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REV01

2022-2023 INITIAL SITE ASSESSMENTS SUMMARY REPORT

DOT&PF Statewide Airport PFAS Investigations

MULTIPLE LOCATIONS, ALASKA

SHANNON & WILSON

January 2024

Shannon & Wilson No: 102219

Submitted To: Alaska Department of Transportation & Public Facilities
PO Box 112500
Juneau, Alaska 99811
Attn: Ms. Melanie Bray

Subject: REV01 2022-2023 INITIAL SITE ASSESSMENTS SUMMARY REPORT , DOT&PF STATEWIDE AIRPORT PFAS INVESTIGATIONS, MULTIPLE LOCATIONS, ALASKA

Shannon & Wilson, Inc. prepared this report and participated in this project as a consultant to the Alaska Department of Transportation and Public Facilities (DOT&PF). Shannon & Wilson's services were authorized by DOT&PF under Professional Services Agreement Number 25-19-1-013, issued by the DOT&PF on December 19, 2018, and subsequent amendments authorized August 26, 2022, under Contract Amendment 44:

- NTP P6-7: Statewide Airport PFAS Investigations (Statewide Aviation);
- NTP P6-8: Historical Results (Statewide Aviation); and
- NTP P6-9: Statewide Public Relations (Statewide Aviation).

This revised report presents a summary of Shannon & Wilson's initial site assessment activities performed for this project from August 2022 through December 2023. A final version of this document was sent to the Alaska Department of Environmental Conservation (DEC) on June 22, 2023. This report includes additional information collected since that date.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

Kristen Freiburger
Senior Associate

EXECUTIVE SUMMARY

The Alaska Department of Transportation and Public Facilities (DOT&PF) has contracted Shannon & Wilson, Inc. (Shannon & Wilson) to assess potential per- and polyfluoroalkyl substances (PFAS) contamination related to the historical use of aqueous film forming foam (AFFF) at several state-owned airport properties in multiple locations across Alaska. PFAS are a category of persistent organic compounds that are considered emerging environmental contaminants due to evidence that exposure to the compounds can lead to adverse health effects. Due to their persistence, toxicity, and bioaccumulative potential, these compounds are of increasing concern to environmental and health agencies.

Our investigation, which is still ongoing at multiple sites, includes an evaluation of airports requiring certification by the Federal Aviation Administration under the Code of Federal Regulations Part 139 (Part 139 airports) and potentially affected nearby properties.

In June 2022, the Alaska Department of Environmental Conservation (DEC) requested that DOT&PF perform an assessment of the current or former Part 139 airports where an initial investigation of the presence of PFAS in nearby domestic water supply wells had not yet been completed. This report summarizes the findings of our investigation for the 11 sites listed below.

- Deadhorse Airport; Deadhorse, Alaska
- Ketchikan International Airport; Ketchikan, Alaska
- Ralph Wien Memorial Airport; Kotzebue, Alaska
- McGrath Airport; McGrath, Alaska
- Port Heiden Airport; Port Heiden, Alaska
- Sand Point Airport; Sand Point, Alaska
- Sitka Rocky Gutierrez Airport; Sitka, Alaska
- St. Mary's Airport; St. Mary's Alaska
- St. Paul Island Airport; St. Paul, Alaska
- Tom Madsen Airport; Unalaska, Alaska
- Wiley Post-Will Rogers Memorial Airport; Utqiaġvik, Alaska

Two additional sites, the Galbraith Lake and Prospect Creek airports, were formerly owned by DOT&PF but are now owned by Alyeska Pipeline Service Company (APSC) and were also included in DEC's request for assessment. APSC informed DOT&PF that no wells were

present in the airports' vicinity and no further assessment was performed for these sites during this investigation.

While not addressed in detail in this report, Table 1 provided with this report also summarizes the current status for the other DOT&PF-owned/managed airports assessed as part of the overall project.

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ACRONYMS

AAC	Alaska Administrative Code
AFFF	aqueous film-forming foam
APSC	Alyeska Pipeline Service Company
ARFF	Aircraft Rescue and Fire Fighting
bgs	below ground surface
BUECI	Barrow Utilities and Electric Coop, Inc.
COC	chain of custody
CSM	conceptual site model
DEC	Alaska Department of Environmental Conservation
DOT&PF	Alaska Department of Transportation and Public Facilities
DNR	Alaska Department of Natural Resources
EPA	U.S. Environmental Protection Agency
Eurofins	Eurofins Environment Testing in Sacramento, California
GWP	*Revision 1 – DOT&PF Statewide PFAS General Work Plan*
HFPO-DA	hexafluoropropylene oxide dimer (also referred to as GenX)
LHA	Lifetime Health Advisory
LORAN	U.S. Coast Guard Long Range Navigation
MCL	maximum contaminant level
MW	monitoring well
ng/L	nanograms per liter
NOAA	National Oceanic and Atmospheric Administration
NPDWR	National Primary Drinking Water Regulation
NWS	National Weather Service
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perluorodecanoic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFNA	perfluorononanoic acid
QA	quality assurance
QC	quality control
Shannon & Wilson	Shannon & Wilson, Inc.
SREB	Snow-Removal Equipment Building
SWA	DOT&PF Statewide Aviation
TWP	temporary well point

