53	1	31506-32-8		10/26/2022 05:06
PFDA	1.3 J	1.9	0.58	0.58	1	335-76-2		10/26/2022 05:06
EtFOSAm	ND	1.9	0.55	0.55	1	4151-50-2		10/26/2022 05:06
8:2 FTS	ND	1.8	0.48	0.48	1	39108-34-4		10/26/2022 05:06
9-CI-PF3ON	ND	1.8	0.45	0.45	1	756426-58-1		10/26/2022 05:06
PFNS	ND	1.8	0.56	0.56	1	68259-12-1		10/26/2022 05:06
PFUnDA	ND	1.9	0.46	0.46	1	2058-94-8		10/26/2022 05:06
NMeFOSAA	1.2 J	1.9	0.66	0.66	1	2355-31-9		10/26/2022 05:06
NEtFOSAA	ND	1.9	0.78	0.78	1	2991-50-6		10/26/2022 05:06
PFDS	ND	1.8	0.61	0.61	1	335-77-3		10/26/2022 05:06
PFDOA	ND	1.9	0.46	0.46	1	307-55-1		10/26/2022 05:06
MeFOSE	ND	1.9	0.50	0.50	1	24448-09-7		10/26/2022 05:06
EtFOSE	ND	1.9	0.85	0.85	1	1691-99-2		10/26/2022 05:06
11-CI-PF3OUdS	ND	1.8	0.53	0.53	1	763051-92-9		10/26/2022 05:06
PFTTrDA	ND	1.9	0.60	0.60	1	72629-94-8		10/26/2022 05:06
PFDoS	ND	1.9	0.57	0.57	1	79780-39-5		10/26/2022 05:06
PFTDA	ND	1.9	0.57	0.57	1	376-06-7		10/26/2022 05:06

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

November 2022

Data Quality and Usability Review – November 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 1/6/2023

Madison Metropolitan Sewerage District (MMSD) collected influent and effluent samples at the Nine Springs wastewater treatment plant on November 14 and 15, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10634264.

Samples included in this review are listed below:

- Influent 02 20221114
- Influent 07 20221114
- Influent 08 20221114
- Influent 11 20221114
- Influent 18 20221114
- Effluent 20221115

Each sample was analyzed for the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;

- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.
- Data are usable for the purposes of the additional characterization.
- The issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The data package was found to be complete as received from the laboratory.
- The cooler temperature upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers,

on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.

- A method blank was analyzed with each analytical batch for PFAS and TSS. Target analytes were not detected in the method blanks.
- No field blank samples were collected with this sample set.
- All samples were extracted and/or prepared and analyzed within the holding time.
- The LCS/LCSD percent recoveries (%Rs) for all analytes were within QC limits. The relative percent differences (RPDs) for all analytes were above the QC limits (30%) in the LCS/LCSD analyses due to a double spike on the LCS as indicated in the discussion and Known Concentrations reported by the laboratory; therefore, the LCS/LCSD RPDs were not applicable. There is no adverse impact on the data usability due to this issue since the %Rs for all analytes were within QC limits in the LCS and LCSD. No validation actions were taken on this basis.
- MS/MSD analyses were not performed on a sample from this data set.
- The following table summarizes the isotopically labeled surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Isotopically Labeled Surrogate	%R	%R Acceptance Limits	Action
Influent 02 20221114	13C2_4:2FTS	246	25-150	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	252		
	13C2_6:2FTS	398		The positive result for 6:2 FTS in sample Influent 02 20221114 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent 07 20221114	13C2_4:2FTS	310		No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.
	13C2_8:2FTS	233		
	13C2_6:2FTS	460		The positive result for 6:2 FTS in sample Influent 07 20221114 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.
Influent 08 20221114	13C2_4:2FTS	313		No validation actions were required on this basis since 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in this sample.
	13C2_6:2FTS	488		
	13C2_8:2FTS	280		
Influent 11 20221114	13C2_4:2FTS	288		No validation actions were required on this basis since 4:2 FTS, 6:2 FTS, and 8:2 FTS were not detected in this sample.
	13C2_6:2FTS	533		
	13C2_8:2FTS	207		
Influent 18 20221114	13C2_4:2FTS	344	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.	
	13C2_8:2FTS	234		
	13C2_6:2FTS	527	The positive result for 6:2 FTS in sample Influent 18 20221114 was qualified as estimated (J).	
Effluent 20221115	13C2_4:2FTS	267	No validation actions were required on this basis since 4:2 FTS and 8:2 FTS were not detected in this sample.	
	13C2_8:2FTS	192		
	13C2_6:2FTS	225	The positive result for 6:2 FTS in sample Effluent 20221115 was already qualified as estimated (J) due to detection < the QL. No further action was required on this basis.	

- A field duplicate pair was not collected with this sample set.
- Laboratory duplicate analyses were not performed on a sample from this data set.
- The discussion related to the total PFAS analyses in the laboratory narrative noted that no samples required centrifugation prior to extraction.
- The QLs met or were below the ranges of QLs suggested in the SAB of 2-5 ng/L for individual PFAS.
- The limits of quantitation (LOQs) for TSS in samples Influent 07 20221114, Influent 08 20221114, Influent 11 20221114, and Influent 18 20221114 were 1.82-2x higher than the associated method blank likely due to a reduced volume used in the sample analyses. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in these samples. No validation action was required on this basis.
- The result for PFHxA in sample Influent 11 20221114 was flagged with an "1" by the laboratory indicating that the ion transition ratio did not meet the acceptance limits; thus, the positive result for PFHxA in sample Influent 11 20221114 was qualified as estimated (J).

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10634264

Sample: Influent 02 20221114 **Lab ID: 10634264001** Collected: 11/14/22 23:59 Received: 11/17/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	239	mg/L	10.0	5.0	1		11/21/22 11:03		

Sample: Influent 07 20221114 **Lab ID: 10634264002** Collected: 11/14/22 23:59 Received: 11/17/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	234	mg/L	18.2	9.1	1		11/21/22 11:03		

Sample: Influent 08 20221114 **Lab ID: 10634264003** Collected: 11/14/22 23:59 Received: 11/17/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	211	mg/L	20.0	10.0	1		11/21/22 11:03		

Sample: Influent 11 20221114 **Lab ID: 10634264004** Collected: 11/14/22 23:59 Received: 11/17/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	239	mg/L	20.0	10.0	1		11/21/22 11:03		

Sample: Influent 18 20221114 **Lab ID: 10634264005** Collected: 11/14/22 23:59 Received: 11/17/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids		Analytical Method: SM 2540D Pace Analytical Services - Minneapolis							
Total Suspended Solids	264	mg/L	20.0	10.0	1		11/21/22 11:03		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10634264

Sample: Effluent 20221115 **Lab ID: 10634264006** Collected: 11/15/22 23:59 Received: 11/17/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D Pace Analytical Services - Minneapolis									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		11/22/22 13:12		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 02 20221114
 Lab Sample ID 10634264001
 Lab File ID B221128A_027
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 256mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	4.9	2.0	0.49	0.49	1	375-22-4		11/28/2022 20:21
PFPeA	5.7	2.0	0.80	0.80	1	2706-90-3		11/28/2022 20:21
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		11/28/2022 20:21
PFBS	4.9	1.7	0.47	0.47	1	375-73-5		11/28/2022 20:21
PFHxA	11	2.0	0.89	0.89	1	307-24-4		11/28/2022 20:21
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		11/28/2022 20:21
PFPeS	ND	1.8	0.59	0.59	1	2706-91-4		11/28/2022 20:21
PFHpA	2.4	2.0	0.67	0.67	1	375-85-9		11/28/2022 20:21
DONA	ND	1.8	0.90	0.90	1	919005-14-4		11/28/2022 20:21
PFHxS	4.5	1.8	0.52	0.52	1	355-46-4		11/28/2022 20:21
PFOA	4.3	2.0	0.84	0.84	1	335-67-1		11/28/2022 20:21
6:2 FTS	1.7 J-J	1.9	0.66	0.66	1	27619-97-2		11/28/2022 20:21
PFHpS	ND	1.9	0.65	0.65	1	375-92-8		11/28/2022 20:21
PFNA	ND	2.0	0.78	0.78	1	375-95-1		11/28/2022 20:21
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		11/28/2022 20:21
PFOS	4.8	1.8	0.65	0.65	1	1763-23-1		11/28/2022 20:21
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		11/28/2022 20:21
PFDA	ND	2.0	0.59	0.59	1	335-76-2		11/28/2022 20:21
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		11/28/2022 20:21
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		11/28/2022 20:21
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		11/28/2022 20:21
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		11/28/2022 20:21
PFUnDA	ND	2.0	0.47	0.47	1	2058-94-8		11/28/2022 20:21
NMeFOSAA	ND	2.0	0.68	0.68	1	2355-31-9		11/28/2022 20:21
NEtFOSAA	ND	2.0	0.79	0.79	1	2991-50-6		11/28/2022 20:21
PFDS	ND	1.9	0.63	0.63	1	335-77-3		11/28/2022 20:21
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		11/28/2022 20:21
MeFOSE	1.0 J	2.0	0.51	0.51	1	24448-09-7		11/28/2022 20:21
EtFOSE	ND	2.0	0.87	0.87	1	1691-99-2		11/28/2022 20:21
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		11/28/2022 20:21
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		11/28/2022 20:21
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		11/28/2022 20:21
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		11/28/2022 20:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 07 20221114
 Lab Sample ID 10634264002
 Lab File ID B221128A_028
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 252mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	13	2.0	0.49	0.49	1	375-22-4		11/28/2022 20:41
PFPeA	7.8	2.0	0.81	0.81	1	2706-90-3		11/28/2022 20:41
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		11/28/2022 20:41
PFBS	8.3	1.8	0.48	0.48	1	375-73-5		11/28/2022 20:41
PFHxA	15	2.0	0.90	0.90	1	307-24-4		11/28/2022 20:41
4:2 FTS	ND	1.9	0.46	0.46	1	757124-72-4		11/28/2022 20:41
PFPeS	1.1 J	1.9	0.60	0.60	1	2706-91-4		11/28/2022 20:41
PFHpA	3.0	2.0	0.68	0.68	1	375-85-9		11/28/2022 20:41
DONA	ND	1.9	0.91	0.91	1	919005-14-4		11/28/2022 20:41
PFHxS	12	1.8	0.53	0.53	1	355-46-4		11/28/2022 20:41
PFOA	7.1	2.0	0.85	0.85	1	335-67-1		11/28/2022 20:41
6:2 FTS	1.9 J--J	1.9	0.67	0.67	1	27619-97-2		11/28/2022 20:41
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		11/28/2022 20:41
PFNA	ND	2.0	0.79	0.79	1	375-95-1		11/28/2022 20:41
PFOSAm	ND	2.0	0.71	0.71	1	754-91-6		11/28/2022 20:41
PFOS	8.6	1.8	0.66	0.66	1	1763-23-1		11/28/2022 20:41
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		11/28/2022 20:41
PFDA	ND	2.0	0.60	0.60	1	335-76-2		11/28/2022 20:41
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		11/28/2022 20:41
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		11/28/2022 20:41
9-CI-PF3ON	ND	1.8	0.47	0.47	1	756426-58-1		11/28/2022 20:41
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		11/28/2022 20:41
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		11/28/2022 20:41
NMeFOSAA	1.4 J	2.0	0.69	0.69	1	2355-31-9		11/28/2022 20:41
NEtFOSAA	0.98 J	2.0	0.81	0.81	1	2991-50-6		11/28/2022 20:41
PFDS	ND	1.9	0.64	0.64	1	335-77-3		11/28/2022 20:41
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		11/28/2022 20:41
MeFOSE	1.8 J	2.0	0.52	0.52	1	24448-09-7		11/28/2022 20:41
EtFOSE	ND	2.0	0.88	0.88	1	1691-99-2		11/28/2022 20:41
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		11/28/2022 20:41
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		11/28/2022 20:41
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		11/28/2022 20:41
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		11/28/2022 20:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 08 20221114
 Lab Sample ID 10634264003
 Lab File ID B221128A_029
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 250mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	5.0	2.0	0.50	0.50	1	375-22-4		11/28/2022 21:01
PFPeA	4.2	2.0	0.82	0.82	1	2706-90-3		11/28/2022 21:01
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		11/28/2022 21:01
PFBS	4.1	1.8	0.49	0.49	1	375-73-5		11/28/2022 21:01
PFHxA	6.4	2.0	0.91	0.91	1	307-24-4		11/28/2022 21:01
4:2 FTS	ND	1.9	0.47	0.47	1	757124-72-4		11/28/2022 21:01
PFPeS	ND	1.9	0.60	0.60	1	2706-91-4		11/28/2022 21:01
PFHpA	1.2 J	2.0	0.69	0.69	1	375-85-9		11/28/2022 21:01
DONA	ND	1.9	0.92	0.92	1	919005-14-4		11/28/2022 21:01
PFHxS	4.3	1.8	0.53	0.53	1	355-46-4		11/28/2022 21:01
PFOA	2.6	2.0	0.86	0.86	1	335-67-1		11/28/2022 21:01
6:2 FTS	ND	1.9	0.68	0.68	1	27619-97-2		11/28/2022 21:01
PFHpS	ND	1.9	0.67	0.67	1	375-92-8		11/28/2022 21:01
PFNA	ND	2.0	0.80	0.80	1	375-95-1		11/28/2022 21:01
PFOSAm	ND	2.0	0.72	0.72	1	754-91-6		11/28/2022 21:01
PFOS	3.8	1.9	0.67	0.67	1	1763-23-1		11/28/2022 21:01
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		11/28/2022 21:01
PFDA	ND	2.0	0.61	0.61	1	335-76-2		11/28/2022 21:01
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		11/28/2022 21:01
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		11/28/2022 21:01
9-CI-PF3ON	ND	1.9	0.47	0.47	1	756426-58-1		11/28/2022 21:01
PFNS	ND	1.9	0.59	0.59	1	68259-12-1		11/28/2022 21:01
PFUnDA	ND	2.0	0.49	0.49	1	2058-94-8		11/28/2022 21:01
NMeFOSAA	ND	2.0	0.70	0.70	1	2355-31-9		11/28/2022 21:01
NEtFOSAA	ND	2.0	0.82	0.82	1	2991-50-6		11/28/2022 21:01
PFDS	ND	1.9	0.64	0.64	1	335-77-3		11/28/2022 21:01
PFDOA	ND	2.0	0.48	0.48	1	307-55-1		11/28/2022 21:01
MeFOSE	1.3 J	2.0	0.52	0.52	1	24448-09-7		11/28/2022 21:01
EtFOSE	ND	2.0	0.89	0.89	1	1691-99-2		11/28/2022 21:01
11-CI-PF3OUdS	ND	1.9	0.56	0.56	1	763051-92-9		11/28/2022 21:01
PFTTrDA	ND	2.0	0.62	0.62	1	72629-94-8		11/28/2022 21:01
PFDoS	ND	1.9	0.59	0.59	1	79780-39-5		11/28/2022 21:01
PFTDA	ND	2.0	0.60	0.60	1	376-06-7		11/28/2022 21:01

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 11 20221114
 Lab Sample ID 10634264004
 Lab File ID B221128A_030
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 253mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	2.6	2.0	0.49	0.49	1	375-22-4		11/28/2022 21:21
PFPeA	2.9	2.0	0.81	0.81	1	2706-90-3		11/28/2022 21:21
HFPO-DA	ND	2.0	0.49	0.49	1	13252-13-6		11/28/2022 21:21
PFBS	2.6	1.7	0.48	0.48	1	375-73-5		11/28/2022 21:21
PFHxA	4.5 I J	2.0	0.90	0.90	1	307-24-4		11/28/2022 21:21
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		11/28/2022 21:21
PFPeS	ND	1.9	0.59	0.59	1	2706-91-4		11/28/2022 21:21
PFHpA	0.92 J	2.0	0.68	0.68	1	375-85-9		11/28/2022 21:21
DONA	ND	1.9	0.91	0.91	1	919005-14-4		11/28/2022 21:21
PFHxS	2.9	1.8	0.52	0.52	1	355-46-4		11/28/2022 21:21
PFOA	2.2	2.0	0.85	0.85	1	335-67-1		11/28/2022 21:21
6:2 FTS	ND	1.9	0.67	0.67	1	27619-97-2		11/28/2022 21:21
PFHpS	ND	1.9	0.66	0.66	1	375-92-8		11/28/2022 21:21
PFNA	ND	2.0	0.78	0.78	1	375-95-1		11/28/2022 21:21
PFOSAm	ND	2.0	0.71	0.71	1	754-91-6		11/28/2022 21:21
PFOS	2.2	1.8	0.66	0.66	1	1763-23-1		11/28/2022 21:21
MeFOSA	ND	2.0	0.55	0.55	1	31506-32-8		11/28/2022 21:21
PFDA	ND	2.0	0.60	0.60	1	335-76-2		11/28/2022 21:21
EtFOSAm	ND	2.0	0.57	0.57	1	4151-50-2		11/28/2022 21:21
8:2 FTS	ND	1.9	0.50	0.50	1	39108-34-4		11/28/2022 21:21
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		11/28/2022 21:21
PFNS	ND	1.9	0.58	0.58	1	68259-12-1		11/28/2022 21:21
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		11/28/2022 21:21
NMeFOSAA	ND	2.0	0.69	0.69	1	2355-31-9		11/28/2022 21:21
NEtFOSAA	ND	2.0	0.80	0.80	1	2991-50-6		11/28/2022 21:21
PFDS	ND	1.9	0.63	0.63	1	335-77-3		11/28/2022 21:21
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		11/28/2022 21:21
MeFOSE	2.6	2.0	0.52	0.52	1	24448-09-7		11/28/2022 21:21
EtFOSE	ND	2.0	0.88	0.88	1	1691-99-2		11/28/2022 21:21
11-CI-PF3OUdS	ND	1.9	0.55	0.55	1	763051-92-9		11/28/2022 21:21
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		11/28/2022 21:21
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		11/28/2022 21:21
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		11/28/2022 21:21

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Influent 18 20221114
 Lab Sample ID 10634264005
 Lab File ID B221128A_031
 Matrix Industrial_Water
 Collected 11/14/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 265mL
 Ical ID 221115B02
 CCal File B221128A_022
 Ending CCal File B221128A_032
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	10	1.9	0.47	0.47	1	375-22-4		11/28/2022 21:41
PFPeA	5.9	1.9	0.78	0.78	1	2706-90-3		11/28/2022 21:41
HFPO-DA	ND	1.9	0.47	0.47	1	13252-13-6		11/28/2022 21:41
PFBS	6.8	1.7	0.46	0.46	1	375-73-5		11/28/2022 21:41
PFHxA	8.7	1.9	0.86	0.86	1	307-24-4		11/28/2022 21:41
4:2 FTS	ND	1.8	0.44	0.44	1	757124-72-4		11/28/2022 21:41
PFPeS	1.9	1.8	0.57	0.57	1	2706-91-4		11/28/2022 21:41
PFHpA	2.4	1.9	0.65	0.65	1	375-85-9		11/28/2022 21:41
DONA	ND	1.8	0.87	0.87	1	919005-14-4		11/28/2022 21:41
PFHxS	16	1.7	0.50	0.50	1	355-46-4		11/28/2022 21:41
PFOA	7.4	1.9	0.81	0.81	1	335-67-1		11/28/2022 21:41
6:2 FTS	2.1 J	1.8	0.64	0.64	1	27619-97-2		11/28/2022 21:41
PFHpS	ND	1.8	0.63	0.63	1	375-92-8		11/28/2022 21:41
PFNA	ND	1.9	0.75	0.75	1	375-95-1		11/28/2022 21:41
PFOSAm	ND	1.9	0.68	0.68	1	754-91-6		11/28/2022 21:41
PFOS	8.4	1.7	0.63	0.63	1	1763-23-1		11/28/2022 21:41
MeFOSA	ND	1.9	0.52	0.52	1	31506-32-8		11/28/2022 21:41
PFDA	ND	1.9	0.57	0.57	1	335-76-2		11/28/2022 21:41
EtFOSAm	ND	1.9	0.54	0.54	1	4151-50-2		11/28/2022 21:41
8:2 FTS	ND	1.8	0.48	0.48	1	39108-34-4		11/28/2022 21:41
9-CI-PF3ON	ND	1.8	0.44	0.44	1	756426-58-1		11/28/2022 21:41
PFNS	ND	1.8	0.55	0.55	1	68259-12-1		11/28/2022 21:41
PFUnDA	ND	1.9	0.46	0.46	1	2058-94-8		11/28/2022 21:41
NMeFOSAA	0.84 J	1.9	0.66	0.66	1	2355-31-9		11/28/2022 21:41
NEtFOSAA	1.2 J	1.9	0.77	0.77	1	2991-50-6		11/28/2022 21:41
PFDS	ND	1.8	0.61	0.61	1	335-77-3		11/28/2022 21:41
PFDOA	ND	1.9	0.45	0.45	1	307-55-1		11/28/2022 21:41
MeFOSE	1.5 J	1.9	0.49	0.49	1	24448-09-7		11/28/2022 21:41
EtFOSE	ND	1.9	0.84	0.84	1	1691-99-2		11/28/2022 21:41
11-CI-PF3OUdS	ND	1.8	0.53	0.53	1	763051-92-9		11/28/2022 21:41
PFTTrDA	ND	1.9	0.59	0.59	1	72629-94-8		11/28/2022 21:41
PFDoS	ND	1.8	0.56	0.56	1	79780-39-5		11/28/2022 21:41
PFTDA	ND	1.9	0.57	0.57	1	376-06-7		11/28/2022 21:41

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



Sample Analysis Summary
 PFAS by Isotope Dilution

Client Sample ID Effluent 20221115
 Lab Sample ID 10634264006
 Lab File ID B221124B_025
 Matrix Industrial_Water
 Collected 11/15/2022 23:59
 Received 11/17/2022 08:50
 Extraction Date 11/22/2022 09:59

Total Amount Extracted 255mL
 Ical ID 221115B02
 CCal File B221124B_017
 Ending CCal File B221124B_028
 Blank File B221124B_007

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	MDL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	10	2.0	0.49	0.49	1	375-22-4		11/25/2022 12:43
PFPeA	16	2.0	0.80	0.80	1	2706-90-3		11/25/2022 12:43
HFPO-DA	ND	2.0	0.48	0.48	1	13252-13-6		11/25/2022 12:43
PFBS	2.9	1.7	0.48	0.48	1	375-73-5		11/25/2022 12:43
PFHxA	18	2.0	0.89	0.89	1	307-24-4		11/25/2022 12:43
4:2 FTS	ND	1.8	0.46	0.46	1	757124-72-4		11/25/2022 12:43
PFPeS	0.63 J	1.8	0.59	0.59	1	2706-91-4		11/25/2022 12:43
PFHpA	2.0	2.0	0.68	0.68	1	375-85-9		11/25/2022 12:43
DONA	ND	1.9	0.90	0.90	1	919005-14-4		11/25/2022 12:43
PFHxS	7.1	1.8	0.52	0.52	1	355-46-4		11/25/2022 12:43
PFOA	7.8	2.0	0.84	0.84	1	335-67-1		11/25/2022 12:43
6:2 FTS	0.79 J J	1.9	0.66	0.66	1	27619-97-2		11/25/2022 12:43
PFHpS	ND	1.9	0.65	0.65	1	375-92-8		11/25/2022 12:43
PFNA	ND	2.0	0.78	0.78	1	375-95-1		11/25/2022 12:43
PFOSAm	ND	2.0	0.70	0.70	1	754-91-6		11/25/2022 12:43
PFOS	4.4	1.8	0.65	0.65	1	1763-23-1		11/25/2022 12:43
MeFOSA	ND	2.0	0.54	0.54	1	31506-32-8		11/25/2022 12:43
PFDA	1.1 J	2.0	0.60	0.60	1	335-76-2		11/25/2022 12:43
EtFOSAm	ND	2.0	0.56	0.56	1	4151-50-2		11/25/2022 12:43
8:2 FTS	ND	1.9	0.49	0.49	1	39108-34-4		11/25/2022 12:43
9-CI-PF3ON	ND	1.8	0.46	0.46	1	756426-58-1		11/25/2022 12:43
PFNS	ND	1.9	0.57	0.57	1	68259-12-1		11/25/2022 12:43
PFUnDA	ND	2.0	0.48	0.48	1	2058-94-8		11/25/2022 12:43
NMeFOSAA	1.3 J	2.0	0.68	0.68	1	2355-31-9		11/25/2022 12:43
NEtFOSAA	ND	2.0	0.80	0.80	1	2991-50-6		11/25/2022 12:43
PFDS	ND	1.9	0.63	0.63	1	335-77-3		11/25/2022 12:43
PFDOA	ND	2.0	0.47	0.47	1	307-55-1		11/25/2022 12:43
MeFOSE	ND	2.0	0.51	0.51	1	24448-09-7		11/25/2022 12:43
EtFOSE	ND	2.0	0.87	0.87	1	1691-99-2		11/25/2022 12:43
11-CI-PF3OUdS	ND	1.8	0.54	0.54	1	763051-92-9		11/25/2022 12:43
PFTTrDA	ND	2.0	0.61	0.61	1	72629-94-8		11/25/2022 12:43
PFDoS	ND	1.9	0.58	0.58	1	79780-39-5		11/25/2022 12:43
PFTDA	ND	2.0	0.59	0.59	1	376-06-7		11/25/2022 12:43

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

December 2022

Data Quality and Usability Review – December 2022

Data Reviewer: Kristen Morin

Peer Reviewer: Jeff Ramey

Date: 5/2/2023

Madison Metropolitan Sewerage District (MMSD) collected influent, effluent, and biosolids samples at the Nine Springs wastewater treatment plant on December 12, 13, and 14, 2022 in conjunction with an additional characterization study conducted by TRC. Samples were analyzed for the standard list of Wisconsin's 33 per- and polyfluoroalkyl substances (PFAS) and total suspended solids (TSS) by Pace Analytical Services, LLC (Pace), in Minneapolis, Minnesota. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 10637158. Samples were analyzed for total oxidizable precursor (TOP) assay PFAS by Pace Analytical – Gulf Coast in Baton Rouge, Louisiana (Pace – Gulf Coast). Those laboratory analytical results were reported in laboratory SDG 10637158 (Report # 222121745) (revised 04/13/23).

Samples included in this review are listed below:

- Influent 02 20221212
- Influent 07 20221212
- Influent 08 20221212
- Influent 11 20221212
- Influent 18 20221212
- Influent Comp 20221212
- Effluent 20221213
- Biosolids A20221214
- Biosolids B20221214
- EB01 20221214

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
PFAS (33 Analytes)	Laboratory standard operating procedure (SOP) using Isotope Dilution/WI Method Criteria
PFAS TOP Assay (33 Analytes)	Laboratory SOP using Isotope Dilution/WI Method Criteria
Total Suspended Solids (TSS)	Standard Method (SM) 2540D
Total Solids*	ASTM D2974*

Notes:

* The laboratory does not hold NELAC/TNI accreditation for total solids.

TRC performed a limited validation of the laboratory data to assess data usability. The following sections summarize the data validation procedure and the results of the validation.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537 (EPA 910-R-18-001), November 2018, USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 542-R-20-007), November 2020, and Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations, Document # EA-19-0001, WDNR, December 2019 as guidance for data review. EPA 910-R-18-001 applies to method 537 and

drinking water matrices only but the guidance can be applied in part or in whole to evaluate data in non-drinking water matrices. The following items were specifically included in the evaluation of the data:

- Data completeness;
- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Quantitation limits (QLs) compared to the ranges of QLs suggested in the Sampling and Analysis Blueprint (SAB) of 2-5 ng/L and 1-5 ug/kg per individual PFAS, as appropriate;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy and precision of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicate (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for isotopically labeled surrogates (also referred to as extracted internal standards by Pace). Percent recoveries are calculated for each surrogate and used to assess the accuracy of the extraction procedure and bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose with the exceptions as noted below. A summary of the data quality review, including non-conformances, and issues identified in this evaluation are noted below.

- The reviewed PFAS and TSS data will be utilized for the purposes of an additional characterization.

- Data are usable for the purposes of the additional characterization with the exception of the nondetect results for select total PFAS and TOP Assay results in several samples which were rejected due to significantly low isotopically labeled surrogate recoveries; this issue has a major impact on the data usability.
- The remaining issues noted in the QA/QC sample summary below have a minor impact on the data usability.

QA/QC Sample Summary

- The revised data packages were found to be complete as received from the laboratory with the following exceptions and/or notes.
 - The laboratory did not report the isotopically labelled surrogate results for 13C5_PFHxA and 13C8-PFOS from the undiluted analysis of sample Biosolids A20221214; this information was provided as a supplement during this review and was within the acceptance limits.
 - The field staff indicated during this review that the collection times for samples Biosolids A20221214 and Biosolids B20221214 were swapped on the COC and that the equipment blank sample was collected prior to the associated sample, Biosolids A20221214. The laboratory was not contacted about this issue.
- The cooler temperature upon receipt at the laboratory was within the acceptance criteria (< 10°C).
 - Select samples were not shipped to the laboratory until one to two days after collection. The samples were stored in coolers, on ice, at the site until delivery to the laboratory. No validation actions were required on this basis since the samples were kept in coolers, on ice, prior to delivery to the laboratory and were received at acceptable temperatures by the laboratory.
- A method blank was analyzed with each analytical batch for PFAS (total and TOP assay) and TSS. The following table summarizes the compounds detected in the method blanks, the associated samples, and the validation actions.

Blank ID	Compound	Blank concentration	Action
MB 4547124 (total PFAS)	PFBS	0.62 J ng/L	<p>The positive results for total PFBS in samples Influent 02 20221212, Influent 07 20221212, Influent 18 20221212, Influent Comp 20221212, and Effluent 20221213 were qualified as nondetects (U) at the reported concentrations since the results were > the QL and < 10x the blank concentration.</p> <p>The positive results for total PFBS in samples Influent 08 20221212 and Influent 11 20221212 were qualified as estimated nondetects (UJ) at the reported concentrations since the results were < the QL.</p> <p>No qualification was required on this basis for sample EB01 20221214 since total PFBS was not detected in this sample.</p>
Associated samples: All samples in this data set except Biosolids A20221214 and Biosolids B20221214			

Blank ID	Compound	Blank concentration	Action
MB757168 (post-TOP assay; initial extraction)	6:2 FTS	15.9 ng/L	The positive post-TOP Assay results for 6:2 FTS in the initial analysis of the associated samples except Effluent 20221213 were qualified as nondetects (U) at the reported concentrations since the results were > the QL and < 10x the blank concentration.
	PFOS	7.87 J ng/L	The positive post-TOP Assay results for PFOS in the initial analysis of the associated samples except Effluent 20221213 were qualified as nondetects (U) at the reported concentrations since the results were > the QL and < 10x the blank concentration. No validation actions were taken on this basis for sample Effluent 20221213 since the initial post-TOP assay analysis of this sample was not used for project objectives.
Associated samples: Influent 02 20221212, Influent 07 20221212, Influent 08 20221212, Influent 11 20221212, Influent 18 20221212, Effluent 20221213			
MB757943 (post-TOP assay)	6:2 FTS	1.0 µg/Kg	The positive post-TOP assay results for 8:2 FTS and FOSA in samples Biosolids A20221214 and Biosolids B20221214, and 6:2 FTS in sample Biosolids B20221214 were qualified as estimated nondetects (UJ) at the reported concentrations since the results were < the QL.
	8:2 FTS	0.294 J µg/Kg	
	PFBA	0.059 J µg/Kg	The positive post-TOP Assay result for 6:2 FTS in sample Biosolids A20221214 was qualified as a nondetect (U) at the reported concentration since the result was > the QL and < 10x the blank concentration. This result was further qualified as estimated (UJ) due to low surrogate recovery, No validation action was required on this basis in the associated samples for post-TOP assay results for PFBA and PFHxA since these results were > 10x the blank concentration when adjusted for sample-specific volume and percent solids. Although the post-TOP Assay result for PFHxA was < the QL in sample Biosolids B20221214, professional judgement was used and this result was not qualified since it was significantly above 10x the blank contamination.
	PFHxA	0.032 J µg/Kg	
	FOSA	0.027 J µg/Kg	
MB757753 (pre-TOP assay)	NEtFOSA	0.053 J µg/Kg	The positive pre-TOP assay results for NEtFOSA in sample Biosolids A20221214 and FOSA in samples Biosolids A20221214 and Biosolids B20221214 were qualified as estimated nondetects (UJ) at the reported concentrations since the results were < the QL.
	FOSA	0.066 J µg/Kg	No validation action was required on this basis in sample Biosolids B20221214 for pre-TOP assay NEtFOSA since NEtFOSA was not detected in the pre-TOP Assay analysis of this sample.
Associated samples: Biosolids A20221214, Biosolids B20221214			

- One equipment blank (EB01 202221214) was collected and analyzed for total PFAS. The following table summarizes the total PFAS compounds detected in the equipment blank, the associated sample, and the validation actions.

Blank ID	Compound	Blank concentration	Action
EB01 202221214	NEtFOSAA	4.1 ng/L	No validation actions were required on this basis since the result for total NEtFOSAA in sample Biosolids A20221214 was > the QL and > 10x the blank concentration when adjusted for sample-specific volume and percent solids.
Associated sample: Biosolids A20221214			

- All samples were extracted and/or prepared and analyzed within the holding time with the following exceptions.
 - The re-extraction of the post-TOP Assay PFAS analyses for all influent samples (with the exception of Influent Comp 20221212 which was not analyzed for TOP Assay) in this data set were performed 30 days outside of the 28-day holding time for 6:2 FTS and PFOS due to nonconformances with the original post-TOP Assay analyses. The higher detected results for 6:2 FTS and PFOS from the initial post-TOP Assay analyses of the influent samples should be used for project objectives in order to remain conservative and due to the significant (>2x) holding time exceedance of the re-extractions which would have resulted in rejecting nondetect results; therefore, no validation actions were required on the basis of this holding time nonconformance for the re-extracted post-TOP Assay analyses of these influent samples since the re-extracted results were not used for project objectives. It should be noted that the results for 6:2 FTS and PFOS from the initial post-TOP Assay analyses of the influent samples were qualified as nondetects (U) at the reported concentrations due to method blank contamination (refer to method blank section above).
 - The re-extraction of the post-TOP Assay PFAS analysis for sample Effluent 20221213 was performed 29 days outside of the 28-day holding time for all PFAS due to nonconformances with the original post-TOP Assay analysis (i.e., significantly low recoveries [<10%] of all surrogates). The positive and nondetect results from the re-extracted post-TOP Assay analysis of sample Effluent 20221213 should be used for project objectives due to improved recoveries of all surrogates. Professional judgement was used and nondetect results were not rejected due to the sample being re-extracted one day outside of the 2x holding time requirement used for rejection. Therefore, the positive and nondetect post-TOP Assay results from the re-extraction of sample Effluent 20221213 were qualified as estimated (J/UJ).
- The LCS and LCSD percent recoveries (%Rs) and relative percent differences (RPDs), where applicable, for all analytes were within QC limits except as noted below.
 - The %R for post-TOP Assay 6:2 FTS (131%) in the LCSD associated with the initial extraction/analysis of samples Influent 02 20221212, Influent 07 20221212, Influent 08 20221212, Influent 11 20221212, Influent 18 20221212, and Effluent 20221213 was above the acceptance criteria (70-130%). The positive results for post-TOP Assay 6:2 FTS in the associated samples except Effluent 20221213 were subsequently qualified as nondetects due to method blank contamination (refer to blanks bullet above); no further validation actions were required on the basis of the high LCSD %R. No validation actions were taken on this basis for sample Effluent 20221213 since the initial post-TOP assay analysis of this sample was not used for project objectives.

- The post-TOP assay LCS and LCSD %Rs for 6:2 FTS (164%/165%) and 8:2 FTS (165%/136%) were above the laboratory’s acceptance limits (70-130%) in prep batch 757943 which was associated with post-TOP assay samples Biosolids A20221214 and Biosolids B20221214. The positive post-TOP Assay results for 6:2 FTS and 8:2 FTS in samples Biosolids A20221214 and Biosolids B20221214 were subsequently qualified as nondetects due to method blank contamination and low post-TOP assay surrogate %Rs; no further validation actions were taken.
- The case narrative in report 222121745 noted that %Rs for PFODA were outside of the acceptance limits in the post-and pre-TOP Assay LCS/LCSDs; no validation actions were taken on this basis since PFODA was not a target compound.
- MS analysis was performed on sample Effluent 20221213 for total PFAS. All criteria were met.
- The following table summarizes the isotopically labeled surrogate and/or TOP assay surrogate %Rs that were outside of criteria, the associated samples, and the validation actions.

Sample ID	Surrogate	%R	%R Acceptance Limits	Action*
Influent 02 20221212 (total PFAS)	13C8-PFOSA	8	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent 02 20221212 due to significantly low (<10%) recoveries: PFOSA, NMeFOSA, NMeFOSE, NETFOSE, and NETFOSA.
	d3-NMeFOSA	6	10-150	
	d7-NMeFOSE	5		
	d9-NEtFOSE	4		
	d5-NEtFOSA	6		
	d3-MeFOSAA	19		
	d5-EtFOSAA	15		
Influent 02 20221212 (post-TOP assay; re-extraction)	MPFOA	44	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150% and since no target compounds were used for project objectives from the re-extracted post-TOP Assay analysis of this sample.
Influent 07 20221212 (total PFAS)	13C8-PFOSA	9	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent 07 20221212 due to significantly low (<10%) recoveries: PFOSA, NMeFOSA, NMeFOSE, NETFOSE, and NETFOSA.
	d3-NMeFOSA	6	10-150	
	d7-NMeFOSE	4		
	d9-NEtFOSE	2		
	d5-NEtFOSA	4		
	d3-MeFOSAA	15		
	d5-EtFOSAA	13		
Influent 07 20221212 (pre-TOP assay)	M2 4:2 FTS	152	50-150	No validation actions were required on this basis since 4:2 FTS was not detected in the pre-TOP Assay analysis of sample Influent 07 20221212.