ACRONYMS

USCG	U.S. Coast Guard
USPS EDDM	United States Postal Service Everyday Door Direct Mail Service
WELTS	DNR Well Log Tracking System
WSW	water supply well
WTP	water treatment plant

1 INTRODUCTION

This report summarizes activities performed to investigate potential per- and polyfluoroalkyl substances (PFAS) contamination related to the historical use of aqueous film forming foam (AFFF) at 11 airport properties owned by the Alaska Department of Transportation and Public Facilities (DOT&PF). In June 2022, the Alaska Department of Environmental Conservation (DEC) requested an assessment of Part 139 airports where an initial investigation for the presence of PFAS in nearby water supply wells (WSWs) had not yet been completed by DEC and/or DOT&PF.

This report summarizes the findings of our initial site visits and follow up activities for the project performed from August 2022 through December 2023 for the 11 sites presented in Exhibit 1-1 below. Locations of all airports included in this contract are shown in Figure 1.

Exhibit 1-1: Project Sites

Airport Location	Airport Code	Airport Name
Deadhorse	SCC	Deadhorse Airport
Ketchikan	KTN	Ketchikan International Airport
Kotzebue	OTZ	Ralph Wien Memorial Airport
McGrath	MCG	McGrath Airport
Port Heiden	PTH	Port Heiden Airport
Sand Point	SDP	Sand Point Airport
Sitka	SIT	Sitka Rocky Gutierrez Airport
St. Mary's	KSM	St. Mary's Airport
St. Paul	SNP	St. Paul Island Airport
Unalaska	DUT	Tom Madsen Airport
Utqiaġvik	BRW	Wiley Post-Will Rogers Memorial Airport

This report was prepared for DOT&PF in accordance with the terms and conditions of Shannon & Wilson's contracts, relevant DEC guidance documents, and 18 Alaska Administrative Code (AAC) 75.335.

1.1 Project Objective

The project objective was to identify and sample WSWs at or near the 11 project sites to assess the potential for human exposure to PFAS in groundwater or other impacted water bodies. In some cases, monitoring wells (MWs) were identified and sampled to determine if PFAS was present in the community.

1.2 Project Summary

Our scope of services included the following activities in relation to achieving the project objective, as applicable based on project site characteristics:

- reviewing historical information for the project sites;
- coordinating with DOT&PF and local community sources to identify WSWs to be sampled;
- preparing work plan addenda documenting our site review, background findings, and proposed investigative approach for each site;
- coordinating with DOT&PF to develop appropriate messaging to be used during our sampling events;
- coordinating with DOT&PF to develop letters to send to the community members prior to our arrival, or to notify them of our well search efforts where travel was deemed unnecessary;
- mobilizing to the sites to perform door-to-door well searches and collect water samples, where necessary;
- conducting desktop studies to determine need for initial or secondary site visits;
- submitting analytical groundwater samples to Eurofins Environment Testing, Inc. (Eurofins) for laboratory analysis of 18 PFAS analytes;
- performing a quality assurance/quality control (QA/QC) review for each laboratory data deliverable;
- preparing a data table and results map for each community to notify the project team of the results; and
- notifying the property owners and occupants of each sampled well by telephone and a personalized results notification letter of the results of their water sample.

Shannon & Wilson personnel who collected water samples for this project are State of Alaska Qualified Environmental Professionals as defined in 18 AAC 75.333[b]. Project activities were performed in accordance with our *Revision 1 – DOT&PF Statewide PFAS General Work Plan* (GWP) and site-specific work plan addenda. Work plan addenda prepared for each site are summarized in Exhibit 1-2 below.

Exhibit 1-2: Work Plan Addenda to the *Revision 1 – DOT&PF Statewide PFAS General Work Plan*

Airport Location	Airport Code	General Work Plan Addendum Title	Date
Deadhorse	SCC	*023-SCC-01 Deadhorse Water Supply Sampling Final General Work Plan Addendum*	January 2023
Ketchikan	KTN	*018-KTN-01 Ketchikan Well Monitoring General Work Plan Addendum*	October 2022
Kotzebue	OTZ	*015-OTZ-01 Kotzebue Water Supply Sampling Final General Work Plan Addendum*	October 2022
McGrath	MCG	*020-MCG-01 McGrath Initial Site Characterization Final General Work Plan Addendum*	November 2022
Port Heiden	PTH	*014-PTH-01 Initial Site Characterization Revision 1 Final General Work Plan Addendum*	October 2022
Sand Point	SDP	*024-SDP-01 Water Supply Well Sampling Final General Work Plan Addendum*	January 2023
Sitka	SIT	*016-SIT-01 Sitka Airport WSW Search Final General Work Plan Addendum*	October 2022
St. Mary's	KSM	*025-KSM-01 Saint Mary's Water Supply Well Sampling General Work Plan Addendum*	February 2023
St. Paul	SNP	*019-SNP-01 St. Paul Island Airport WSW Search Final General Work Plan Addendum*	November 2022
Unalaska	DUT	*021-DUT-01 Initial Site Characterization Final General Work Plan Addendum*	December 2022
Utqiaġvik	BRW	*022-BRW-01 Utqiaġvik Water Supply Sampling Final General Work Plan Addendum*	January 2023

1.3 Contaminants of Concern and Action Levels

For the purpose of this report, we consider the two PFAS compounds currently regulated by DEC, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), to be contaminants of concern. In 2006, DEC promulgated groundwater cleanup levels for PFOS and PFOA of 400 nanograms per liter (ng/L) for the individual analytes. In October 2019, DEC published the revised *Technical Memorandum: Action Levels for PFAS in Water and Guidance on Sampling Groundwater and Drinking Water* (DEC PFAS Technical Memorandum) which set the current action level for PFAS in drinking water at 70 ng/L for the sum of PFOS and PFOA (DEC drinking water action level). We understand the State of Alaska currently considers this action level as the threshold for determining if responsible parties need to provide water treatment or alternative water sources for PFAS-affected WSWs. We further understand the DEC is drafting updated regulations.

Additional details regarding the changes to State of Alaska PFAS regulations are discussed in the GWP.

1.3.1 Routine Monitoring Criteria

In coordination with DEC, DOT&PF has developed monitoring guidelines to determine the routine sampling frequency of WSWs at project sites included in the statewide investigation of PFAS contamination at and near Part 139 airports. Exhibit 1-3 below outlines the monitoring frequency criteria used at other state-owned airports where PFAS-affected water has been detected. We note that monitoring for the 11 sites discussed in this report has not been initiated regardless of if a site meets the criteria. When PFAS regulations are updated by DEC, we will work with DEC and DOT&PF to update monitoring guidelines to reflect the updated action levels.

Exhibit 1-3: Monitoring Guidelines for WSWs at DOT&PF Statewide Airport PFAS Investigation Sites

Criteria	Sum of PFOS and PFOA Detected	Relative to DEC Action Level	Monitoring Frequency
A	Greater than or equal to 70 ng/L	Exceeding	None; Affected Well
B	Between 35 ng/L and 70 ng/L	Between 50% and 100%	Quarterly
C	Between 17.5 ng/L and 35 ng/L	Between 25% and 50%	Annual
WSWs within 500 feet of Criteria A, B, or C	N/A	N/A	Quarterly (A/B) or Annual (C)

NOTES: % = percent, ng/L = nanograms per liter

1.4 Federal Regulatory Levels

In June 2022, the Environmental Protection Agency (EPA) published interim lifetime health advisory (LHA) levels of 0.004 ng/L for PFOA and 0.02 ng/L for PFOS, and final LHA levels of 2,000 ng/L for perfluorobutanesulfonic acid (PFBS) and 10 ng/L for hexafluoropropylene oxide dimer (HFPO-DA) and its ammonium salt (together referred to as "GenX chemicals"). We understand the DEC is currently evaluating the interim LHA levels released by EPA to determine their impact on DOT&PF PFAS projects and other projects in the State of Alaska. Currently the DEC considers the EPA final LHA of 70 ng/L for the sum of PFOS and PFOA to be the drinking water action level.

In March 2023, EPA announced draft maximum contaminant levels (MCLs) via proposed National Primary Drinking Water Regulation (NPDWR) for six PFAS including PFOS, PFOA, PFBS, HFPO-DA/GenX chemicals, perfluorononanoic acid (PFNA), and perfluorohexanesulfonic acid (PFHxS). We understand that DEC is currently evaluating the impact this may have on public water systems in Alaska. We note DEC currently adopts the NPDWR requirements in the State of Alaska drinking water regulations (18 AAC 80.010). These regulations are anticipated to be finalized in 2024.

Additional details regarding the changes to EPA's PFAS regulations are discussed in the GWP.

1.5 Analytical Methods

Water samples collected by Shannon & Wilson during these efforts were submitted to Eurofins for laboratory analysis of 18 PFAS compounds by the EPA Method 537M compliant with the Department of Defense Quality Systems Manual for Environmental Laboratories Version 5.3 Table B-15 based on laboratory certification with the DEC. These 18 PFAS analytes and their abbreviated names are presented in Exhibit 1-4 below. These analytes are consistent with samples collected at other airport sites where AFFF was used.

Exhibit 1-4: 18 PFAS Analytes and Abbreviations

Analyte	Abbreviation
Perfluorooctanesulfonic acid	PFOS
Perfluorooctanoic acid	PFOA
Perfluoroheptanoic acid	PFHpA
Perfluorononanoic acid	PFNA
Perfluorohexanesulfonic acid	PFHxS
Perfluorobutanesulfonic acid	PFBS
Perfluorodecanoic acid	PFDA
Perfluorohexanoic acid	PFHxA
Perfluorotetradecanoic acid	PFTeA
Perfluorotridecanoic acid	PFTrDA or PFTriA
Perfluoroundecanoic acid	PFUnA
Hexafluoropropylene oxide dimer acid	HFPO-DA
N-ethyl perfluorooctane sulfonamidoacetic acid	N-EtFOSAA
N-methyl perfluorooctane sulfonamidoacetic acid	N-MeFOSAA
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11CL-PF3OUdS
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9CL-PF3ONS

Additional information regarding the analytical results can be found in the appended analytical laboratory data.