Sample ID	Surrogate	%R	%R Acceptance Limits	Action*
Influent 07 20221212 (post-TOP assay; re-extraction)	MPFOA	42	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150% and since no target compounds were used for project objectives from the re-extracted post-TOP Assay analysis of this sample.
Influent 08 20221212 (total PFAS)	13C8-PFOA	9	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent 08 20221212 due to significantly low (<10%) recoveries: PFOA, NMeFOA, NMeFOSE, NETFOSE, and NETFOA.
	d3-NMeFOA	6	10-150	
	d7-NMeFOSE	5		
	d9-NETFOSE	2		
	d5-NETFOA	4		
	d3-MeFOSAA	12	25-150	The nondetect results for total NETFOSAA and NMeFOSAA were qualified as estimated (UJ) in sample Influent 08 20221212.
d5-EtFOSAA	11			
Influent 08 20221212 (post-TOP assay; re-extraction)	MPFOA	42	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150% and since no target compounds were used for project objectives from the re-extracted post-TOP Assay analysis of this sample.
Influent 11 20221212 (total PFAS)	d3-MeFOSAA	7	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent 11 20221212 due to significantly low (<10%) recoveries: NMeFOSAA, PFOA, NETFOSAA, NMeFOA, NMeFOSE, NETFOSE, and NETFOA. The nondetect results for total PFUdA, PFDoA, and PFTrDA were qualified as estimated (UJ) in sample Influent 11 20221212.
	13C7-PFUdA	21		
	13C8-PFOA	4		
	d5-EtFOSAA	7		
	13C2-PFDoA	14		
	d3-NMeFOA	5	10-150	
	d7-NMeFOSE	3		
	d9-NETFOSE	1		
d5-NETFOA	2			
Influent 11 20221212 (post-TOP assay; re-extraction)	MPFOA	38	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150% and since no target compounds were used for project objectives from the re-extracted post-TOP Assay analysis of this sample.
Influent 18 20221212 (total PFAS)	13C26:2FTS	151	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent 18 20221212 due to significantly low (<10%) recoveries: PFOA, NMeFOA, NMeFOSE, NETFOSE, and NETFOA. The positive and nondetect results for total NMeFOSAA, NETFOSAA, 6:2 FTS, PFDoA, and PFTrDA were qualified as estimated (J/UJ) in sample Influent 18 20221212.
	d3-MeFOSAA	11		
	13C8-PFOA	6		
	d5-EtFOSAA	11		
	13C2-PFDoA	23		
	d3-NMeFOA	3	10-150	
	d7-NMeFOSE	2		
	d9-NETFOSE	1		
	d5-NETFOA	2		

Sample ID	Surrogate	%R	%R Acceptance Limits	Action*
Influent 18 20221212 (pre-TOP assay)	M2 4:2 FTS	163	50-150	No validation actions were required on this basis since 4:2 FTS was not detected in the pre-TOP Assay analysis of sample Influent 18 20221212.
Influent 18 20221212 (post-TOP assay; re-extraction)	MPFOA	40	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150% and since no target compounds were used for project objectives from the re-extracted post-TOP Assay analysis of this sample.
Influent Comp 20221212 (total PFAS)	13C8-PFOS	439	25-150	The nondetect results for the following total PFAS results were rejected (R) in sample Influent Comp 20221212 due to significantly low (<10%) recoveries: PFOSA, NMeFOSA, NMeFOSE, NEtFOSE, and NEtFOSA. The positive and nondetect results for total NMeFOSAA, NEtFOSAA, PFHpS, PFOS, 9CI-PF3ONS, 11CI-PF3OUdS, PFNS, PFDS, and PFDoS were qualified as estimated (J/UJ) in sample Influent Comp 20221212.
	d3-MeFOSAA	12		
	13C8-PFOSA	8		
	d5-EtFOSAA	11		
	d3-NMeFOSA	3	10-150	
	d7-NMeFOSE	1		
	d9-NEtFOSE	1		
d5-NEtFOSA	4			
Effluent 20221213 (post-TOP assay; initial extraction)	All surrogates	Range: 2-5	50-150	No validation action was taken on this basis since no results from the initial post-TOP Assay extraction analysis of sample Effluent 20221213 were used for project objectives.
Effluent 20221213 (post-TOP assay; re-extraction)	MPFOA	36	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogate recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150% and since no associated target compounds were used for project objectives from the re-extracted post-TOP Assay analysis of this sample.
	d-NEtFOSA	35		
	d-NMeFOSA	35		
Biosolids A20221214 (total PFAS)	13C2PFHxDA	14	25-150	No validation actions were required on this basis since no target PFAS compounds were quantitated using this isotopically labeled surrogate.
	13C2-PFDoA	13	25-150	The positive results for total PFDoA and PFTrDA were qualified as estimated (J/UJ) in sample Biosolids A20221214.
	13C24:2FTS	151		No qualification was required on this basis since total 4:2 FTS was not detected in sample Biosolids A20221214.
Biosolids A20221214 (pre-TOP assay)	d-NEtFOSA	17	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.
	d-NMeFOSA	10		
	d7-NMeFOSE	27		

Sample ID	Surrogate	%R	%R Acceptance Limits	Action*
Biosolids A20221214 (pre-TOP assay)	M2PFHxDA	24	50-150	No validation actions were required on this basis since this surrogate was not used to quantitate any target analyte sample results.
	M2PFTA	34	50-150	Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150%.
	M8FOSA	49		
Biosolids A20221214 (post-TOP assay)	MPFOA	3	50-150	<p>The positive post-TOP assay results for 6:2 FTS and 8:2 FTS were qualified as nondetects due to method blank contamination as noted above; these results were further qualified as estimated (UJ) in sample Biosolids A20221214.</p> <p>The positive post-TOP assay results for NEtFOSE and NMeFOSAA in sample Biosolids A20221214 were qualified as estimated (J+) with a potential high bias; however, these results were also qualified as J due to detection < QL. Thus, the overall qualification was J for the post-TOP assay results for NEtFOSE and NMeFOSAA.</p> <p>The positive post-TOP assay results for PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA, PFUnA, PFDaA, PFTrDA, and PFTA in sample Biosolids A20221214 were qualified as estimated (J-) with a potential low bias; however, select results were also qualified as J due to detection < QL or low isotopically labeled surrogate recoveries (i.e., PFBA as noted below). Thus, the overall qualification was J in those instances.</p> <p>No validation actions were required on this basis for the remaining post-TOP assay results in sample Biosolids A20221214.</p>
	MPFBA	12		The positive post-TOP assay result for PFBA was qualified as estimated (J) in sample Biosolids A20221214.
Biosolids B20221214 (total PFAS)	13C2PFHxDA	21	25-150	No validation actions were required on this basis since no target PFAS compounds were quantitated using this isotopically labeled surrogate.
	13C24:2FTS	161		No qualification was required on this basis since total 4:2 FTS was not detected in sample Biosolids B20221214
	d3-NMeFOSA	9	10-150	The nondetect results for total NMeFOSA and NEtFOSA were rejected (R) in sample Biosolids B20221214 due to significantly low (<10%) recoveries.
	d5-NEtFOSA	6		

Sample ID	Surrogate	%R	%R Acceptance Limits	Action*
Biosolids B20221214 (pre-TOP assay)	d-NEtFOSA	6	50-150	The nondetect results for pre-TOP Assay NMeFOSA and NEtFOSA were rejected (R) in sample Biosolids B20221214 due to significantly low (<10%) recoveries.
	d-NMeFOSA	6		
	d7-NMeFOSE	26		Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 25-150%.
	M8FOSA	44		
	M2PFHxDA	45		
Biosolids B20221214 (post-TOP assay)	MPFOA	1	50-150	The positive post-TOP assay results for 6:2 FTS and 8:2 FTS were qualified as nondetects due to method blank contamination as noted above; these results were further qualified as estimated (UJ) in sample Biosolids B20221214.
				The nondetect post-TOP assay results for PFTA and PFTrDA were rejected (R) in sample Biosolids B20221214 due to significantly low (<10%) recovery
				The positive post-TOP assay results for PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA, PFUnA, and PFDoA in sample Biosolids B20221214 were qualified as estimated (J-) with a potential low bias; however, select results were also qualified as J due to detection < QL or low isotopically labeled surrogate recoveries (i.e., PFBA as noted below). Thus, the overall qualification was J in those instances.
	No validation actions were required on this basis for the remaining post-TOP assay results in sample Biosolids B20221214.			
	d-NEtFOSA	46		Professional judgement was used and no validation actions were taken on this basis since the surrogates recovered within the Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations acceptance limits of 10-150%.
	MPFBA	16		The positive post-TOP assay result for PFBA was qualified as estimated (J) in sample Biosolids B20221214.

* Note that several results were also qualified as estimated (J) by the laboratory due to detection between the method detection limit (MDL) and QL.

It should be noted that several other surrogate %Rs were outside of the acceptance limits in method blanks, LCS/LCSDs, laboratory duplicates, and/or MS/MSDs. No validation actions were required on this basis so these issues are not summarized.

- It should be noted that the laboratory only reported %Rs for 13C5_PFHxA and 13C8-PFOS from the diluted analysis of sample Biosolids A20221214. The laboratory was contacted during validation and provided the %Rs from the undiluted analysis as supplemental information and the %Rs were within the acceptance limits. No validation actions were required on this basis.
- A field duplicate pair was not collected with this sample set.
- Laboratory duplicate analyses were performed on sample Influent 18 20221212 for total PFAS, and on samples Influent 02 20221212 and Influent 07 20221212 for TSS. All criteria were met except as noted below.
 - The relative percent difference (RPD) (8%) for TSS in the duplicate analysis of sample Influent 02 20221212 exceeded the laboratory QC limit (5%). However, due to the low QC limit for TSS and professional judgement, an RPD criteria of 20% was used for the evaluation of laboratory duplicate results. No validation actions were taken on this basis since the RPD was <20%.
 - The RPD (53%) for total PFBA in the duplicate analysis of sample Influent 18 20221212 exceeded the laboratory QC limit (30%). Therefore, the positive result for total PFBA in sample Influent 18 20221212 was qualified as estimated (J).
 - The RPD for total PFDS in the duplicate analysis of sample Influent 18 20221212 was not calculated by the laboratory due to a nondetect result in one of the two samples. However, the absolute difference between the parent and duplicate result (2.0 ng/L) was > the limit of quantitation (LOQ) (1.9 ng/L). Therefore, professional judgment was used and the nondetect result for total PFDS in sample Influent 18 20221212 was qualified as estimated (UJ).
- The laboratory was contacted during this review and stated that no samples required centrifugation or decanting prior to extraction.
- Select sample QLs were outside of the ranges of QLs suggested in the SAB of 2-5 ng/L and 1-5 ug/kg per individual PFAS due to sample volume and/or low total solids.
- The LOQs for TSS in samples Influent 02 20221212, Influent 08 20221212, Influent 11 20221212, and Influent 18 20221212 were 1.82-2x higher than the associated method blank likely due to a reduced volume used in the sample analysis. There is no adverse impact on the data usability due to this issue since TSS was detected above the LOQ in these samples. No validation action was required on this basis.
- Sample Biosolids A20221214 was diluted 5-fold due to the concentrations of PFHxA and PFOS which likely exceeded the calibration range in the undiluted analysis. The laboratory combined the results of the diluted and undiluted analyses in order to report all compounds within calibration range and with the lowest possible QLs. No other dilutions were performed on the samples in this data set.
- Based on a discussion with the laboratory during this review, due to a recent change in the laboratory's reporting system, the laboratory no longer flags PFAS results with an "I" when the ion transition ratio did not meet the acceptance limits; therefore, it is unknown if any ion transition ratios did not meet the acceptance limits for the samples collected in December 2022. No validation actions were taken on this basis.
- The percent moisture for the biosolids samples was high (>70% moisture). The laboratory was contacted during previous rounds of validation review regarding this issue and stated that the biosolids samples were homogenized, indicating that a representative sample was extracted for PFAS analysis. No validation actions were taken on this basis.

QUALIFIED FORM 1s

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 02 20221212 Lab ID: 10637158001 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.56	ng/L	1.9	0.56	1	12/30/22 09:11	01/06/23 12:02	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:02	757124-72-4	
6:2 FTS	<0.68	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:02	27619-97-2	
8:2 FTS	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:02	39108-34-4	
9CI-PF3ONS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:02	756426-58-1	
ADONA	<0.93	ng/L	1.9	0.93	1	12/30/22 09:11	01/06/23 12:02	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:02	13252-13-6	
NEtFOSAA	<0.82 UJ	ng/L	2.0	0.82	1	12/30/22 09:11	01/06/23 12:02	2991-50-6	
NEtFOSA	R <0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:02	4151-50-2	
NEtFOSE	R <0.90	ng/L	2.0	0.90	1	12/30/22 09:11	01/06/23 12:02	1691-99-2	
NMeFOSAA	<0.70 UJ	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:02	2355-31-9	
NMeFOSA	R <0.56	ng/L	2.0	0.56	1	12/30/22 09:11	01/06/23 12:02	31506-32-8	
NMeFOSE	R <0.53	ng/L	2.0	0.53	1	12/30/22 09:11	01/06/23 12:02	24448-09-7	
Perfluorobutanesulfonic acid	2.2 U	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:02	375-73-5	-B--
Perfluorodecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:02	335-76-2	
Perfluorohexanoic acid	9.0	ng/L	2.0	0.92	1	12/30/22 09:11	01/06/23 12:02	307-24-4	
PFBA	9.7	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:02	375-22-4	
PFDS	<0.65	ng/L	2.0	0.65	1	12/30/22 09:11	01/06/23 12:02	335-77-3	
PFDoS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:02	79780-39-5	
PFHpS	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:02	375-92-8	
PFNS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:02	68259-12-1	
PFOSA	R <0.72	ng/L	2.0	0.72	1	12/30/22 09:11	01/06/23 12:02	754-91-6	
PFPeA	126	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:02	2706-90-3	
PFPeS	<0.61	ng/L	1.9	0.61	1	12/30/22 09:11	01/06/23 12:02	2706-91-4	
Perfluorododecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:02	307-55-1	
Perfluoroheptanoic acid	1.0J	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:02	375-85-9	
Perfluorohexanesulfonic acid	4.2	ng/L	1.8	0.54	1	12/30/22 09:11	01/06/23 12:02	355-46-4	
Perfluorononanoic acid	<0.80	ng/L	2.0	0.80	1	12/30/22 09:11	01/06/23 12:02	375-95-1	
Perfluorooctanesulfonic acid	2.4	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:02	1763-23-1	
Perfluorooctanoic acid	2.2	ng/L	2.0	0.87	1	12/30/22 09:11	01/06/23 12:02	335-67-1	
Perfluorotetradecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:02	376-06-7	
Perfluorotridecanoic acid	<0.63	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:02	72629-94-8	
Perfluoroundecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:02	2058-94-8	
Surrogates									
13C4-PFBA (S)	55	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C5-PFPeA (S)	79	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C3-PFBS (S)	69	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C24:2FTS (S)	104	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C3HFPO-DA (S)	47	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C4-PFHpA (S)	80	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C3-PFHxS (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C26:2FTS (S)	131	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C8-PFOA (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C8-PFOS (S)	81	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C9-PFNA (S)	64	%	25-150		1	12/30/22 09:11	01/06/23 12:02		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 02 20221212 Lab ID: 10637158001 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

13C6-PFDA (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C28:2FTS (S)	93	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
d3-MeFOSAA (S)	19	%	25-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C7-PFUdA (S)	37	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
13C8-PFOA (S)	8	%	25-150		1	12/30/22 09:11	01/06/23 12:02		S0
d5-EtFOSAA (S)	15	%	25-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C2-PFDoA (S)	29	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
d3-NMeFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
d7-NMeFOSE (S)	5	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C2-PFTA (S)	30	%	25-150		1	12/30/22 09:11	01/06/23 12:02		
d9-NEtFOSE (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
d5-NEtFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:02		S0
13C5-PFHxA (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:02		

2540D Total Suspended Solids Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	282	mg/L	20.0	10.0	1		12/16/22 12:07		D6
------------------------	-----	------	------	------	---	--	----------------	--	----

Sample: Influent 07 20221212 Lab ID: 10637158002 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