1.6 Water Supply Well Categories

Information gathered during the WSW surveys was used to designate a well category based on use, as follows:

- Category 1: WSWs used for drinking or cooking, as reported by owners or occupants.
- Category 2: WSWs used for dish washing, bathing, and other domestic purposes. Homes or businesses where the occupants report they do not drink the water, but where the water supply wells lead to kitchen or bathroom faucets, are considered possible future drinking water wells.
- Category 3: WSWs used for vegetable gardening and are not plumbed to indoor faucets or spigots. The well water is not accessed by outdoor plumbing, but the well may be located underneath or inside the structure. These wells are considered non-drinking water wells.
- Category 4: WSWs used for outdoor purposes only, such as irrigation or vehicle washing. These wells are considered non-drinking water wells.

- Category 5: WSWs currently not in use. Wells that have been abandoned in place, are inoperable, disconnected, or intended for future use, are considered non-drinking water wells.

Water supply wells are categorized in this way for consistency and to allow for easy sorting of wells by use.

2 PROJECT SITE SUMMARIES

The following sections summarize project activities performed for each of the 11 sites. We also provide a discussion of analytical sample results and recommendations for further investigation, as applicable. The approximate extent of the investigation areas associated with each project site are presented in the appended vicinity map figures.

Our well search activities for each site included querying the Alaska Department of Natural Resources (DNR) Well Log Tracking System (WELTS), contacting DOT&PF Statewide Aviation (SWA) Leasing, and interviewing airport personnel. We also relied on information provided directly by the DOT&PF project team. We performed a preliminary, office-based investigation for each site to evaluate the potential presence of WSWs within the well search areas and depending on findings either mobilized to conduct a well search and/or mailed questionnaires to property owners in the investigation area.

During our site review and preliminary well search activities, we identified several sites without WSWs in the proposed investigation areas. Field mobilization and/or sampling were not performed for these sites. Exhibit 2-1 below summarizes the number of locations sampled at each site for this assessment and the dates of field activities, where applicable.

Exhibit 2-1: Sampling Summary

Airport Location	Locations Sampled[1]	Field Event Month/Year	Comments
Deadhorse	None	N/A	PFAS results provided by the municipal water treatment plant.
Ketchikan	None	October 2022	No WSWs were identified in the investigation area.
Kotzebue	2	December 2022	Two monitoring wells were sampled.
McGrath	16	January 2023 and August 2023	Four WSWs, four MWs, and the municipal water treatment plant were sampled in January 2023. One WSW was resampled, and seven additional WSWs were sampled in August 2023.
Port Heiden	38	November 2022 and August 2023	28 WSWs were sampled in November 2022. Three WSWs were resampled, and 10 additional WSWs were sampled in August 2023. Three locations meet monitoring criteria.
Sand Point	3	February 2023	3 WSWs were sampled.
Sitka	None	N/A	No WSWs were identified in the investigation area.
St. Mary's	6	February 2023 and August 2023	One WSW and two MWs were sampled in February 2023. One WSW was resampled, two MWs were resampled, and three additional MWs were sampled in August 2023.
St. Paul	5	January 2023	Three municipal wells and two MWs were sampled.
Unalaska	None	N/A	No WSWs were identified in investigation area.
Utqiaġvik	None	N/A	PFAS results provided by the municipal water treatment plant.

NOTES:

1 Locations sampled by Shannon & Wilson. See project summaries for additional information.

N/A = Not applicable

We have appended documents regarding the project activities described in the following sections. The appended supporting documentation includes the following:

- Vicinity Map, Site Map, and Results Map Figures, where applicable
- Tabulated Analytical Results, where applicable
- Analytical Laboratory Reports and Data Review Documentation, where applicable
- Well Search Questionnaire Letters and PFAS Fact Sheet Mailings
- Completed Well Search Questionnaires
- Private Well Inventory Survey Forms, where applicable
- Private Well Sampling Logs and Monitoring Well Sampling Logs, where applicable
- Results Notification Letter Templates, where applicable

2.1 Deadhorse Airport (SCC)

The Deadhorse municipal water supply reservoir was the only domestic water source identified within the well search area for the Deadhorse Airport site. The Deadhorse water treatment plant (WTP) supplies domestic water for the airport and community. Water for the system is sourced from a reservoir adjacent to the Sagavanirktok River, colloquially referred to as the Sag River.

In February 2023, we mailed WSW search questionnaire letters to properties within the well search area, including lessees at the Deadhorse Airport property. A figure showing the well search area and a copy of the mailing letter are included in Appendix A. We received three responses to the questionnaire; the responses indicated there were no WSWs present in the search area. Completed well search questionnaires are provided in Appendix A.

Due to the lack of WSWs identified in the investigation area, we did not mobilize to Deadhorse to perform sampling activities. However, we did acquire PFAS sampling results from the Deadhorse WTP which is operated by the North Slope Borough. The Deadhorse WTP (Figure A1) is identified in the DEC Drinking Water Program database as:

- Water System Name: North Slope Borough SA 10
- Water System Number: AK2331184

Figure A2 indicates areas of known or suspected AFFF use at the Deadhorse Airport (Appendix A).