11CI-PF3OUdS	<0.55	ng/L	1.9	0.55	1	12/30/22 09:11	01/06/23 12:09	763051-92-9	
4:2 FTS	<0.46	ng/L	1.9	0.46	1	12/30/22 09:11	01/06/23 12:09	757124-72-4	
6:2 FTS	1.5J	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:09	27619-97-2	
8:2 FTS	<0.50	ng/L	1.9	0.50	1	12/30/22 09:11	01/06/23 12:09	39108-34-4	
9CI-PF3ONS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:09	756426-58-1	
ADONA	1.8J	ng/L	1.9	0.91	1	12/30/22 09:11	01/06/23 12:09	919005-14-4	
HFPO-DA	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:09	13252-13-6	
NEtFOSAA	0.82J-- J	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 12:09	2991-50-6	
NEtFOSA	<0.57	ng/L	2.0	0.57	1	12/30/22 09:11	01/06/23 12:09	4151-50-2	
NEtFOSE	<0.89	ng/L	2.0	0.89	1	12/30/22 09:11	01/06/23 12:09	1691-99-2	
NMeFOSAA	<0.69 UJ	ng/L	2.0	0.69	1	12/30/22 09:11	01/06/23 12:09	2355-31-9	
NMeFOSA	<0.55	ng/L	2.0	0.55	1	12/30/22 09:11	01/06/23 12:09	31506-32-8	
NMeFOSE	<0.52	ng/L	2.0	0.52	1	12/30/22 09:11	01/06/23 12:09	24448-09-7	
Perfluorobutanesulfonic acid	4.6 U	ng/L	1.8	0.48	1	12/30/22 09:11	01/06/23 12:09	375-73-5	-B---
Perfluorodecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:09	335-76-2	
Perfluorohexanoic acid	11.8	ng/L	2.0	0.91	1	12/30/22 09:11	01/06/23 12:09	307-24-4	
PFBA	17.2	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:09	375-22-4	
PFDS	<0.64	ng/L	1.9	0.64	1	12/30/22 09:11	01/06/23 12:09	335-77-3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 07 20221212 Lab ID: 10637158002 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
PFDoS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:09	79780-39-5	
PFHpS	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:09	375-92-8	
PFNS	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 12:09	68259-12-1	
PFOSA	R <0.71	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 12:09	754-91-6	
PFPeA	98.9	ng/L	2.0	0.82	1	12/30/22 09:11	01/06/23 12:09	2706-90-3	
PFPeS	0.84J	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:09	2706-91-4	
Perfluorododecanoic acid	<0.48	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 12:09	307-55-1	
Perfluoroheptanoic acid	1.8J	ng/L	2.0	0.69	1	12/30/22 09:11	01/06/23 12:09	375-85-9	
Perfluorohexanesulfonic acid	11.2	ng/L	1.8	0.53	1	12/30/22 09:11	01/06/23 12:09	355-46-4	
Perfluorononanoic acid	<0.79	ng/L	2.0	0.79	1	12/30/22 09:11	01/06/23 12:09	375-95-1	
Perfluorooctanesulfonic acid	3.4	ng/L	1.8	0.66	1	12/30/22 09:11	01/06/23 12:09	1763-23-1	
Perfluorooctanoic acid	5.9	ng/L	2.0	0.86	1	12/30/22 09:11	01/06/23 12:09	335-67-1	
Perfluorotetradecanoic acid	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:09	376-06-7	
Perfluorotridecanoic acid	<0.62	ng/L	2.0	0.62	1	12/30/22 09:11	01/06/23 12:09	72629-94-8	
Perfluoroundecanoic acid	<0.48	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 12:09	2058-94-8	
Surrogates									
13C4-PFBA (S)	56	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C5-PFPeA (S)	77	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C3-PFBS (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C24:2FTS (S)	118	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C3HFPO-DA (S)	48	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C4-PFHpA (S)	78	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C3-PFHxS (S)	71	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C26:2FTS (S)	140	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C8-PFOA (S)	70	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C8-PFOS (S)	133	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C9-PFNA (S)	62	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C6-PFDA (S)	56	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C28:2FTS (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
d3-MeFOSAA (S)	15	%	25-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C7-PFUDa (S)	35	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
13C8-PFOSA (S)	9	%	25-150		1	12/30/22 09:11	01/06/23 12:09		S0
d5-EtFOSAA (S)	13	%	25-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C2-PFDoA (S)	29	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
d3-NMeFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
d7-NMeFOSE (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C2-PFTA (S)	27	%	25-150		1	12/30/22 09:11	01/06/23 12:09		
d9-NEtFOSE (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
d5-NEtFOSA (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:09		S0
13C5-PFHxA (S)	77	%	25-150		1	12/30/22 09:11	01/06/23 12:09		

2540D Total Suspended Solids

Analytical Method: SM 2540D

Pace Analytical Services - Minneapolis

Total Suspended Solids	149	mg/L	10.0	5.0	1		12/16/22 12:07		
------------------------	-----	------	------	-----	---	--	----------------	--	--

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 08 20221212 Lab ID: 10637158003 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.54	ng/L	1.8	0.54	1	12/30/22 09:11	01/06/23 12:16	763051-92-9	
4:2 FTS	<0.45	ng/L	1.8	0.45	1	12/30/22 09:11	01/06/23 12:16	757124-72-4	
6:2 FTS	<0.65	ng/L	1.8	0.65	1	12/30/22 09:11	01/06/23 12:16	27619-97-2	
8:2 FTS	<0.49	ng/L	1.9	0.49	1	12/30/22 09:11	01/06/23 12:16	39108-34-4	
9CI-PF3ONS	<0.45	ng/L	1.8	0.45	1	12/30/22 09:11	01/06/23 12:16	756426-58-1	
ADONA	0.89J	ng/L	1.8	0.89	1	12/30/22 09:11	01/06/23 12:16	919005-14-4	
HFPO-DA	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:16	13252-13-6	
NEtFOSAA	<0.79 UJ	ng/L	1.9	0.79	1	12/30/22 09:11	01/06/23 12:16	2991-50-6	
NEtFOSA	R <0.55	ng/L	1.9	0.55	1	12/30/22 09:11	01/06/23 12:16	4151-50-2	
NEtFOSE	R <0.86	ng/L	1.9	0.86	1	12/30/22 09:11	01/06/23 12:16	1691-99-2	
NMeFOSAA	<0.67 UJ	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:16	2355-31-9	
NMeFOSA	R <0.53	ng/L	1.9	0.53	1	12/30/22 09:11	01/06/23 12:16	31506-32-8	
NMeFOSE	R <0.50	ng/L	1.9	0.50	1	12/30/22 09:11	01/06/23 12:16	24448-09-7	
Perfluorobutanesulfonic acid	1.2J-- UJ	ng/L	1.7	0.47	1	12/30/22 09:11	01/06/23 12:16	375-73-5	
Perfluorodecanoic acid	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:16	335-76-2	
Perfluorohexanoic acid	6.8	ng/L	1.9	0.88	1	12/30/22 09:11	01/06/23 12:16	307-24-4	
PFBA	7.5	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:16	375-22-4	
PFDS	<0.62	ng/L	1.9	0.62	1	12/30/22 09:11	01/06/23 12:16	335-77-3	
PFDoS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:16	79780-39-5	
PFHpS	<0.64	ng/L	1.8	0.64	1	12/30/22 09:11	01/06/23 12:16	375-92-8	
PFNS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:16	68259-12-1	
PFOSA	R <0.69	ng/L	1.9	0.69	1	12/30/22 09:11	01/06/23 12:16	754-91-6	
PFPeA	124	ng/L	1.9	0.79	1	12/30/22 09:11	01/06/23 12:16	2706-90-3	
PFPeS	<0.58	ng/L	1.8	0.58	1	12/30/22 09:11	01/06/23 12:16	2706-91-4	
Perfluorododecanoic acid	<0.46	ng/L	1.9	0.46	1	12/30/22 09:11	01/06/23 12:16	307-55-1	
Perfluoroheptanoic acid	0.86J	ng/L	1.9	0.66	1	12/30/22 09:11	01/06/23 12:16	375-85-9	
Perfluorohexanesulfonic acid	4.8	ng/L	1.8	0.51	1	12/30/22 09:11	01/06/23 12:16	355-46-4	
Perfluorononanoic acid	<0.77	ng/L	1.9	0.77	1	12/30/22 09:11	01/06/23 12:16	375-95-1	
Perfluorooctanesulfonic acid	2.2	ng/L	1.8	0.64	1	12/30/22 09:11	01/06/23 12:16	1763-23-1	
Perfluorooctanoic acid	2.0	ng/L	1.9	0.83	1	12/30/22 09:11	01/06/23 12:16	335-67-1	
Perfluorotetradecanoic acid	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 12:16	376-06-7	
Perfluorotridecanoic acid	<0.60	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:16	72629-94-8	
Perfluoroundecanoic acid	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:16	2058-94-8	
Surrogates									
13C4-PFBA (S)	57	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C5-PFPeA (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C3-PFBS (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C24:2FTS (S)	130	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C3HFPO-DA (S)	55	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C4-PFHpA (S)	87	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C3-PFHxS (S)	76	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C26:2FTS (S)	133	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C8-PFOA (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C8-PFOS (S)	91	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C9-PFNA (S)	69	%	25-150		1	12/30/22 09:11	01/06/23 12:16		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Project No.: 10637158

Sample: Influent 08 20221212 Lab ID: 10637158003 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

13C6-PFDA (S)	55	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C28:2FTS (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
d3-MeFOSAA (S)	12	%	25-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C7-PFUdA (S)	34	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
13C8-PFOA (S)	9	%	25-150		1	12/30/22 09:11	01/06/23 12:16		S0
d5-EtFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C2-PFDoA (S)	26	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
d3-NMeFOSA (S)	6	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
d7-NMeFOSE (S)	5	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C2-PFTA (S)	29	%	25-150		1	12/30/22 09:11	01/06/23 12:16		
d9-NEtFOSE (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
d5-NEtFOSA (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:16		S0
13C5-PFHxA (S)	86	%	25-150		1	12/30/22 09:11	01/06/23 12:16		

2540D Total Suspended Solids Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	367	mg/L	18.2	9.1	1		12/16/22 12:08		
------------------------	-----	------	------	-----	---	--	----------------	--	--

Sample: Influent 11 20221212 Lab ID: 10637158004 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

11CI-PF3OUdS	<0.54	ng/L	1.8	0.54	1	12/30/22 09:11	01/06/23 12:23	763051-92-9	
4:2 FTS	<0.45	ng/L	1.8	0.45	1	12/30/22 09:11	01/06/23 12:23	757124-72-4	
6:2 FTS	<0.66	ng/L	1.8	0.66	1	12/30/22 09:11	01/06/23 12:23	27619-97-2	
8:2 FTS	<0.49	ng/L	1.9	0.49	1	12/30/22 09:11	01/06/23 12:23	39108-34-4	
9CI-PF3ONS	<0.46	ng/L	1.8	0.46	1	12/30/22 09:11	01/06/23 12:23	756426-58-1	
ADONA	2.2	ng/L	1.8	0.89	1	12/30/22 09:11	01/06/23 12:23	919005-14-4	
HFPO-DA	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:23	13252-13-6	
NEtFOSAA	R <0.79	ng/L	1.9	0.79	1	12/30/22 09:11	01/06/23 12:23	2991-50-6	
NEtFOSA	R <0.56	ng/L	1.9	0.56	1	12/30/22 09:11	01/06/23 12:23	4151-50-2	
NEtFOSE	R <0.86	ng/L	1.9	0.86	1	12/30/22 09:11	01/06/23 12:23	1691-99-2	
NMeFOSAA	R <0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:23	2355-31-9	
NMeFOSA	R <0.54	ng/L	1.9	0.54	1	12/30/22 09:11	01/06/23 12:23	31506-32-8	
NMeFOSE	R <0.51	ng/L	1.9	0.51	1	12/30/22 09:11	01/06/23 12:23	24448-09-7	
Perfluorobutanesulfonic acid	0.92J-UJ	ng/L	1.7	0.47	1	12/30/22 09:11	01/06/23 12:23	375-73-5	
Perfluorodecanoic acid	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:23	335-76-2	
Perfluorohexanoic acid	5.4	ng/L	1.9	0.88	1	12/30/22 09:11	01/06/23 12:23	307-24-4	
PFBA	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:23	375-22-4	
PFDS	<0.62	ng/L	1.9	0.62	1	12/30/22 09:11	01/06/23 12:23	335-77-3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 11 20221212 **Lab ID: 10637158004** Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
PFDoS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:23	79780-39-5	
PFHpS	<0.65	ng/L	1.8	0.65	1	12/30/22 09:11	01/06/23 12:23	375-92-8	
PFNS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:23	68259-12-1	
PFOSA	R <0.70	ng/L	1.9	0.70	1	12/30/22 09:11	01/06/23 12:23	754-91-6	
PFPeA	164	ng/L	1.9	0.80	1	12/30/22 09:11	01/06/23 12:23	2706-90-3	
PFPeS	<0.58	ng/L	1.8	0.58	1	12/30/22 09:11	01/06/23 12:23	2706-91-4	
Perfluorododecanoic acid	<0.47 UJ	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:23	307-55-1	
Perfluoroheptanoic acid	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:23	375-85-9	
Perfluorohexanesulfonic acid	2.7	ng/L	1.8	0.52	1	12/30/22 09:11	01/06/23 12:23	355-46-4	
Perfluorononanoic acid	<0.77	ng/L	1.9	0.77	1	12/30/22 09:11	01/06/23 12:23	375-95-1	
Perfluorooctanesulfonic acid	1.6J	ng/L	1.8	0.65	1	12/30/22 09:11	01/06/23 12:23	1763-23-1	
Perfluorooctanoic acid	1.8J	ng/L	1.9	0.84	1	12/30/22 09:11	01/06/23 12:23	335-67-1	
Perfluorotetradecanoic acid	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 12:23	376-06-7	
Perfluorotridecanoic acid	<0.60 UJ	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:23	72629-94-8	
Perfluoroundecanoic acid	<0.47 UJ	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:23	2058-94-8	
Surrogates									
13C4-PFBA (S)	40	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C5-PFPeA (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C3-PFBS (S)	65	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C24:2FTS (S)	104	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C3HFPO-DA (S)	49	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C4-PFHpA (S)	72	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C3-PFHxS (S)	75	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C26:2FTS (S)	125	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C8-PFOA (S)	71	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C8-PFOS (S)	70	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C9-PFNA (S)	54	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C6-PFDA (S)	38	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
13C28:2FTS (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
d3-MeFOSAA (S)	7	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C7-PFUDa (S)	21	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C8-PFOSA (S)	4	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
d5-EtFOSAA (S)	7	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C2-PFDoA (S)	14	%	25-150		1	12/30/22 09:11	01/06/23 12:23		S0
d3-NMeFOSA (S)	5	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
d7-NMeFOSE (S)	3	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C2-PFTA (S)	25	%	25-150		1	12/30/22 09:11	01/06/23 12:23		
d9-NEtFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
d5-NEtFOSA (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:23		S0
13C5-PFHxA (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:23		

2540D Total Suspended Solids

Analytical Method: SM 2540D

Pace Analytical Services - Minneapolis

Total Suspended Solids	291	mg/L	20.0	10.0	1		12/16/22 12:08		
------------------------	------------	------	------	------	---	--	----------------	--	--

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 18 20221212 Lab ID: 10637158005 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.56	ng/L	1.9	0.56	1	12/30/22 09:11	01/06/23 12:30	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:30	757124-72-4	
6:2 FTS	2.0 J	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:30	27619-97-2	
8:2 FTS	<0.51	ng/L	1.9	0.51	1	12/30/22 09:11	01/06/23 12:30	39108-34-4	
9CI-PF3ONS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:30	756426-58-1	
ADONA	2.3	ng/L	1.9	0.92	1	12/30/22 09:11	01/06/23 12:30	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:30	13252-13-6	
NEtFOSAA	0.91J-- J	ng/L	2.0	0.82	1	12/30/22 09:11	01/06/23 12:30	2991-50-6	
NEtFOSA	R <0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:30	4151-50-2	
NEtFOSE	R <0.89	ng/L	2.0	0.89	1	12/30/22 09:11	01/06/23 12:30	1691-99-2	
NMeFOSAA	<0.70 UJ	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:30	2355-31-9	
NMeFOSA	R <0.55	ng/L	2.0	0.55	1	12/30/22 09:11	01/06/23 12:30	31506-32-8	
NMeFOSE	R <0.52	ng/L	2.0	0.52	1	12/30/22 09:11	01/06/23 12:30	24448-09-7	
Perfluorobutanesulfonic acid	3.2 U	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:30	375-73-5	--B---
Perfluorodecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:30	335-76-2	
Perfluorohexanoic acid	8.5	ng/L	2.0	0.91	1	12/30/22 09:11	01/06/23 12:30	307-24-4	
PFBA	8.5 J	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:30	375-22-4	D6
PFDS	<0.64 UJ	ng/L	1.9	0.64	1	12/30/22 09:11	01/06/23 12:30	335-77-3	
PFDoS	<0.59	ng/L	2.0	0.59	1	12/30/22 09:11	01/06/23 12:30	79780-39-5	
PFHpS	<0.67	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:30	375-92-8	
PFNS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 12:30	68259-12-1	
PFOSA	R <0.72	ng/L	2.0	0.72	1	12/30/22 09:11	01/06/23 12:30	754-91-6	
PFPeA	109	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:30	2706-90-3	
PFPeS	1.2J	ng/L	1.9	0.60	1	12/30/22 09:11	01/06/23 12:30	2706-91-4	
Perfluorododecanoic acid	<0.48 UJ	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 12:30	307-55-1	
Perfluoroheptanoic acid	1.7J	ng/L	2.0	0.69	1	12/30/22 09:11	01/06/23 12:30	375-85-9	
Perfluorohexanesulfonic acid	13.9	ng/L	1.8	0.53	1	12/30/22 09:11	01/06/23 12:30	355-46-4	
Perfluorononanoic acid	<0.80	ng/L	2.0	0.80	1	12/30/22 09:11	01/06/23 12:30	375-95-1	
Perfluorooctanesulfonic acid	5.1	ng/L	1.9	0.67	1	12/30/22 09:11	01/06/23 12:30	1763-23-1	
Perfluorooctanoic acid	6.3	ng/L	2.0	0.86	1	12/30/22 09:11	01/06/23 12:30	335-67-1	
Perfluorotetradecanoic acid	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:30	376-06-7	
Perfluorotridecanoic acid	<0.63 UJ	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:30	72629-94-8	
Perfluoroundecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:30	2058-94-8	
Surrogates									
13C4-PFBA (S)	43	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C5-PFPeA (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C3-PFBS (S)	74	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C24:2FTS (S)	130	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C3HFPO-DA (S)	53	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C4-PFHpA (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C3-PFHxS (S)	82	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C26:2FTS (S)	151	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C8-PFOA (S)	75	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C8-PFOS (S)	94	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C9-PFNA (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:30		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent 18 20221212 Lab ID: 10637158005 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

13C6-PFDA (S)	54	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C28:2FTS (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
d3-MeFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C7-PFUdA (S)	35	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
13C8-PFOA (S)	6	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
d5-EtFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C2-PFDoA (S)	23	%	25-150		1	12/30/22 09:11	01/06/23 12:30		S0
d3-NMeFOSA (S)	3	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
d7-NMeFOSE (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C2-PFTA (S)	28	%	25-150		1	12/30/22 09:11	01/06/23 12:30		
d9-NEtFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
d5-NEtFOSA (S)	2	%	10-150		1	12/30/22 09:11	01/06/23 12:30		S0
13C5-PFHxA (S)	86	%	25-150		1	12/30/22 09:11	01/06/23 12:30		

2540D Total Suspended Solids

Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	220	mg/L	20.0	10.0	1		12/16/22 12:08		
------------------------	-----	------	------	------	---	--	----------------	--	--

Sample: Influent Comp 20221212 Lab ID: 10637158006 Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW

Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

11CI-PF3OUdS	<0.57 UJ	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:52	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:52	757124-72-4	
6:2 FTS	<0.69	ng/L	1.9	0.69	1	12/30/22 09:11	01/06/23 12:52	27619-97-2	
8:2 FTS	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:52	39108-34-4	
9CI-PF3ONS	<0.48 UJ	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:52	756426-58-1	
ADONA	2.1	ng/L	1.9	0.94	1	12/30/22 09:11	01/06/23 12:52	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:52	13252-13-6	
NEtFOSAA	<0.83 UJ	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:52	2991-50-6	
NEtFOSA	R <0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:52	4151-50-2	
NEtFOSE	R <0.91	ng/L	2.0	0.91	1	12/30/22 09:11	01/06/23 12:52	1691-99-2	
NMeFOSAA	<0.71 UJ	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 12:52	2355-31-9	
NMeFOSA	R <0.56	ng/L	2.0	0.56	1	12/30/22 09:11	01/06/23 12:52	31506-32-8	
NMeFOSE	R <0.53	ng/L	2.0	0.53	1	12/30/22 09:11	01/06/23 12:52	24448-09-7	
Perfluorobutanesulfonic acid	2.1 U	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:52	375-73-5	B
Perfluorodecanoic acid	<0.62	ng/L	2.0	0.62	1	12/30/22 09:11	01/06/23 12:52	335-76-2	
Perfluorohexanoic acid	8.6	ng/L	2.0	0.93	1	12/30/22 09:11	01/06/23 12:52	307-24-4	
PFBA	9.7	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:52	375-22-4	
PFDS	<0.65 UJ	ng/L	2.0	0.65	1	12/30/22 09:11	01/06/23 12:52	335-77-3	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Influent Comp 20221212 **Lab ID: 10637158006** Collected: 12/12/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
PFDoS	<0.60 UJ	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:52	79780-39-5	
PFHpS	<0.68 UJ	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:52	375-92-8	
PFNS	<0.60 UJ	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:52	68259-12-1	
PFOSA	R <0.73	ng/L	2.0	0.73	1	12/30/22 09:11	01/06/23 12:52	754-91-6	
PFPeA	128	ng/L	2.0	0.84	1	12/30/22 09:11	01/06/23 12:52	2706-90-3	
PFPeS	<0.61	ng/L	1.9	0.61	1	12/30/22 09:11	01/06/23 12:52	2706-91-4	
Perfluorododecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:52	307-55-1	
Perfluoroheptanoic acid	1.3J	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:52	375-85-9	
Perfluorohexanesulfonic acid	6.6	ng/L	1.9	0.54	1	12/30/22 09:11	01/06/23 12:52	355-46-4	
Perfluorononanoic acid	<0.81	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 12:52	375-95-1	
Perfluorooctanesulfonic acid	1.2J	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:52	1763-23-1	
Perfluorooctanoic acid	3.5	ng/L	2.0	0.88	1	12/30/22 09:11	01/06/23 12:52	335-67-1	
Perfluorotetradecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:52	376-06-7	
Perfluorotridecanoic acid	<0.63	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:52	72629-94-8	
Perfluoroundecanoic acid	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:52	2058-94-8	
Surrogates									
13C4-PFBA (S)	57	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C5-PFPeA (S)	90	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C3-PFBS (S)	83	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C24:2FTS (S)	146	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C3HFPO-DA (S)	57	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C4-PFHpA (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C3-PFHxS (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C26:2FTS (S)	126	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C8-PFOA (S)	79	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C8-PFOS (S)	439	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C9-PFNA (S)	67	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C6-PFDA (S)	53	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C28:2FTS (S)	68	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
d3-MeFOSAA (S)	12	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C7-PFUDa (S)	31	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
13C8-PFOSA (S)	8	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
d5-EtFOSAA (S)	11	%	25-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C2-PFDoA (S)	26	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
d3-NMeFOSA (S)	3	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
d7-NMeFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C2-PFTA (S)	32	%	25-150		1	12/30/22 09:11	01/06/23 12:52		
d9-NEtFOSE (S)	1	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
d5-NEtFOSA (S)	4	%	10-150		1	12/30/22 09:11	01/06/23 12:52		S0
13C5-PFHxA (S)	90	%	25-150		1	12/30/22 09:11	01/06/23 12:52		

2540D Total Suspended Solids

Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	107	mg/L	10.0	5.0	1	12/16/22 12:08			
------------------------	-----	------	------	-----	---	----------------	--	--	--

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Effluent 20221213 Lab ID: 10637158007 Collected: 12/13/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.57	ng/L	1.9	0.57	1	12/30/22 09:11	01/06/23 12:59	763051-92-9	
4:2 FTS	<0.47	ng/L	1.9	0.47	1	12/30/22 09:11	01/06/23 12:59	757124-72-4	
6:2 FTS	0.76J	ng/L	1.9	0.69	1	12/30/22 09:11	01/06/23 12:59	27619-97-2	
8:2 FTS	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:59	39108-34-4	
9CI-PF3ONS	<0.48	ng/L	1.9	0.48	1	12/30/22 09:11	01/06/23 12:59	756426-58-1	
ADONA	<0.93	ng/L	1.9	0.93	1	12/30/22 09:11	01/06/23 12:59	919005-14-4	
HFPO-DA	<0.50	ng/L	2.0	0.50	1	12/30/22 09:11	01/06/23 12:59	13252-13-6	
NEtFOSAA	<0.83	ng/L	2.0	0.83	1	12/30/22 09:11	01/06/23 12:59	2991-50-6	
NEtFOSA	<0.58	ng/L	2.0	0.58	1	12/30/22 09:11	01/06/23 12:59	4151-50-2	
NEtFOSE	<0.90	ng/L	2.0	0.90	1	12/30/22 09:11	01/06/23 12:59	1691-99-2	
NMeFOSAA	0.82J	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 12:59	2355-31-9	
NMeFOSA	<0.56	ng/L	2.0	0.56	1	12/30/22 09:11	01/06/23 12:59	31506-32-8	
NMeFOSE	<0.53	ng/L	2.0	0.53	1	12/30/22 09:11	01/06/23 12:59	24448-09-7	
Perfluorobutanesulfonic acid	3.3 U	ng/L	1.8	0.49	1	12/30/22 09:11	01/06/23 12:59	375-73-5	---B---
Perfluorodecanoic acid	0.85J	ng/L	2.0	0.62	1	12/30/22 09:11	01/06/23 12:59	335-76-2	
Perfluorohexanoic acid	16.7	ng/L	2.0	0.93	1	12/30/22 09:11	01/06/23 12:59	307-24-4	
PFBA	6.1	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 12:59	375-22-4	
PFDS	<0.65	ng/L	2.0	0.65	1	12/30/22 09:11	01/06/23 12:59	335-77-3	
PFDoS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:59	79780-39-5	
PFHpS	<0.68	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:59	375-92-8	
PFNS	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 12:59	68259-12-1	
PFOSA	<0.73	ng/L	2.0	0.73	1	12/30/22 09:11	01/06/23 12:59	754-91-6	
PFPeA	12.9	ng/L	2.0	0.84	1	12/30/22 09:11	01/06/23 12:59	2706-90-3	
PFPeS	<0.61	ng/L	1.9	0.61	1	12/30/22 09:11	01/06/23 12:59	2706-91-4	
Perfluorododecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:59	307-55-1	
Perfluoroheptanoic acid	1.5J	ng/L	2.0	0.70	1	12/30/22 09:11	01/06/23 12:59	375-85-9	
Perfluorohexanesulfonic acid	7.0	ng/L	1.9	0.54	1	12/30/22 09:11	01/06/23 12:59	355-46-4	
Perfluorononanoic acid	<0.81	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 12:59	375-95-1	
Perfluorooctanesulfonic acid	3.6	ng/L	1.9	0.68	1	12/30/22 09:11	01/06/23 12:59	1763-23-1	
Perfluorooctanoic acid	6.5	ng/L	2.0	0.88	1	12/30/22 09:11	01/06/23 12:59	335-67-1	
Perfluorotetradecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 12:59	376-06-7	
Perfluorotridecanoic acid	<0.63	ng/L	2.0	0.63	1	12/30/22 09:11	01/06/23 12:59	72629-94-8	
Perfluoroundecanoic acid	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 12:59	2058-94-8	
Surrogates									
13C4-PFBA (S)	65	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C5-PFPeA (S)	84	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C3-PFBS (S)	81	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C24:2FTS (S)	86	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C3HFPO-DA (S)	68	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C4-PFHpA (S)	100	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C3-PFHxS (S)	89	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C26:2FTS (S)	109	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C8-PFOA (S)	92	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C8-PFOS (S)	91	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C9-PFNA (S)	104	%	25-150		1	12/30/22 09:11	01/06/23 12:59		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Effluent 20221213 **Lab ID: 10637158007** Collected: 12/13/22 23:59 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

WI ID NPW Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

Surrogates

13C6-PFDA (S)	98	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C28:2FTS (S)	94	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d3-MeFOSAA (S)	87	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C7-PFUdA (S)	98	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C8-PFOA (S)	66	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d5-EtFOSAA (S)	87	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
13C2-PFDoA (S)	90	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d3-NMeFOSA (S)	47	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
d7-NMeFOSE (S)	65	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
13C2-PFTA (S)	65	%	25-150		1	12/30/22 09:11	01/06/23 12:59		
d9-NEtFOSE (S)	56	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
d5-NEtFOSA (S)	46	%	10-150		1	12/30/22 09:11	01/06/23 12:59		
13C5-PFHxA (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 12:59		

2540D Total Suspended Solids Analytical Method: SM 2540D
Pace Analytical Services - Minneapolis

Total Suspended Solids	9.3J	mg/L	10.0	5.0	1		12/20/22 11:15		
------------------------	-------------	------	------	-----	---	--	----------------	--	--

Sample: Biosolids A20221214 **Lab ID: 10637158009** Collected: 12/14/22 07:20 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
------------	---------	-------	-----	-----	----	----------	----------	---------	------

Dry Weight / %M by ASTM D2974 Analytical Method: ASTM D2974
Pace Analytical Services - Minneapolis

Percent Moisture	69.2	%	0.10	0.10	1		12/20/22 14:36		N2
------------------	-------------	---	------	------	---	--	----------------	--	-----------

WI ID SL Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178
Pace Analytical Services - Minneapolis

11CI-PF3OUdS	<0.082	ug/kg	0.30	0.082	1	01/10/23 12:08	01/12/23 15:16	763051-92-9	
4:2 FTS	<0.075	ug/kg	0.30	0.075	1	01/10/23 12:08	01/12/23 15:16	757124-72-4	
6:2 FTS	2.1	ug/kg	0.31	0.13	1	01/10/23 12:08	01/12/23 15:16	27619-97-2	
8:2 FTS	1.2	ug/kg	0.31	0.14	1	01/10/23 12:08	01/12/23 15:16	39108-34-4	
9CI-PF3ONS	<0.081	ug/kg	0.30	0.081	1	01/10/23 12:08	01/12/23 15:16	756426-58-1	
ADONA	<0.12	ug/kg	0.31	0.12	1	01/10/23 12:08	01/12/23 15:16	919005-14-4	
HFPO-DA	<0.090	ug/kg	0.32	0.090	1	01/10/23 12:08	01/12/23 15:16	13252-13-6	
NEtFOSAA	9.0	ug/kg	0.32	0.13	1	01/10/23 12:08	01/12/23 15:16	2991-50-6	
NEtFOSA	0.18J	ug/kg	0.32	0.083	1	01/10/23 12:08	01/12/23 15:16	4151-50-2	
NEtFOSE	2.8	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	1691-99-2	
NMeFOSAA	29.8	ug/kg	0.32	0.091	1	01/10/23 12:08	01/12/23 15:16	2355-31-9	
NMeFOSA	0.13J	ug/kg	0.32	0.088	1	01/10/23 12:08	01/12/23 15:16	31506-32-8	
NMeFOSE	5.8	ug/kg	0.32	0.098	1	01/10/23 12:08	01/12/23 15:16	24448-09-7	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Biosolids A20221214 Lab ID: 10637158009 Collected: 12/14/22 07:20 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID SL Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178 Pace Analytical Services - Minneapolis									
Perfluorobutanesulfonic acid	1.8	ug/kg	0.29	0.085	1	01/10/23 12:08	01/12/23 15:16	375-73-5	
Perfluorodecanoic acid	11.8	ug/kg	0.32	0.074	1	01/10/23 12:08	01/12/23 15:16	335-76-2	
Perfluorohexanoic acid	37.1	ug/kg	1.6	0.44	5	01/10/23 12:08	01/13/23 16:43	307-24-4	
PFBA	9.8	ug/kg	0.32	0.092	1	01/10/23 12:08	01/12/23 15:16	375-22-4	
PFDS	1.7	ug/kg	0.31	0.091	1	01/10/23 12:08	01/12/23 15:16	335-77-3	
PFDoS	<0.084	ug/kg	0.31	0.084	1	01/10/23 12:08	01/12/23 15:16	79780-39-5	
PFHpS	0.39	ug/kg	0.31	0.090	1	01/10/23 12:08	01/12/23 15:16	375-92-8	
PFNS	<0.11	ug/kg	0.31	0.11	1	01/10/23 12:08	01/12/23 15:16	68259-12-1	
PFOSA	1.6	ug/kg	0.32	0.095	1	01/10/23 12:08	01/12/23 15:16	754-91-6	
PFPeA	15.0	ug/kg	0.32	0.092	1	01/10/23 12:08	01/12/23 15:16	2706-90-3	
PFPeS	0.11J	ug/kg	0.30	0.078	1	01/10/23 12:08	01/12/23 15:16	2706-91-4	
Perfluorododecanoic acid	4.0 J	ug/kg	0.32	0.11	1	01/10/23 12:08	01/12/23 15:16	307-55-1	
Perfluoroheptanoic acid	2.9	ug/kg	0.32	0.11	1	01/10/23 12:08	01/12/23 15:16	375-85-9	
Perfluorohexanesulfonic acid	1.0	ug/kg	0.29	0.071	1	01/10/23 12:08	01/12/23 15:16	355-46-4	
Perfluorononanoic acid	1.4	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	375-95-1	
Perfluorooctanesulfonic acid	14.7	ug/kg	1.5	0.48	5	01/10/23 12:08	01/13/23 16:43	1763-23-1	
Perfluorooctanoic acid	25.8	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	335-67-1	
Perfluorotetradecanoic acid	1.1	ug/kg	0.32	0.11	1	01/10/23 12:08	01/12/23 15:16	376-06-7	
Perfluorotridecanoic acid	1.6 J	ug/kg	0.32	0.10	1	01/10/23 12:08	01/12/23 15:16	72629-94-8	
Perfluoroundecanoic acid	1.5	ug/kg	0.32	0.098	1	01/10/23 12:08	01/12/23 15:16	2058-94-8	
Surrogates									
13C2-PFDoA (S)	13	%	25-150		1	01/10/23 12:08	01/12/23 15:16		S0
13C2-PFTA (S)	27	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C24:2FTS (S)	151	%	25-150		1	01/10/23 12:08	01/12/23 15:16		S0
13C26:2FTS (S)	140	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C28:2FTS (S)	111	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C2PFHxDA (S)	14	%	25-150		1	01/10/23 12:08	01/12/23 15:16		S0
13C3-PFBS (S)	60	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C3-PFHxS (S)	54	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C3HFPO-DA (S)	51	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C4-PFBA (S)	55	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C4-PFHpA (S)	53	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C5-PFHxA (S)	85	%	25-150		5	01/10/23 12:08	01/13/23 16:43		
13C5-PFPeA (S)	57	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C6-PFDA (S)	42	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C7-PFUdA (S)	35	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C8-PFOA (S)	50	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C8-PFOS (S)	58	%	25-150		5	01/10/23 12:08	01/13/23 16:43		
13C8-PFOSA (S)	33	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
13C9-PFNA (S)	48	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
d3-MeFOSAA (S)	35	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
d3-NMeFOSA (S)	13	%	10-150		1	01/10/23 12:08	01/12/23 15:16		
d5-EtFOSAA (S)	29	%	25-150		1	01/10/23 12:08	01/12/23 15:16		
d5-NEtFOSA (S)	11	%	10-150		1	01/10/23 12:08	01/12/23 15:16		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Biosolids A20221214 Lab ID: 10637158009 Collected: 12/14/22 07:20 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
Surrogates									
d7-NMeFOSE (S)	25	%	10-150		1	01/10/23 12:08	01/12/23 15:16		
d9-NEtFOSE (S)	15	%	10-150		1	01/10/23 12:08	01/12/23 15:16		

Sample: Biosolids B20221214 Lab ID: 10637158010 Collected: 12/14/22 07:45 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	93.6	%	0.10	0.10	1		12/22/22 14:01		N2
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.39	ug/kg	1.5	0.39	1	01/10/23 12:08	01/12/23 15:36	763051-92-9	
4:2 FTS	<0.36	ug/kg	1.5	0.36	1	01/10/23 12:08	01/12/23 15:36	757124-72-4	
6:2 FTS	<0.64	ug/kg	1.5	0.64	1	01/10/23 12:08	01/12/23 15:36	27619-97-2	
8:2 FTS	<0.68	ug/kg	1.5	0.68	1	01/10/23 12:08	01/12/23 15:36	39108-34-4	
9CI-PF3ONS	<0.39	ug/kg	1.4	0.39	1	01/10/23 12:08	01/12/23 15:36	756426-58-1	
ADONA	<0.56	ug/kg	1.5	0.56	1	01/10/23 12:08	01/12/23 15:36	919005-14-4	
HFPO-DA	<0.43	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	13252-13-6	
NEtFOSAA	4.9	ug/kg	1.5	0.62	1	01/10/23 12:08	01/12/23 15:36	2991-50-6	
NEtFOSA	R <0.40	ug/kg	1.5	0.40	1	01/10/23 12:08	01/12/23 15:36	4151-50-2	
NEtFOSE	1.3J	ug/kg	1.5	0.50	1	01/10/23 12:08	01/12/23 15:36	1691-99-2	
NMeFOSAA	8.6	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	2355-31-9	
NMeFOSA	R <0.42	ug/kg	1.5	0.42	1	01/10/23 12:08	01/12/23 15:36	31506-32-8	
NMeFOSE	4.5	ug/kg	1.5	0.47	1	01/10/23 12:08	01/12/23 15:36	24448-09-7	
Perfluorobutanesulfonic acid	1.2J	ug/kg	1.4	0.41	1	01/10/23 12:08	01/12/23 15:36	375-73-5	
Perfluorodecanoic acid	2.8	ug/kg	1.5	0.35	1	01/10/23 12:08	01/12/23 15:36	335-76-2	
Perfluorohexanoic acid	1.3J	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	307-24-4	
PFBA	<0.44	ug/kg	1.5	0.44	1	01/10/23 12:08	01/12/23 15:36	375-22-4	
PFDS	0.70J	ug/kg	1.5	0.44	1	01/10/23 12:08	01/12/23 15:36	335-77-3	
PFDoS	<0.40	ug/kg	1.5	0.40	1	01/10/23 12:08	01/12/23 15:36	79780-39-5	
PFHpS	<0.43	ug/kg	1.5	0.43	1	01/10/23 12:08	01/12/23 15:36	375-92-8	
PFNS	<0.54	ug/kg	1.5	0.54	1	01/10/23 12:08	01/12/23 15:36	68259-12-1	
PFOSA	<0.45	ug/kg	1.5	0.45	1	01/10/23 12:08	01/12/23 15:36	754-91-6	
PFPeA	<0.44	ug/kg	1.5	0.44	1	01/10/23 12:08	01/12/23 15:36	2706-90-3	
PFPeS	<0.37	ug/kg	1.5	0.37	1	01/10/23 12:08	01/12/23 15:36	2706-91-4	
Perfluorododecanoic acid	1.8	ug/kg	1.5	0.51	1	01/10/23 12:08	01/12/23 15:36	307-55-1	
Perfluoroheptanoic acid	<0.54	ug/kg	1.5	0.54	1	01/10/23 12:08	01/12/23 15:36	375-85-9	
Perfluorohexanesulfonic acid	0.52J	ug/kg	1.4	0.34	1	01/10/23 12:08	01/12/23 15:36	355-46-4	
Perfluorononanoic acid	<0.48	ug/kg	1.5	0.48	1	01/10/23 12:08	01/12/23 15:36	375-95-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: Biosolids B20221214 **Lab ID: 10637158010** Collected: 12/14/22 07:45 Received: 12/15/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID SL									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
Perfluorooctanesulfonic acid	8.5	ug/kg	1.4	0.46	1	01/10/23 12:08	01/12/23 15:36	1763-23-1	
Perfluorooctanoic acid	1.2J	ug/kg	1.5	0.48	1	01/10/23 12:08	01/12/23 15:36	335-67-1	
Perfluorotetradecanoic acid	0.56J	ug/kg	1.5	0.53	1	01/10/23 12:08	01/12/23 15:36	376-06-7	
Perfluorotridecanoic acid	<0.49	ug/kg	1.5	0.49	1	01/10/23 12:08	01/12/23 15:36	72629-94-8	
Perfluoroundecanoic acid	0.81J	ug/kg	1.5	0.47	1	01/10/23 12:08	01/12/23 15:36	2058-94-8	
Surrogates									
13C2-PFDoA (S)	32	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C2-PFTA (S)	29	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C24:2FTS (S)	161	%	25-150		1	01/10/23 12:08	01/12/23 15:36		S0
13C26:2FTS (S)	138	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C28:2FTS (S)	114	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C2PFHxDA (S)	21	%	25-150		1	01/10/23 12:08	01/12/23 15:36		S0
13C3-PFBS (S)	70	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C3-PFHxS (S)	67	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C3HFPO-DA (S)	62	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C4-PFBA (S)	47	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C4-PFHpA (S)	61	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C5-PFHxA (S)	68	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C5-PFPeA (S)	48	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C6-PFDA (S)	38	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C7-PFUdA (S)	30	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C8-PFOA (S)	60	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C8-PFOS (S)	32	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C8-PFOA (S)	33	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
13C9-PFNA (S)	60	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
d3-MeFOSAA (S)	27	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
d3-NMeFOSA (S)	9	%	10-150		1	01/10/23 12:08	01/12/23 15:36		S0
d5-EtFOSAA (S)	33	%	25-150		1	01/10/23 12:08	01/12/23 15:36		
d5-NEtFOSA (S)	6	%	10-150		1	01/10/23 12:08	01/12/23 15:36		S0
d7-NMeFOSE (S)	25	%	10-150		1	01/10/23 12:08	01/12/23 15:36		
d9-NEtFOSE (S)	23	%	10-150		1	01/10/23 12:08	01/12/23 15:36		