2.1.1 Analytical Results

The Deadhorse WTP provided us with analytical results for historical samples collected from the water system in November 2018, January 2019, April 2019, August 2019, August 2020, and September 2022. Multiple detections of PFAS were reported in the sample results, including PFOS, PFOA, PFHxS, perfluorohexanoic acid (PFHxA), and PFNA.

We have included the analytical laboratory reports received from the Deadhorse WTP in Appendix A. Results were detected below the current DEC drinking water action; however, several samples exceeded the proposed MCL. Exhibit 2-2 below summarizes PFAS analytes detected in the water samples collected at the Deadhorse WTP.

Exhibit 2-2: Deadhorse Water Treatment Plant PFAS Detections Summary

Event Date	Sample Name	Sample Date	Units	Detected Analytes‡				
				PFOS	PFOA	PFHxS	PFHxA	PFNA
November 2018	Raw Water Pond House	11/17/2018	ng/L	4.0	—	3.1	2.3	—
	Raw Tank UF Feed	11/17/2018	ng/L	4.3	—	3.1	2.2	—
	UF1 Permeate	11/17/2018	ng/L	4.6	—	3.4	2.3	—
	UF2 Permeate	11/17/2018	ng/L	3.5	—	2.9	2.3	—
	Potable Tanks Combined	11/17/2018	ng/L	4.1	—	3.2	2.3	—
	Potable Fill 4	11/17/2018	ng/L	3.7	—	3.2	2.3	—
	Potable Truck 19518	11/17/2018	ng/L	4.1	—	3.3	2.3	—
	Potable Truck 19520	11/17/2018	ng/L	4.2	—	3.3	2.3	—
	Potable Truck 7-21	11/17/2018	ng/L	3.9	—	2.3	3.2	—
January 2019	Raw Water Pond House	1/27/2019	ng/L	4.6	—	3.5	2.5	—
	Raw Water Plant Sample Port	1/27/2019	ng/L	4.6	—	3.3	2.3	—
	Raw Tank UF Feed	1/27/2019	ng/L	4.6	—	3.4	2.5	—
	UF1 Permeate	1/27/2019	ng/L	3.7	—	3.3	2.5	—
	UF2 Permeate	1/27/2019	ng/L	3.8	—	3.2	2.4	—
	Potable Tanks Combined	1/27/2019	ng/L	3.6	—	3.2	2.4	—
	Potable Fill 4	1/27/2019	ng/L	3.3	14	3.4	2.5	—
	Potable Truck 19518	1/27/2019	ng/L	3.8	—	3.1	2.3	—
	Potable Truck 19520	1/27/2019	ng/L	3.2	—	3.2	2.5	—
	Potable Truck 7-21	1/27/2019	ng/L	3.7	—	3.3	2.4	—
April 2019	Potable Truck Fill 4	4/1/2019	ng/L	4.2	—	3.2	2.1	—
	Raw Water Sample Port	4/1/2019	ng/L	4.3	—	3.2	2.1	—
August 2019	Raw Water Pondhouse	8/5/2019	ng/L	2.1	—	—	—	—
	Raw Water Plant Sample Port	8/5/2019	ng/L	2.9	—	—	—	—
	Raw Tank UF Feed	8/5/2019	ng/L	2.2	—	—	—	—
	UF 1 Permeate	8/5/2019	ng/L	7.5	—	—	—	—
	UF 2 Permeate	8/5/2019	ng/L	8.2	—	—	—	—
	Potable Tanks Combined	8/5/2019	ng/L	3.7	—	—	—	—
	Potable Fill 4	8/5/2019	ng/L	3.9	—	—	—	—
	Potable Truck 19518	8/5/2019	ng/L	3.6	—	—	—	—
	Potable Truck 19520	8/5/2019	ng/L	4.0	—	—	—	—
	Potable Truck 7-21	8/5/2019	ng/L	3.8	—	—	—	—
August 2020	Well 1	8/24/2020	ng/L	24	—	5.2	2.9	3.4
	Well 2	8/24/2020	ng/L	14	—	4.5	2.3	2.5
	Raw Surface Water	8/24/2020	ng/L	2.4	—	—	—	—
September 2022	Raw Water Pondhouse	9/12/2022	ng/L	3.0	—	2.2	—	—
	Raw Water Plant Sample Port	9/11/2022	ng/L	3.1	—	2.1	—	—
	UF 1 Permeate	9/11/2022	ng/L	2.8	—	2.2	—	—
	UF 2 Permeate	9/12/2022	ng/L	3.2	—	2.2	—	—
	CFE Post Cl2	9/11/2022	ng/L	3.0	—	2.3	—	—

NOTES:

‡ Only detected analytes are summarized in this table. The data was supplied by North Slope Borough Deadhorse WTP personnel; Shannon & Wilson did not perform a quality-assurance/quality-control assessment for the data. The analytical data packets are presented in Appendix A.

— The analyte was not detected above the laboratory's method reporting limit (i.e., not-detected result).

ng/L nanograms per liter

2.1.2 Discussion and Recommendations

The Deadhorse WTP was the only domestic water source identified in the current investigation area for the Deadhorse Airport site. According to the sample results we received from the Deadhorse WTP, PFOS has been detected in the community's water source at concentrations up to 24 ng/L and PFOA was detected at a concentration of 14 ng/L in the January 2019 sampling event. Detected results were also reported for PFHxS, PFHxA, and PFNA in one or more of the WTP samples.