Sample: EB01 202221214 **Lab ID: 10637158011** Collected: 12/14/22 07:30 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
11CI-PF3OUdS	<0.55	ng/L	1.9	0.55	1	12/30/22 09:11	01/06/23 13:13	763051-92-9	
4:2 FTS	<0.46	ng/L	1.8	0.46	1	12/30/22 09:11	01/06/23 13:13	757124-72-4	
6:2 FTS	<0.66	ng/L	1.9	0.66	1	12/30/22 09:11	01/06/23 13:13	27619-97-2	
8:2 FTS	<0.50	ng/L	1.9	0.50	1	12/30/22 09:11	01/06/23 13:13	39108-34-4	
9CI-PF3ONS	<0.46	ng/L	1.8	0.46	1	12/30/22 09:11	01/06/23 13:13	756426-58-1	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: MMSD PFAS

Pace Project No.: 10637158

Sample: **EB01 202221214** Lab ID: **10637158011** Collected: 12/14/22 07:30 Received: 12/15/22 08:50 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
WI ID NPW									
Analytical Method: ENV-SOP-MIN4-0178 Preparation Method: ENV-SOP-MIN4-0178									
Pace Analytical Services - Minneapolis									
ADONA	<0.90	ng/L	1.9	0.90	1	12/30/22 09:11	01/06/23 13:13	919005-14-4	
HFPO-DA	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 13:13	13252-13-6	
NEtFOSAA	4.1	ng/L	2.0	0.80	1	12/30/22 09:11	01/06/23 13:13	2991-50-6	
NEtFOSA	<0.57	ng/L	2.0	0.57	1	12/30/22 09:11	01/06/23 13:13	4151-50-2	
NEtFOSE	<0.88	ng/L	2.0	0.88	1	12/30/22 09:11	01/06/23 13:13	1691-99-2	
NMeFOSAA	<0.68	ng/L	2.0	0.68	1	12/30/22 09:11	01/06/23 13:13	2355-31-9	
NMeFOSA	<0.54	ng/L	2.0	0.54	1	12/30/22 09:11	01/06/23 13:13	31506-32-8	
NMeFOSE	<0.51	ng/L	2.0	0.51	1	12/30/22 09:11	01/06/23 13:13	24448-09-7	
Perfluorobutanesulfonic acid	<0.48	ng/L	1.7	0.48	1	12/30/22 09:11	01/06/23 13:13	375-73-5	
Perfluorodecanoic acid	<0.60	ng/L	2.0	0.60	1	12/30/22 09:11	01/06/23 13:13	335-76-2	
Perfluorohexanoic acid	<0.90	ng/L	2.0	0.90	1	12/30/22 09:11	01/06/23 13:13	307-24-4	
PFBA	<0.49	ng/L	2.0	0.49	1	12/30/22 09:11	01/06/23 13:13	375-22-4	
PFDS	<0.63	ng/L	1.9	0.63	1	12/30/22 09:11	01/06/23 13:13	335-77-3	
PFDoS	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 13:13	79780-39-5	
PFHpS	<0.66	ng/L	1.9	0.66	1	12/30/22 09:11	01/06/23 13:13	375-92-8	
PFNS	<0.58	ng/L	1.9	0.58	1	12/30/22 09:11	01/06/23 13:13	68259-12-1	
PFOSA	<0.71	ng/L	2.0	0.71	1	12/30/22 09:11	01/06/23 13:13	754-91-6	
PFPeA	<0.81	ng/L	2.0	0.81	1	12/30/22 09:11	01/06/23 13:13	2706-90-3	
PFPeS	<0.59	ng/L	1.9	0.59	1	12/30/22 09:11	01/06/23 13:13	2706-91-4	
Perfluorododecanoic acid	<0.47	ng/L	2.0	0.47	1	12/30/22 09:11	01/06/23 13:13	307-55-1	
Perfluoroheptanoic acid	<0.68	ng/L	2.0	0.68	1	12/30/22 09:11	01/06/23 13:13	375-85-9	
Perfluorohexanesulfonic acid	<0.52	ng/L	1.8	0.52	1	12/30/22 09:11	01/06/23 13:13	355-46-4	
Perfluorononanoic acid	<0.78	ng/L	2.0	0.78	1	12/30/22 09:11	01/06/23 13:13	375-95-1	
Perfluorooctanesulfonic acid	<0.66	ng/L	1.8	0.66	1	12/30/22 09:11	01/06/23 13:13	1763-23-1	
Perfluorooctanoic acid	<0.85	ng/L	2.0	0.85	1	12/30/22 09:11	01/06/23 13:13	335-67-1	
Perfluorotetradecanoic acid	<0.59	ng/L	2.0	0.59	1	12/30/22 09:11	01/06/23 13:13	376-06-7	
Perfluorotridecanoic acid	<0.61	ng/L	2.0	0.61	1	12/30/22 09:11	01/06/23 13:13	72629-94-8	
Perfluoroundecanoic acid	<0.48	ng/L	2.0	0.48	1	12/30/22 09:11	01/06/23 13:13	2058-94-8	
Surrogates									
13C4-PFBA (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C5-PFPeA (S)	89	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C3-PFBS (S)	88	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C24:2FTS (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C3HFPO-DA (S)	83	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C4-PFHpA (S)	96	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C3-PFHxS (S)	92	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C26:2FTS (S)	59	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C8-PFOA (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C8-PFOS (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C9-PFNA (S)	97	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C6-PFDA (S)	96	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C28:2FTS (S)	69	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
d3-MeFOSAA (S)	71	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C7-PFUdA (S)	92	%	25-150		1	12/30/22 09:11	01/06/23 13:13		
13C8-PFOSA (S)	70	%	25-150		1	12/30/22 09:11	01/06/23 13:13		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Sample Results

INFLUENT 02 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174501
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:05	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.54J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.88J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.71J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	5.05J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.09J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.73J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	53.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 02 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174501
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:05	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	519	ng/L	104	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	159	ng/L	63	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	144	ng/L	58	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	261	ng/L	104	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	250	ng/L	100	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	180	ng/L	72	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	156	ng/L	62	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	337	ng/L	135	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	347	ng/L	139	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	237	ng/L	95	50 - 150
67905-19-5-EIS	M2PFHxDA	250	170	ng/L	68	50 - 150
376-06-7-EIS	M2PFFTA	250	218	ng/L	87	50 - 150
13252-13-6-EIS	M3HFPODA	250	212	ng/L	85	50 - 150
375-73-5-EIS	M3PFBS	250	241	ng/L	97	50 - 150
355-46-4-EIS	M3PFHxS	250	244	ng/L	98	50 - 150
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150
307-24-4-EIS	M5PFHxA	250	238	ng/L	95	50 - 150
2706-90-3-EIS	M5PFPeA	250	223	ng/L	89	50 - 150
335-76-2-EIS	M6PFDA	250	260	ng/L	104	50 - 150
2058-94-8-EIS	M7PFUnA	250	258	ng/L	103	50 - 150
754-91-6-EIS	M8FOSA	250	217	ng/L	87	50 - 150
335-67-1-EIS	M8PFOA	250	255	ng/L	102	50 - 150
1763-23-1-EIS	M8PFOS	250	256	ng/L	103	50 - 150
375-95-1-EIS	M9PFNA	250	256	ng/L	102	50 - 150
375-22-4-EIS	MPFBA	250	190	ng/L	76	50 - 150
307-55-1-EIS	MPFDoA	250	219	ng/L	88	50 - 150

Sample Results

INFLUENT 02 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174501
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:29	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	15.3 U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	11.9	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.68J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	5.96J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16.1 U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.75J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 02 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174501
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:29	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	421	ng/L	84	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	257	ng/L	103	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	219	ng/L	87	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	210	ng/L	84	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	248	ng/L	99	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	254	ng/L	102	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	267	ng/L	107	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	284	ng/L	114	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	279	ng/L	112	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	306	ng/L	122	50 - 150
67905-19-5-EIS	M2PFHxDA	250	297	ng/L	119	50 - 150
376-06-7-EIS	M2PFFTA	250	309	ng/L	124	50 - 150
13252-13-6-EIS	M3HFPODA	250	276	ng/L	110	50 - 150
375-73-5-EIS	M3PFBS	250	266	ng/L	107	50 - 150
355-46-4-EIS	M3PFHxS	250	271	ng/L	108	50 - 150
375-85-9-EIS	M4PFHpA	250	282	ng/L	113	50 - 150
307-24-4-EIS	M5PFHxA	250	282	ng/L	113	50 - 150
2706-90-3-EIS	M5PFPeA	250	272	ng/L	109	50 - 150
335-76-2-EIS	M6PFDA	250	281	ng/L	112	50 - 150
2058-94-8-EIS	M7PFUnA	250	268	ng/L	107	50 - 150
754-91-6-EIS	M8FOSA	250	239	ng/L	96	50 - 150
335-67-1-EIS	M8PFOA	250	281	ng/L	112	50 - 150
1763-23-1-EIS	M8PFOS	250	269	ng/L	108	50 - 150
375-95-1-EIS	M9PFNA	250	281	ng/L	112	50 - 150
375-22-4-EIS	MPFBA	250	256	ng/L	102	50 - 150
307-55-1-EIS	MPFDoA	250	273	ng/L	109	50 - 150



Sample Results

INFLUENT 02 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174501
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:10	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.07J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	218	ng/L	44*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	238	ng/L	95	50 - 150
1763-23-1-EIS	M8PFOS	250	194	ng/L	77	50 - 150

DO NOT REPORT

Sample Results

INFLUENT 07 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174502
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:20	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.14J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	12.2	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11.6	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	12.0	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.96J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	6.39J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	7.51J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 07 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174502
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:20	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L

CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	455	ng/L	91	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	145	ng/L	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	137	ng/L	55	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	246	ng/L	98	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	238	ng/L	95	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	172	ng/L	69	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	155	ng/L	62	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	379	ng/L	152*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	326	ng/L	130	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	227	ng/L	91	50 - 150
67905-19-5-EIS	M2PFHxDA	250	177	ng/L	71	50 - 150
376-06-7-EIS	M2PFFTA	250	223	ng/L	89	50 - 150
13252-13-6-EIS	M3HFPODA	250	220	ng/L	88	50 - 150
375-73-5-EIS	M3PFBS	250	245	ng/L	98	50 - 150
355-46-4-EIS	M3PFHxS	250	244	ng/L	97	50 - 150
375-85-9-EIS	M4PFHpA	250	269	ng/L	108	50 - 150
307-24-4-EIS	M5PFHxA	250	248	ng/L	99	50 - 150
2706-90-3-EIS	M5PFPeA	250	238	ng/L	95	50 - 150
335-76-2-EIS	M6PFDA	250	273	ng/L	109	50 - 150
2058-94-8-EIS	M7PFUnA	250	277	ng/L	111	50 - 150
754-91-6-EIS	M8FOSA	250	220	ng/L	88	50 - 150
335-67-1-EIS	M8PFOA	250	256	ng/L	102	50 - 150
1763-23-1-EIS	M8PFOS	250	339	ng/L	135	50 - 150
375-95-1-EIS	M9PFNA	250	256	ng/L	102	50 - 150
375-22-4-EIS	MPFBA	250	196	ng/L	79	50 - 150
307-55-1-EIS	MPFDoA	250	223	ng/L	89	50 - 150

Sample Results

INFLUENT 07 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174502
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:44	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	16.9 U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	25.9	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16.4	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	14.9	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15.5 U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	6.70J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	3.36J	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	15.2	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 07 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174502
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:44	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	423	ng/L	85	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	201	ng/L	81	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	189	ng/L	76	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	186	ng/L	74	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	224	ng/L	90	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	200	ng/L	80	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	229	ng/L	92	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	245	ng/L	98	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	224	ng/L	89	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	282	ng/L	113	50 - 150
67905-19-5-EIS	M2PFHxDA	250	258	ng/L	103	50 - 150
376-06-7-EIS	M2PFATA	250	280	ng/L	112	50 - 150
13252-13-6-EIS	M3HFPODA	250	222	ng/L	89	50 - 150
375-73-5-EIS	M3PFBS	250	243	ng/L	97	50 - 150
355-46-4-EIS	M3PFHxS	250	244	ng/L	98	50 - 150
375-85-9-EIS	M4PFHpA	250	229	ng/L	91	50 - 150
307-24-4-EIS	M5PFHxA	250	230	ng/L	92	50 - 150
2706-90-3-EIS	M5PFPeA	250	228	ng/L	91	50 - 150
335-76-2-EIS	M6PFDA	250	240	ng/L	96	50 - 150
2058-94-8-EIS	M7PFUnA	250	235	ng/L	94	50 - 150
754-91-6-EIS	M8FOSA	250	198	ng/L	79	50 - 150
335-67-1-EIS	M8PFOA	250	234	ng/L	93	50 - 150
1763-23-1-EIS	M8PFOS	250	248	ng/L	99	50 - 150
375-95-1-EIS	M9PFNA	250	234	ng/L	94	50 - 150
375-22-4-EIS	MPFBA	250	209	ng/L	84	50 - 150
307-55-1-EIS	MPFDoA	250	245	ng/L	98	50 - 150



Sample Results

INFLUENT 07 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174502
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:24	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.63J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	210	ng/L	42*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	217	ng/L	87	50 - 150
1763-23-1-EIS	M8PFOS	250	200	ng/L	80	50 - 150

DO NOT REPORT

Sample Results

INFLUENT 08 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174503
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:34	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.60J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.76J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	4.86J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.48J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.56J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	56.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 08 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174503
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:34	757653	SXA	NA
CAS#	Parameter	Result	DL	LOQ	Units		
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L		
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits	
335-67-1-SUR	MPFOA	500	463	ng/L	93	50 - 150	
4151-50-2-EIS	d-NEtFOSA	250	140	ng/L	56	50 - 150	
31506-32-8-EIS	d-NMeFOSA	250	139	ng/L	55	50 - 150	
2355-31-9-EIS	d3-NMeFOSAA	250	250	ng/L	100	50 - 150	
2991-50-6-EIS	d5-NEtFOSAA	250	224	ng/L	90	50 - 150	
24448-09-7-EIS	d7-NMeFOSE	250	177	ng/L	71	50 - 150	
1691-99-2-EIS	d9-NEtFOSE	250	147	ng/L	59	50 - 150	
757124-72-4-EIS	M2 4:2 FTS	250	343	ng/L	137	50 - 150	
27619-97-2-EIS	M2 6:2 FTS	250	326	ng/L	130	50 - 150	
39108-34-4-EIS	M2 8:2 FTS	250	237	ng/L	95	50 - 150	
67905-19-5-EIS	M2PFHxDA	250	171	ng/L	68	50 - 150	
376-06-7-EIS	M2PFFTA	250	215	ng/L	86	50 - 150	
13252-13-6-EIS	M3HFPODA	250	213	ng/L	85	50 - 150	
375-73-5-EIS	M3PFBS	250	231	ng/L	92	50 - 150	
355-46-4-EIS	M3PFHxS	250	237	ng/L	95	50 - 150	
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150	
307-24-4-EIS	M5PFHxA	250	237	ng/L	95	50 - 150	
2706-90-3-EIS	M5PFPeA	250	223	ng/L	89	50 - 150	
335-76-2-EIS	M6PFDA	250	269	ng/L	107	50 - 150	
2058-94-8-EIS	M7PFUnA	250	254	ng/L	102	50 - 150	
754-91-6-EIS	M8FOSA	250	216	ng/L	86	50 - 150	
335-67-1-EIS	M8PFOA	250	248	ng/L	99	50 - 150	
1763-23-1-EIS	M8PFOS	250	254	ng/L	102	50 - 150	
375-95-1-EIS	M9PFNA	250	252	ng/L	101	50 - 150	
375-22-4-EIS	MPFBA	250	188	ng/L	75	50 - 150	
307-55-1-EIS	MPFDoA	250	228	ng/L	91	50 - 150	