The source water for the Deadhorse WTP is located approximately one-quarter mile northeast of the Deadhorse Airport. According to the DEC Drinking Water Program database, which refers to the reservoir as both the Sag River Reservoir and NANA Reservoir, the approximately rectangular-shaped reservoir is lined on three sides and its base. The eastern side of the reservoir which abuts the Sag River is an unlined gravel levy. The reservoir is replenished by water from the Sag River that seeps through the levy (Figure A1).

The Deadhorse Airport property is located adjacent to the Sag River in the upstream direction from the WTP source water reservoir. Potential migration of PFAS from the airport property to the Sag River could affect water quality at the WTP source water reservoir, though the PFAS source area affecting the Deadhorse WTP has not been determined and there are potentially several potential sources near the Deadhorse WTP.

The Prudhoe Bay Operation Center (DEC Water System Number AK2331011) also uses the Sag River as a water supply; water is pumped from the river into reservoirs. The water intake on the Sag River for the facility is located approximately 5 miles northeast and downstream of the airport.

We recommend coordinating with DEC to determine additional steps for investigating potential effects on soil and groundwater quality resulting from the use of AFFF at the Deadhorse Airport. We also recommend coordinating with the Deadhorse WTP to develop a plan for additional sampling of the community water system to include additional PFAS analytes (e.g., analysis of the 18 PFAS analytes by EPA Method 537M reported for project sites). Given the potential for additional sources, we further recommend forensic assessment of the analytical results.

2.2 Ketchikan Airport (KTN)

Our well search activities for the Ketchikan Airport site did not identify WSWs within the current investigation area (Appendix B). The airport is located on Gravina Island, separated from Ketchikan on Revillagigedo Island by the Tongass Narrows. We understand the

airport is supplied by Ketchikan's municipal water system via a water main that runs beneath Tongass Narrows (Coffman 1989). The municipal water system's source is located on Revillagigedo Island and not within the bounds of the current investigation area (Figure B1).

We performed a site visit to the airport property in October 2022 while our personnel were in Ketchikan for reasons unrelated to the project. During our site visit, which included a drive-around on the airport property, airport personnel noted that there are residential properties on Gravina Island located outside of the current well search area. We were informed that water supplies for these residences are likely sourced from rain catchment, or the residences lacked indoor plumbing (i.e., "dry" cabins). We did not find evidence of WSWs within the search area during our site visit. Field notes from our well search are included in Appendix B.

Airport personnel also informed us that potential areas where AFFF has been used on the airport property include the 1976 Alaska Airline Flight 60 crash site and a training area adjacent to the Aircraft Rescue and Fire Fighting (ARFF) building. Based on information provided, we understand the Flight 60 crash site at the Ketchikan Airport has since been covered by additional earthen fill during subsequent airport improvements. Areas of known or suspected AFFF use at the Ketchikan Airport are presented in Figure B2 (Appendix B).

2.2.1 Discussion and Recommendations

Our well search activities for the Ketchikan Airport site did not identify WSWs within the current investigation area. We recommend coordinating with DEC to determine additional steps for investigating potential effects on soil and groundwater quality resulting from the use of AFFF at the site. Additionally, we were informed of one residential property to the north of the airport that was under construction. During subsequent site visits, we recommend contacting this property to verify their water source.

2.3 Kotzebue Airport (OTZ)

Our well search activities for the Kotzebue Airport site did not identify WSWs within the current investigation area (Figure C1). In November 2022, we mailed WSW search questionnaire letters to Kotzebue addresses (zip code 99752) using the United States Postal Service's Everyday Door Direct Mail (USPS EDDM) bulk mailing service. This service allows a company to send letters to every address within a certain zip code. A copy of the mailing letter is included in Appendix C.

We received six responses to the well search questionnaire. The six questionnaire respondents noted domestic water for their properties was supplied by the Kotzebue

municipal water system. One respondent indicated they had a hand-dug well approximately six feet in depth in their basement but that it was not in use. Another respondent indicated they were employed by the Kotzebue WTP and were unaware of WSWs in Kotzebue used as a drinking water source. Completed well search questionnaires are included in Appendix C.

The DEC Drinking Water Program database indicates that the municipal water supply for Kotzebue is sourced from two surface water bodies. Devils Lake is located approximately two miles east of the Kotzebue Airport and is the system's primary water source. Vortac Lake is located approximately one mile from the airport and is a backup source for the water system. Both lakes are located at elevations greater than the airport property and unlikely to be affected by activities at the airport (Figure C1).

Though our well search for the Kotzebue Airport site did not identify WSWs in the investigation area, we did collect samples from groundwater MWs located at the airport property during the mobilization for a separate PFAS site characterization project for DOT&PF in December 2022. Field notes are included in Appendix C.

Areas of known or suspected AFFF use at the Kotzebue Airport are indicated on Figure C2 (Appendix C).