Sample Results

INFLUENT 08 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174503
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:59	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	15.0 U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	10.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.71J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	9.00J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15.3 U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.70J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	18.1	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 08 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174503
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 03:59	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	483	ng/L	97	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	213	ng/L	85	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	199	ng/L	80	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	209	ng/L	84	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	235	ng/L	94	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	207	ng/L	83	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	257	ng/L	103	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	257	ng/L	103	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	246	ng/L	98	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	298	ng/L	119	50 - 150
67905-19-5-EIS	M2PFHxDA	250	279	ng/L	111	50 - 150
376-06-7-EIS	M2PFATA	250	279	ng/L	112	50 - 150
13252-13-6-EIS	M3HFPODA	250	243	ng/L	97	50 - 150
375-73-5-EIS	M3PFBS	250	264	ng/L	105	50 - 150
355-46-4-EIS	M3PFHxS	250	269	ng/L	107	50 - 150
375-85-9-EIS	M4PFHpA	250	257	ng/L	103	50 - 150
307-24-4-EIS	M5PFHxA	250	254	ng/L	102	50 - 150
2706-90-3-EIS	M5PFPeA	250	248	ng/L	99	50 - 150
335-76-2-EIS	M6PFDA	250	271	ng/L	108	50 - 150
2058-94-8-EIS	M7PFUnA	250	263	ng/L	105	50 - 150
754-91-6-EIS	M8FOSA	250	215	ng/L	86	50 - 150
335-67-1-EIS	M8PFOA	250	261	ng/L	104	50 - 150
1763-23-1-EIS	M8PFOS	250	260	ng/L	104	50 - 150
375-95-1-EIS	M9PFNA	250	267	ng/L	107	50 - 150
375-22-4-EIS	MPFBA	250	231	ng/L	92	50 - 150
307-55-1-EIS	MPFDoA	250	261	ng/L	104	50 - 150



Sample Results

INFLUENT 08 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174503
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:39	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.93J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	212	ng/L	42*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	207	ng/L	83	50 - 150
1763-23-1-EIS	M8PFOS	250	187	ng/L	75	50 - 150

DO NOT REPORT

Sample Results

INFLUENT 11 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174504
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:49	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	3.80U	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.10U	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	3.44J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.97J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.52J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	69.7	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 11 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174504
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 14:49	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	490	ng/L	98	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	131	ng/L	52	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	124	ng/L	50	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	205	ng/L	82	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	241	ng/L	96	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	172	ng/L	69	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	129	ng/L	52	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	330	ng/L	132	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	363	ng/L	145	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	237	ng/L	95	50 - 150
67905-19-5-EIS	M2PFHxDA	250	160	ng/L	64	50 - 150
376-06-7-EIS	M2PFFTA	250	220	ng/L	88	50 - 150
13252-13-6-EIS	M3HFPODA	250	217	ng/L	87	50 - 150
375-73-5-EIS	M3PFBS	250	233	ng/L	93	50 - 150
355-46-4-EIS	M3PFHxS	250	239	ng/L	96	50 - 150
375-85-9-EIS	M4PFHpA	250	251	ng/L	100	50 - 150
307-24-4-EIS	M5PFHxA	250	237	ng/L	95	50 - 150
2706-90-3-EIS	M5PFPeA	250	222	ng/L	89	50 - 150
335-76-2-EIS	M6PFDA	250	272	ng/L	109	50 - 150
2058-94-8-EIS	M7PFUnA	250	267	ng/L	107	50 - 150
754-91-6-EIS	M8FOSA	250	210	ng/L	84	50 - 150
335-67-1-EIS	M8PFOA	250	255	ng/L	102	50 - 150
1763-23-1-EIS	M8PFOS	250	248	ng/L	99	50 - 150
375-95-1-EIS	M9PFNA	250	254	ng/L	102	50 - 150
375-22-4-EIS	MPFBA	250	186	ng/L	75	50 - 150
307-55-1-EIS	MPFDoA	250	226	ng/L	90	50 - 150

Sample Results

INFLUENT 11 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174504
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:13	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	17.3 U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.95J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	11.7	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.85J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	7.96J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14.4 U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	2.96J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	11.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 11 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174504
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:13	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	476	ng/L	95	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	176	ng/L	70	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	160	ng/L	64	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	195	ng/L	78	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	239	ng/L	96	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	176	ng/L	70	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	225	ng/L	90	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	269	ng/L	108	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	240	ng/L	96	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	297	ng/L	119	50 - 150
67905-19-5-EIS	M2PFHxDA	250	256	ng/L	102	50 - 150
376-06-7-EIS	M2PFFTA	250	301	ng/L	120	50 - 150
13252-13-6-EIS	M3HFPODA	250	230	ng/L	92	50 - 150
375-73-5-EIS	M3PFBS	250	249	ng/L	100	50 - 150
355-46-4-EIS	M3PFHxS	250	257	ng/L	103	50 - 150
375-85-9-EIS	M4PFHpA	250	252	ng/L	101	50 - 150
307-24-4-EIS	M5PFHxA	250	249	ng/L	99	50 - 150
2706-90-3-EIS	M5PFPeA	250	240	ng/L	96	50 - 150
335-76-2-EIS	M6PFDA	250	272	ng/L	109	50 - 150
2058-94-8-EIS	M7PFUnA	250	268	ng/L	107	50 - 150
754-91-6-EIS	M8FOSA	250	203	ng/L	81	50 - 150
335-67-1-EIS	M8PFOA	250	259	ng/L	104	50 - 150
1763-23-1-EIS	M8PFOS	250	263	ng/L	105	50 - 150
375-95-1-EIS	M9PFNA	250	269	ng/L	108	50 - 150
375-22-4-EIS	MPFBA	250	215	ng/L	86	50 - 150
307-55-1-EIS	MPFDoA	250	273	ng/L	109	50 - 150



Sample Results

INFLUENT 11 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174504
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 22:54	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.36J	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	188	ng/L	38*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	219	ng/L	88	50 - 150
1763-23-1-EIS	M8PFOS	250	186	ng/L	75	50 - 150

DO NOT REPORT

Sample Results

INFLUENT 18 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174505
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:04	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.96J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	8.77J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14.9	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	8.01J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.87J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	6.81J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	6.59J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 18 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174505
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:04	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ		
79780-39-5	PFDoS	3.28U	3.28	10.0	Units ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	480	ng/L	96	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	127	ng/L	51	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	134	ng/L	54	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	251	ng/L	100	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	245	ng/L	98	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	174	ng/L	70	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	147	ng/L	59	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	407	ng/L	163*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	365	ng/L	146	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	261	ng/L	104	50 - 150
67905-19-5-EIS	M2PFHxDA	250	154	ng/L	62	50 - 150
376-06-7-EIS	M2PFFTA	250	197	ng/L	79	50 - 150
13252-13-6-EIS	M3HFPODA	250	231	ng/L	93	50 - 150
375-73-5-EIS	M3PFBS	250	254	ng/L	101	50 - 150
355-46-4-EIS	M3PFHxS	250	252	ng/L	101	50 - 150
375-85-9-EIS	M4PFHpA	250	284	ng/L	114	50 - 150
307-24-4-EIS	M5PFHxA	250	260	ng/L	104	50 - 150
2706-90-3-EIS	M5PFPeA	250	243	ng/L	97	50 - 150
335-76-2-EIS	M6PFDA	250	278	ng/L	111	50 - 150
2058-94-8-EIS	M7PFUnA	250	269	ng/L	108	50 - 150
754-91-6-EIS	M8FOSA	250	221	ng/L	88	50 - 150
335-67-1-EIS	M8PFOA	250	270	ng/L	108	50 - 150
1763-23-1-EIS	M8PFOS	250	271	ng/L	108	50 - 150
375-95-1-EIS	M9PFNA	250	267	ng/L	107	50 - 150
375-22-4-EIS	MPFBA	250	203	ng/L	81	50 - 150
307-55-1-EIS	MPFDoA	250	205	ng/L	82	50 - 150

Sample Results

INFLUENT 18 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174505
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:28	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	19.9 U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.55U	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	22.8	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	19.4	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	11.2	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21.2 U	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.12J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.0	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

INFLUENT 18 20221212	Collect Date 12/12/2022 23:59	Lab ID 22212174505
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:28	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	487	ng/L	97	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	200	ng/L	80	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	171	ng/L	68	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	216	ng/L	86	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	263	ng/L	105	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	199	ng/L	80	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	238	ng/L	95	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	287	ng/L	115	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	272	ng/L	109	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	330	ng/L	132	50 - 150
67905-19-5-EIS	M2PFHxDA	250	289	ng/L	116	50 - 150
376-06-7-EIS	M2PFFTA	250	326	ng/L	130	50 - 150
13252-13-6-EIS	M3HFPODA	250	237	ng/L	95	50 - 150
375-73-5-EIS	M3PFBS	250	270	ng/L	108	50 - 150
355-46-4-EIS	M3PFHxS	250	275	ng/L	110	50 - 150
375-85-9-EIS	M4PFHpA	250	261	ng/L	104	50 - 150
307-24-4-EIS	M5PFHxA	250	257	ng/L	103	50 - 150
2706-90-3-EIS	M5PFPeA	250	244	ng/L	98	50 - 150
335-76-2-EIS	M6PFDA	250	293	ng/L	117	50 - 150
2058-94-8-EIS	M7PFUnA	250	289	ng/L	116	50 - 150
754-91-6-EIS	M8FOSA	250	207	ng/L	83	50 - 150
335-67-1-EIS	M8PFOA	250	272	ng/L	109	50 - 150
1763-23-1-EIS	M8PFOS	250	279	ng/L	112	50 - 150
375-95-1-EIS	M9PFNA	250	279	ng/L	112	50 - 150
375-22-4-EIS	MPFBA	250	223	ng/L	89	50 - 150
307-55-1-EIS	MPFDoA	250	291	ng/L	116	50 - 150

Sample Results

INFLUENT 18 20221212	Collect Date	12/12/2022 23:59	Lab ID	22212174505
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 23:08	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L	
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14.5	1.90	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	198	ng/L	40*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	180	ng/L	72	50 - 150
1763-23-1-EIS	M8PFOS	250	168	ng/L	67	50 - 150

DO NOT REPORT

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:19	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.86J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	7.34J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.90U	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.27J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	16.4	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.17J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	7.29J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.3	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Pre) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/29/22 11:00	757049	PFAS Top Assay QSM B15 (Pre)	1	01/09/23 15:19	757653	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	438	ng/L	88	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	173	ng/L	69	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	185	ng/L	74	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	228	ng/L	91	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	238	ng/L	95	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	211	ng/L	84	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	186	ng/L	74	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	285	ng/L	114	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	253	ng/L	101	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	254	ng/L	102	50 - 150
67905-19-5-EIS	M2PFHxDA	250	219	ng/L	88	50 - 150
376-06-7-EIS	M2PFFTA	250	189	ng/L	76	50 - 150
13252-13-6-EIS	M3HFPODA	250	232	ng/L	93	50 - 150
375-73-5-EIS	M3PFBS	250	236	ng/L	94	50 - 150
355-46-4-EIS	M3PFHxS	250	237	ng/L	95	50 - 150
375-85-9-EIS	M4PFHpA	250	248	ng/L	99	50 - 150
307-24-4-EIS	M5PFHxA	250	239	ng/L	96	50 - 150
2706-90-3-EIS	M5PFPeA	250	234	ng/L	94	50 - 150
335-76-2-EIS	M6PFDA	250	250	ng/L	100	50 - 150
2058-94-8-EIS	M7PFUnA	250	246	ng/L	98	50 - 150
754-91-6-EIS	M8FOSA	250	227	ng/L	91	50 - 150
335-67-1-EIS	M8PFOA	250	239	ng/L	95	50 - 150
1763-23-1-EIS	M8PFOS	250	240	ng/L	96	50 - 150
375-95-1-EIS	M9PFNA	250	239	ng/L	96	50 - 150
375-22-4-EIS	MPFBA	250	215	ng/L	86	50 - 150
307-55-1-EIS	MPFDoA	250	232	ng/L	93	50 - 150

Do not report

Sample Results

EFFLUENT 20221213	Collect Date	12/13/2022 23:59	Lab ID	22212174506
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:43	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	2.25U	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	20.8	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.99J	2.65	10.0	ng/L
756426-58-1	9CI-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	4.30J	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	7.27J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	16.5	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	8.72J	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.67J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10.2	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	19.7	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	5.66J	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.47J	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28.5	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	10.5	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.20U	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U	3.10	10.0	ng/L

Do not report

Sample Results

EFFLUENT 20221213	Collect Date	12/13/2022 23:59	Lab ID	22212174506
	Receive Date	12/17/2022 09:42	Matrix	Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
12/30/22 14:30	757168	PFAS Top Assay QSM B15 (Post)	1	01/11/23 04:43	757777	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	11.3	ng/L	2*	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	9.59	ng/L	4*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	9.61	ng/L	4*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	6.41	ng/L	3*	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	6.76	ng/L	3*	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	7.18	ng/L	3*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	6.86	ng/L	3*	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	10.1	ng/L	4*	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	9.03	ng/L	4*	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	11.8	ng/L	5*	50 - 150
67905-19-5-EIS	M2PFHxDA	250	9.76	ng/L	4*	50 - 150
376-06-7-EIS	M2PFFTA	250	7.94	ng/L	3*	50 - 150
13252-13-6-EIS	M3HFPODA	250	9.11	ng/L	4*	50 - 150
375-73-5-EIS	M3PFBS	250	9.88	ng/L	4*	50 - 150
355-46-4-EIS	M3PFHxS	250	9.44	ng/L	4*	50 - 150
375-85-9-EIS	M4PFHpA	250	8.78	ng/L	4*	50 - 150
307-24-4-EIS	M5PFHxA	250	9.12	ng/L	4*	50 - 150
2706-90-3-EIS	M5PFPeA	250	8.88	ng/L	4*	50 - 150
335-76-2-EIS	M6PFDA	250	7.35	ng/L	3*	50 - 150
2058-94-8-EIS	M7PFUnA	250	7.1	ng/L	3*	50 - 150
754-91-6-EIS	M8FOSA	250	6.48	ng/L	3*	50 - 150
335-67-1-EIS	M8PFOA	250	9.11	ng/L	4*	50 - 150
1763-23-1-EIS	M8PFOS	250	9.04	ng/L	4*	50 - 150
375-95-1-EIS	M9PFNA	250	8.14	ng/L	3*	50 - 150
375-22-4-EIS	MPFBA	250	8.52	ng/L	3*	50 - 150
307-55-1-EIS	MPFDoA	250	6.77	ng/L	3*	50 - 150

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 23:37	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	2.25U UJ	2.25	10.0	ng/L
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	3.10U	3.10	10.0	ng/L
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	3.75U	3.75	10.0	ng/L
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	2.65U	2.65	10.0	ng/L
756426-58-1	9Cl-PF3ONS	2.25U	2.25	10.0	ng/L
919005-14-4	ADONA	2.15U	2.15	10.0	ng/L
4151-50-2	NEtFOSA	3.50U	3.50	20.0	ng/L
2991-50-6	NEtFOSAA	3.95U	3.95	20.0	ng/L
1691-99-2	NEtFOSE	2.53U	2.53	20.0	ng/L
31506-32-8	NMeFOSA	4.15U	4.15	20.0	ng/L
2355-31-9	NMeFOSAA	2.25U	2.25	20.0	ng/L
24448-09-7	NMeFOSE	3.25U	3.25	20.0	ng/L
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	4.33U UJ	4.33	20.0	ng/L
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.30J- J	1.55	10.0	ng/L
375-22-4	Perfluorobutanoic acid (PFBA)	20.1 J	3.80	10.0	ng/L
335-77-3	Perfluorodecane sulfonic acid (PFDS)	3.05U UJ	3.05	10.0	ng/L
335-76-2	Perfluorodecanoic acid (PFDA)	3.60U	3.60	10.0	ng/L
307-55-1	Perfluorododecanoic acid (PFDoA)	3.25U J	3.25	10.0	ng/L
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	3.05U UJ	3.05	10.0	ng/L
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.28J- J	2.90	10.0	ng/L
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.04J-- J	3.10	10.0	ng/L
307-24-4	Perfluorohexanoic acid (PFHxA)	14.8 J	2.35	10.0	ng/L
68259-12-1	Perfluorononanesulfonic acid (PFNS)	4.35U UJ	4.35	10.0	ng/L
375-95-1	Perfluorononanoic acid (PFNA)	2.45U UJ	2.45	10.0	ng/L
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85U UJ	1.85	10.0	ng/L
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.90J J	1.90	10.0	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	5.21J-- J	2.10	10.0	ng/L
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	2.55U UJ	2.55	10.0	ng/L
2706-90-3	Perfluoropentanoic acid (PFPeA)	15.9 J	2.20	10.0	ng/L
376-06-7	Perfluorotetradecanoic acid (PFTA)	2.85U UJ	2.85	10.0	ng/L
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	3.08U UJ	3.08	10.0	ng/L
2058-94-8	Perfluoroundecanoic acid (PFUnA)	3.10U UJ	3.10	10.0	ng/L

Sample Results

EFFLUENT 20221213	Collect Date 12/13/2022 23:59	Lab ID 22212174506
	Receive Date 12/17/2022 09:42	Matrix Water

PFAS Top Assay QSM B15 (Post) (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
02/08/23 14:00	759538	PFAS Top Assay QSM B15 (Post)	1	02/14/23 23:37	759869	SXA	NA

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	3.28U UJ	3.28	10.0	ng/L	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	500	180	ng/L	36*	50 - 150
4151-50-2-EIS	d-NEtFOSA	250	88.6	ng/L	35*	50 - 150
31506-32-8-EIS	d-NMeFOSA	250	88.7	ng/L	35*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	250	139	ng/L	56	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	250	148	ng/L	59	50 - 150
24448-09-7-EIS	d7-NMeFOSE	250	130	ng/L	52	50 - 150
1691-99-2-EIS	d9-NEtFOSE	250	125	ng/L	50	50 - 150
757124-72-4-EIS	M2 4:2 FTS	250	201	ng/L	80	50 - 150
27619-97-2-EIS	M2 6:2 FTS	250	196	ng/L	78	50 - 150
39108-34-4-EIS	M2 8:2 FTS	250	176	ng/L	70	50 - 150
67905-19-5-EIS	M2PFHxDA	250	167	ng/L	67	50 - 150
376-06-7-EIS	M2PFFTA	250	166	ng/L	66	50 - 150
13252-13-6-EIS	M3HFPODA	250	236	ng/L	94	50 - 150
375-73-5-EIS	M3PFBS	250	227	ng/L	91	50 - 150
355-46-4-EIS	M3PFHxS	250	215	ng/L	86	50 - 150
375-85-9-EIS	M4PFHpA	250	233	ng/L	93	50 - 150
307-24-4-EIS	M5PFHxA	250	232	ng/L	93	50 - 150
2706-90-3-EIS	M5PFPeA	250	223	ng/L	89	50 - 150
335-76-2-EIS	M6PFDA	250	180	ng/L	72	50 - 150
2058-94-8-EIS	M7PFUnA	250	163	ng/L	65	50 - 150
754-91-6-EIS	M8FOSA	250	139	ng/L	55	50 - 150
335-67-1-EIS	M8PFOA	250	226	ng/L	90	50 - 150
1763-23-1-EIS	M8PFOS	250	177	ng/L	71	50 - 150
375-95-1-EIS	M9PFNA	250	198	ng/L	79	50 - 150
375-22-4-EIS	MPFBA	250	224	ng/L	89	50 - 150
307-55-1-EIS	MPFDoA	250	151	ng/L	60	50 - 150

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:36	758104	SLR2	65.76

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	0.056U	0.056	2.82	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.141U	0.141	2.82	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	5.67	0.169	2.82	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	1.56J	0.085	2.82	ug/Kg
756426-58-1	9CI-PF3ONS	0.085U	0.085	2.82	ug/Kg
919005-14-4	ADONA	0.028U	0.028	2.82	ug/Kg
4151-50-2	NEtFOSA	0.180J--- UJ	0.113	2.82	ug/Kg
2991-50-6	NEtFOSAA	6.41	0.085	2.82	ug/Kg
1691-99-2	NEtFOSE	0.986J	0.085	2.82	ug/Kg
31506-32-8	NMeFOSA	0.201J	0.113	2.82	ug/Kg
2355-31-9	NMeFOSAA	25.3	0.056	2.82	ug/Kg
24448-09-7	NMeFOSE	4.25	0.085	2.82	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.395U	0.395	5.64	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.42J	0.056	2.82	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	6.56	0.113	2.82	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	1.41J	0.085	2.82	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	10.2	0.113	2.82	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	2.95	0.056	2.82	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.206J	0.056	2.82	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.74J	0.056	2.82	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.866J	0.085	2.82	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	28.5	0.056	2.82	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.085U	0.085	2.82	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	1.06J	0.056	2.82	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.54J-- UJ	0.056	2.82	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11.8	0.141	2.82	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	22.0	0.226	2.82	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.056U	0.056	2.82	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	12.1	0.056	2.82	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.717J	0.056	2.82	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	0.440J	0.085	2.82	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.10J	0.056	2.82	ug/Kg

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:36	758104	SLR2	65.76

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	1.25J	0.085	2.82	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	96.5	15.9	ug/Kg	17*	50 - 150
335-67-1-SUR	MPFOA	4.83	2.81	ug/Kg	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	96.5	9.67	ug/Kg	10*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	96.5	49.6	ug/Kg	51	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	96.5	55.8	ug/Kg	58	50 - 150
24448-09-7-EIS	d7-NMeFOSE	96.5	26.3	ug/Kg	27*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	96.5	70.2	ug/Kg	73	50 - 150
757124-72-4-EIS	M2 4:2 FTS	96.5	98.6	ug/Kg	102	50 - 150
27619-97-2-EIS	M2 6:2 FTS	96.5	88	ug/Kg	91	50 - 150
39108-34-4-EIS	M2 8:2 FTS	96.5	102	ug/Kg	106	50 - 150
67905-19-5-EIS	M2PFHxDA	96.5	23.5	ug/Kg	24*	50 - 150
376-06-7-EIS	M2PFATA	96.5	32.7	ug/Kg	34*	50 - 150
13252-13-6-EIS	M3HFPODA	96.5	54.2	ug/Kg	56	50 - 150
375-73-5-EIS	M3PFBS	96.5	55.3	ug/Kg	57	50 - 150
355-46-4-EIS	M3PFHxS	96.5	55.2	ug/Kg	57	50 - 150
375-85-9-EIS	M4PFHpA	96.5	58.2	ug/Kg	60	50 - 150
307-24-4-EIS	M5PFHxA	96.5	59.2	ug/Kg	61	50 - 150
2706-90-3-EIS	M5PFPeA	96.5	53.4	ug/Kg	55	50 - 150
335-76-2-EIS	M6PFDA	96.5	63.2	ug/Kg	65	50 - 150
2058-94-8-EIS	M7PFUnA	96.5	60.4	ug/Kg	63	50 - 150
754-91-6-EIS	M8FOSA	96.5	46.9	ug/Kg	49*	50 - 150
335-67-1-EIS	M8PFOA	96.5	61.7	ug/Kg	64	50 - 150
1763-23-1-EIS	M8PFOS	96.5	58.2	ug/Kg	60	50 - 150
375-95-1-EIS	M9PFNA	96.5	63	ug/Kg	65	50 - 150
375-22-4-EIS	MPFBA	96.5	49.6	ug/Kg	51	50 - 150
307-55-1-EIS	MPFDoA	96.5	51.8	ug/Kg	54	50 - 150

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 08:00	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:40	758656	SXA	65.76

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11CI-PF3OUdS	0.055U	0.055	2.74	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.137U	0.137	2.74	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	2.81 UJ	0.165	2.74	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.694J- UJ	0.082	2.74	ug/Kg
756426-58-1	9CI-PF3ONS	0.082U	0.082	2.74	ug/Kg
919005-14-4	ADONA	0.027U	0.027	2.74	ug/Kg
4151-50-2	NEtFOSA	0.110U	0.110	2.74	ug/Kg
2991-50-6	NEtFOSAA	0.082U	0.082	2.74	ug/Kg
1691-99-2	NEtFOSE	0.135J--- J	0.082	2.74	ug/Kg
31506-32-8	NMeFOSA	0.110U	0.110	2.74	ug/Kg
2355-31-9	NMeFOSAA	0.075J--- J	0.055	2.74	ug/Kg
24448-09-7	NMeFOSE	0.082U	0.082	2.74	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	0.384U	0.384	5.49	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.33J	0.055	2.74	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	33.1 J	0.110	2.74	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.857J	0.082	2.74	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	4.09 J-	0.110	2.74	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.93J-- J	0.055	2.74	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.082J	0.055	2.74	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.07 J-	0.055	2.74	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.805J	0.082	2.74	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	17.7 J-	0.055	2.74	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.082U	0.082	2.74	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	2.73J- J	0.055	2.74	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.151J-- UJ	0.055	2.74	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.56	0.137	2.74	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	9.25 J-	0.220	2.74	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.055U	0.055	2.74	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	22.1 J-	0.055	2.74	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.406J-- J	0.055	2.74	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	0.423J--- J	0.082	2.74	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.44J--- J	0.055	2.74	ug/Kg

Sample Results

BIOSOLIDS A20221214	Collect Date	12/14/2022 07:20	Lab ID	22212174507
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 08:00	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:40	758656	SXA	65.76

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.082U	0.082	2.74	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.7	.157	ug/Kg	3*	50 - 150
4151-50-2-EIS	d-NEtFOSA	94	59.8	ug/Kg	64	50 - 150
31506-32-8-EIS	d-NMeFOSA	94	63.4	ug/Kg	67	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	94	69.1	ug/Kg	73	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	94	68.3	ug/Kg	73	50 - 150
24448-09-7-EIS	d7-NMeFOSE	94	50.4	ug/Kg	54	50 - 150
1691-99-2-EIS	d9-NEtFOSE	94	52.7	ug/Kg	56	50 - 150
757124-72-4-EIS	M2 4:2 FTS	94	87.4	ug/Kg	93	50 - 150
27619-97-2-EIS	M2 6:2 FTS	94	81.2	ug/Kg	86	50 - 150
39108-34-4-EIS	M2 8:2 FTS	94	76.1	ug/Kg	81	50 - 150
67905-19-5-EIS	M2PFHxDA	94	99.5	ug/Kg	106	50 - 150
376-06-7-EIS	M2PFFTA	94	71.5	ug/Kg	76	50 - 150
13252-13-6-EIS	M3HFPODA	94	81.5	ug/Kg	87	50 - 150
375-73-5-EIS	M3PFBS	94	80	ug/Kg	85	50 - 150
355-46-4-EIS	M3PFHxS	94	78.8	ug/Kg	84	50 - 150
375-85-9-EIS	M4PFHpA	94	83	ug/Kg	88	50 - 150
307-24-4-EIS	M5PFHxA	94	81.7	ug/Kg	87	50 - 150
2706-90-3-EIS	M5PFPeA	94	76.3	ug/Kg	81	50 - 150
335-76-2-EIS	M6PFDA	94	71.8	ug/Kg	76	50 - 150
2058-94-8-EIS	M7PFUnA	94	64.3	ug/Kg	68	50 - 150
754-91-6-EIS	M8FOSA	94	72.3	ug/Kg	77	50 - 150
335-67-1-EIS	M8PFOA	94	82.6	ug/Kg	88	50 - 150
1763-23-1-EIS	M8PFOS	94	69.2	ug/Kg	74	50 - 150
375-95-1-EIS	M9PFNA	94	77.9	ug/Kg	83	50 - 150
375-22-4-EIS	MPFBA	94	11.7	ug/Kg	12*	50 - 150
307-55-1-EIS	MPFDoA	94	62.1	ug/Kg	66	50 - 150

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:50	758104	SLR2	93.64

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.299U	0.299	15.0	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.748U	0.748	15.0	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	0.897U	0.897	15.0	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.449U	0.449	15.0	ug/Kg
756426-58-1	9Cl-PF3ONS	0.449U	0.449	15.0	ug/Kg
919005-14-4	ADONA	0.150U	0.150	15.0	ug/Kg
4151-50-2	NEtFOSA	R --- 0.598U	0.598	15.0	ug/Kg
2991-50-6	NEtFOSAA	3.28J	0.449	15.0	ug/Kg
1691-99-2	NEtFOSE	0.740J	0.449	15.0	ug/Kg
31506-32-8	NMeFOSA	R --- 0.598U	0.598	15.0	ug/Kg
2355-31-9	NMeFOSAA	7.23J	0.299	15.0	ug/Kg
24448-09-7	NMeFOSE	3.76J	0.449	15.0	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.09U	2.09	29.9	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.299U	0.299	15.0	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	0.598U	0.598	15.0	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	7.57J	0.449	15.0	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	2.26J	0.598	15.0	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.30J	0.299	15.0	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.299U	0.299	15.0	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.299U	0.299	15.0	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.873J	0.449	15.0	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	0.991J	0.299	15.0	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.449U	0.449	15.0	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	0.323J	0.299	15.0	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.85J-- UJ	0.299	15.0	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.64J	0.748	15.0	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	1.20U	1.20	15.0	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.299U	0.299	15.0	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.411J	0.299	15.0	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.413J	0.299	15.0	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	0.449U	0.449	15.0	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.589J	0.299	15.0	ug/Kg

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Pre) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/11/23 09:15	757753	PFAS Top Assay QSM B15 (Pre)	1	01/17/23 20:50	758104	SLR2	93.64

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	2.57J	0.449	15.0	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
4151-50-2-EIS	d-NEtFOSA	95.1	5.52	ug/Kg	6*	50 - 150
335-67-1-SUR	MPFOA	4.75	2.76	ug/Kg	58	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.1	5.79	ug/Kg	6*	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.1	49.1	ug/Kg	52	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.1	55.5	ug/Kg	58	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.1	24.4	ug/Kg	26*	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.1	47.1	ug/Kg	50	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.1	69.4	ug/Kg	73	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.1	64.6	ug/Kg	68	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.1	48.8	ug/Kg	51	50 - 150
67905-19-5-EIS	M2PFHxDA	95.1	42.8	ug/Kg	45*	50 - 150
376-06-7-EIS	M2PFATA	95.1	53.8	ug/Kg	57	50 - 150
13252-13-6-EIS	M3HFPODA	95.1	56.6	ug/Kg	60	50 - 150
375-73-5-EIS	M3PFBS	95.1	54.4	ug/Kg	57	50 - 150
355-46-4-EIS	M3PFHxS	95.1	52.9	ug/Kg	56	50 - 150
375-85-9-EIS	M4PFHpA	95.1	56.5	ug/Kg	59	50 - 150
307-24-4-EIS	M5PFHxA	95.1	58.8	ug/Kg	62	50 - 150
2706-90-3-EIS	M5PFPeA	95.1	54.3	ug/Kg	57	50 - 150
335-76-2-EIS	M6PFDA	95.1	55.5	ug/Kg	58	50 - 150
2058-94-8-EIS	M7PFUnA	95.1	57.8	ug/Kg	61	50 - 150
754-91-6-EIS	M8FOSA	95.1	42	ug/Kg	44*	50 - 150
335-67-1-EIS	M8PFOA	95.1	57.4	ug/Kg	60	50 - 150
1763-23-1-EIS	M8PFOS	95.1	53.9	ug/Kg	57	50 - 150
375-95-1-EIS	M9PFNA	95.1	56.6	ug/Kg	60	50 - 150
375-22-4-EIS	MPFBA	95.1	52.4	ug/Kg	55	50 - 150
307-55-1-EIS	MPFDoA	95.1	55.8	ug/Kg	59	50 - 150

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/17/23 09:15	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:55	758656	SXA	93.64

CAS#	Parameter	Result	DL	LOQ	Units
763051-92-9	11Cl-PF3OUdS	0.301U	0.301	15.0	ug/Kg
757124-72-4	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.752U	0.752	15.0	ug/Kg
27619-97-2	6:2 Fluorotelomer sulfonic acid (6:2FTS)	7.54J-- UJ	0.902	15.0	ug/Kg
39108-34-4	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	1.87J-- UJ	0.451	15.0	ug/Kg
756426-58-1	9Cl-PF3ONS	0.451U	0.451	15.0	ug/Kg
919005-14-4	ADONA	0.150U	0.150	15.0	ug/Kg
4151-50-2	NEtFOSA	0.601U	0.601	15.0	ug/Kg
2991-50-6	NEtFOSAA	0.451U	0.451	15.0	ug/Kg
1691-99-2	NEtFOSE	0.451U	0.451	15.0	ug/Kg
31506-32-8	NMeFOSA	0.601U	0.601	15.0	ug/Kg
2355-31-9	NMeFOSAA	0.301U	0.301	15.0	ug/Kg
24448-09-7	NMeFOSE	0.451U	0.451	15.0	ug/Kg
13252-13-6	Perfluoro-2-proxypropanoic acid (HFPO-DA)	2.11U	2.11	30.1	ug/Kg
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.834J	0.301	15.0	ug/Kg
375-22-4	Perfluorobutanoic acid (PFBA)	34.2 J	0.601	15.0	ug/Kg
335-77-3	Perfluorodecane sulfonic acid (PFDS)	0.451U	0.451	15.0	ug/Kg
335-76-2	Perfluorodecanoic acid (PFDA)	1.93J-- J	0.601	15.0	ug/Kg
307-55-1	Perfluorododecanoic acid (PFDoA)	1.04J-- J	0.301	15.0	ug/Kg
375-92-8	Perfluoroheptanesulfonic acid (PFHpS)	0.301U	0.301	15.0	ug/Kg
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.01J-- J	0.301	15.0	ug/Kg
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.584J	0.451	15.0	ug/Kg
307-24-4	Perfluorohexanoic acid (PFHxA)	11.1J-- J	0.301	15.0	ug/Kg
68259-12-1	Perfluorononanesulfonic acid (PFNS)	0.451U	0.451	15.0	ug/Kg
375-95-1	Perfluorononanoic acid (PFNA)	2.31J-- J	0.301	15.0	ug/Kg
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.556J-- UJ	0.301	15.0	ug/Kg
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.51J	0.752	15.0	ug/Kg
335-67-1	Perfluorooctanoic acid (PFOA)	5.48J-- J	1.20	15.0	ug/Kg
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.301U	0.301	15.0	ug/Kg
2706-90-3	Perfluoropentanoic acid (PFPeA)	18.4 J-	0.301	15.0	ug/Kg
376-06-7	Perfluorotetradecanoic acid (PFTA)	R ----- 0.301U	0.301	15.0	ug/Kg
72629-94-8	Perfluorotridecanoic acid (PFTTrDA)	R ----- 0.451U	0.451	15.0	ug/Kg
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.20J-- J	0.301	15.0	ug/Kg

Sample Results

BIOSOLIDS B20221214	Collect Date	12/14/2022 07:45	Lab ID	22212174508
	Receive Date	12/17/2022 09:42	Matrix	Solid

PFAS Top Assay QSM B15 (Post) (Continued)

*Results and limits adjusted for moisture content

Prep Date	Prep Batch	Prep Method	Dilution	Run Date	Run Batch	Analyst	%Moisture
01/17/23 09:15	757943	PFAS Top Assay QSM B15 (Post)	1	01/25/23 17:55	758656	SXA	93.64

CAS#	Parameter	Result	DL	LOQ	Units	
79780-39-5	PFDoS	0.451U	0.451	15.0	ug/Kg	
CAS#	Extracted Internal Standard(EIS)	Cal Area	Samp Area	Units	%Recovery	%Rec Limits
335-67-1-SUR	MPFOA	4.78	.065	ug/Kg	1*	50 - 150
4151-50-2-EIS	d-NEtFOSA	95.6	43.6	ug/Kg	46*	50 - 150
31506-32-8-EIS	d-NMeFOSA	95.6	59.7	ug/Kg	62	50 - 150
2355-31-9-EIS	d3-NMeFOSAA	95.6	76.9	ug/Kg	80	50 - 150
2991-50-6-EIS	d5-NEtFOSAA	95.6	77.4	ug/Kg	81	50 - 150
24448-09-7-EIS	d7-NMeFOSE	95.6	48.2	ug/Kg	50	50 - 150
1691-99-2-EIS	d9-NEtFOSE	95.6	49.4	ug/Kg	52	50 - 150
757124-72-4-EIS	M2 4:2 FTS	95.6	93.5	ug/Kg	98	50 - 150
27619-97-2-EIS	M2 6:2 FTS	95.6	88.4	ug/Kg	92	50 - 150
39108-34-4-EIS	M2 8:2 FTS	95.6	86.3	ug/Kg	90	50 - 150
67905-19-5-EIS	M2PFHxDA	95.6	98.9	ug/Kg	103	50 - 150
376-06-7-EIS	M2PFFTA	95.6	70.7	ug/Kg	74	50 - 150
13252-13-6-EIS	M3HFPODA	95.6	83.2	ug/Kg	87	50 - 150
375-73-5-EIS	M3PFBS	95.6	84.2	ug/Kg	88	50 - 150
355-46-4-EIS	M3PFHxS	95.6	85.5	ug/Kg	89	50 - 150
375-85-9-EIS	M4PFHpA	95.6	87.1	ug/Kg	91	50 - 150
307-24-4-EIS	M5PFHxA	95.6	86.1	ug/Kg	90	50 - 150
2706-90-3-EIS	M5PFPeA	95.6	79.9	ug/Kg	84	50 - 150
335-76-2-EIS	M6PFDA	95.6	84.7	ug/Kg	89	50 - 150
2058-94-8-EIS	M7PFUnA	95.6	77.4	ug/Kg	81	50 - 150
754-91-6-EIS	M8FOSA	95.6	83.9	ug/Kg	88	50 - 150
335-67-1-EIS	M8PFOA	95.6	88.4	ug/Kg	92	50 - 150
1763-23-1-EIS	M8PFOS	95.6	83	ug/Kg	87	50 - 150
375-95-1-EIS	M9PFNA	95.6	86.7	ug/Kg	91	50 - 150
375-22-4-EIS	MPFBA	95.6	15.5	ug/Kg	16*	50 - 150
307-55-1-EIS	MPFDoA	95.6	62.6	ug/Kg	66	50 - 150