2.3.1 Analytical Results

In December 2022, we collected groundwater samples from MW10-04 and MW10-09 at the Kotzebue Airport property (Figure C2) using a peristaltic pump. PFOS and PFOA were detected at concentrations less than the DEC groundwater cleanup level of 400 ng/L for the individual analytes. Exhibit 2-3 below summarizes PFAS analytes detected in the groundwater samples collected from the MWs. The full set of PFAS data are summarized in Table C1 and results are presented in Figure C3 (Appendix C).

Exhibit 2-3: Kotzebue Monitoring Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡							
			PFOS	PFOA	PFBS	PFDA	PFHpA	PFHxS	PFHxA	PFNA
MW10-04	12/3/2022	ng/L	160	10	0.84 J	2.6	7.8	9.6	15	24
MW10-09	12/3/2022	ng/L	5.2	41	7.9	—	160	43	280	1.2 J

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix C for further information.

— The analyte was not detected above the laboratory's method detection limit (i.e., not-detected result).

J The analyte was detected at an estimated concentration greater than the detection limit but less than the reporting limit.

ng/L nanograms per liter

2.3.2 Discussion and Recommendations

PFOS was detected at a concentration greater than the DEC drinking water action level at MW10-04. However, our well search did not indicate that residents in Kotzebue are using groundwater for household purposes.

Without evidence that groundwater is used for drinking water in Kotzebue, our opinion is the applicable regulatory levels for PFAS in groundwater at the site are the DEC groundwater cleanup levels listed in 18 AAC 75.345. The regulations list groundwater cleanup levels of 400 ng/L for PFOS and 400 ng/L for PFOA. Concentrations of these analytes were not detected above DEC groundwater cleanup levels at the site.

We recommend coordinating with DEC to develop additional steps to characterize and delineate potentially affected soil, groundwater, and surface water at the site. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas.

2.4 McGrath Airport (MCG)

Our well search activities for the McGrath Airport site identified several properties with WSWs in the investigation area. In November 2022, we mailed WSW search questionnaire letters to McGrath addresses (zip code 99627) using the USPS EDDM bulk mailing service indicating we would mobilize to perform a door-to-door survey effort to identify and sample wells (Appendix D). We have included a copy of the questionnaire letter in Appendix D. As a point of clarification, the letter notes we would travel to McGrath in December 2022, but our mobilization occurred in January 2023 due to weather delays.

Preliminary information obtained for the site indicated there was no evidence of AFFF having been used at the McGrath Airport, and that domestic water for most community residents was supplied by the municipal water system. Our initial (January 2023) mobilization focused on identifying and sampling MWs or WSWs in the immediate vicinity of the airport during the scheduled timeframe.

During our January 2023 mobilization, we collected samples from four WSWs, four groundwater MWs, and the McGrath WTP, which sources its water from the Kuskokwim River upstream of the McGrath Airport (Figure D1). Due to time limitations, we were unable to visit every property in the investigation area. We were informed by longtime

residents that they were not aware of additional indoor-use WSWs within Search Area 1, but outdoor wells may be present. Well search areas are presented in Figure D2.

During our site visit, we coordinated with DOT&PF to provide McGrath's local radio station with information describing the well search effort. A version of the prepared statement from DOT&PF was read on-air by the radio station's host as an additional outreach effort to inform residents in McGrath of the well search and sampling effort.

In August 2023, we returned to McGrath to continue our well search and sampling activities. We collected samples from seven additional WSWs and resampled MCG-021 (due to potential use of well). We were able to confirm drinking water sources for several additional properties in the well search areas during our August 2023 visit. Field notes for the January and August sampling events are included in Appendix D.

Our well search activities identified five category 1 wells, four category 2 wells, three category 3 wells, one category 4 well, and 11 category 5 wells (see Section 1.6 for well category descriptions). Well search results are presented in Exhibit 2-4 below.

Exhibit 2-4: McGrath Well Search Results

Total Well Search Locations	**236**
Total Abandoned Properties[1]	19
Total Confirmed No Well	132
Total Unknown Well Status	34
Total Unknown, Appears Vacant[2]	20
Potential Future Well[3]	6
Total Sampled Water Supply Locations	**12**
Category 1	5
Category 2	4
Category 3	1
Category 4	1
Municipal Water Source Sample	1
Total Unsampled Wells[4]	**13**
Category 3, first-time sample needed	2
Category 5, no sample needed	11
Total Active Refusals	0
Total Sampled Monitoring Wells[5]	**4**

NOTES:
1 Homes in condition that would prevent occupancy.
2 Unoccupied properties where well status is unknown. Properties also included in total for "Unknown Well Status"
3 Properties in development, or properties where owner indicated plans to repair formerly unused well; no sample collected.
4 Well use confirmed, but sample could not be collected.
5 Not included in the overall well search locations number in the first row.

2.4.1 Analytical Results

We collected samples from four WSWs, four groundwater MWs, and the municipal WTP during our January 2023 mobilization to McGrath. We collected samples from an additional seven WSWs in August 2023. Figure D3 shows the highest sum of PFOS and PFOA results for WSW and MW sample locations in McGrath (Appendix D).

PFAS analytes detected in WSWs sampled in McGrath are summarized in Exhibit 2-5 below. The full WSW data set for January 2023 is presented in Table D1 (Appendix D). The full WSW data set for August 2023 is presented in Table D2 (Appendix D).

Exhibit 2-5: McGrath Water Supply Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡					
			PFOS	PFOA	PFBS	PFHpA	PFHxS	PFHxA
MCG-001	1/10/2023	ng/L	–	–	2.7	0.26 J	4.6	2.2
MCG-003	1/10/2023	ng/L	–	5.5	–	1.8	1.6 J	3.8
MCG-007	1/10/2023	ng/L	–	–	0.71 J	–	–	3.4
MCG-018	8/10//2023	ng/L	5.2	6.8	1.2 J	2.7	2.2	5.1
MCG-021	1/10/2023	ng/L	6.7	3.9	1.1 J	1.3 J	9.0	3.1
	8/10/2023	ng/L	5.9	4.9	1.0 J	1.8	8.0	4.7
MCG-054	8/10/2023	ng/L	–	2.2	1.3 J	0.69 J	1.2 J	2.8
MCG-080	8/13/2023	ng/L	–	–	0.62 J	–	–	–
MCG-201	8/8/2023	ng/L	–	–	0.57 J	0.27 J	1.2 J	–
MCG-219	8/10/2023	ng/L	1.4 J	2.1	1.4 J	2.1	2.6	9.1
MCG-259	8/11/2023	ng/L	–	–	–	–	–	0.91 J
MCG-275	8/10/2023	ng/L	–	2.1	1.8	0.96 J	1.3 J	9.7

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix D for further information.
– The analyte was not detected above the laboratory's method detection limit (i.e., not-detected result).
J The analyte was detected at an estimated concentration greater than the detection limit but less than the reporting limit.
ng/L nanograms per liter

PFAS analytes detected in MWs sampled in McGrath are summarized in Exhibit 2-6 below. The full data set is presented in Table D3.

Exhibit 2-6: McGrath Monitoring Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡					
			PFOS	PFOA	PFBS	PFHpA	PFHxS	PFHxA
MCG-MW-01	1/11/2023	ng/L	—	—	6.0	2.3	14	25
MCG-MW-02	1/11/2023	ng/L	—	55	18	32	450	65
MCG-MW-03	1/11/2023	ng/L	—	—	1.8	0.27 J	0.82 JH*	2.6
MCG-MW-04	1/11/2023	ng/L	—	—	0.39 J	—	—	0.64 J

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix D for further information.
— The analyte was not detected above the laboratory's method detection limit (i.e., not-detected result).
J The analyte was detected at an estimated concentration greater than the detection limit but less than the reporting limit.
JH* The result is considered an estimated concentration, biased high, due to quality control failures. Flag applied by Shannon & Wilson.
ng/L nanograms per liter

Results were communicated to residents via letter or email at the owner's or occupant's request. Results letters included pages of the laboratory report that apply to the WSW sample. A copy of the results letter is provided in Appendix D.

2.4.2 Discussion and Recommendations

PFOS and PFOA were not detected above the DEC drinking water action level at WSW or MW locations sampled in McGrath in 2023. Concentrations of PFOA detected at MCG-MW-02 are greater than the criteria for initiating routine monitoring of WSWs within 500 feet of the monitoring well. Based on our well search activities, we did not identify a WSW within 500 feet of MCG-MW-02. The reported PFAS analytes were not detected in the municipal WTP sample (Sample Name: *MCG-024;* Appendix D).

The WSWs sampled during our January 2023 mobilization provided water for commercial buildings or buildings occupied by governmental agencies. No private residences were sampled because our well search did not identify residences with drinking water WSWs. In Exhibit 2-7, we summarize information collected during our well search regarding WSW usage at the properties where PFAS was detected in McGrath.

Exhibit 2-7: McGrath Water Supply Wells Usage Summary for Wells with PFAS Detections

Sample Name	Description	Well Category	Notes
MCG-001	ADF&G Office	1	WSW is used for internal plumbing, and food preparation/cooking. Drinking water is noted to be supplied by bottled water.
MCG-003	DOT&PF Shop	2	WSW is used for internal plumbing, and vehicle maintenance. Unknown if water is consumed. New construction – drinking water supply is unknown.
MCG-007	Commercial Airline Services	2	WSW is used for toilets and handwashing. Unknown if water is consumed by visitors/customers. Drinking water is noted to be supplied by bottled water.
MCG-018	Residence	1	WSW is assumed Category 1.
MCG-021	Gas Station	1	WSW is used for internal plumbing, and food preparation/cooking. Drinking water is noted to be supplied by bottled water. Unknown if water is used for coffee sales.
MCG-054	Residence	1	WSW has multiple users. Used for gardening and drinking water.
MCG-080	Residence	4	WSW is used for washing vehicles and other outdoor use. No gardening reported. Municipal water is used indoors.
MCG-201	Residence	3	WSW is used for gardening city. Reported to use community well for indoor water use (assumed municipal water connection)
MCG-219	Residence	1	WSW is used for indoor plumbing, drinking, food preparation, and gardening.
MCG-259	Residence	3	WSW used for gardening and indoor plumbing. Drinking water is hauled from the municipal system.
MCG-275	Residence	1	WSW is used for indoor plumbing, drinking, food preparation, gardening, and pets.

We recommend coordinating with DEC to develop additional steps to characterize and delineate PFAS-affected soil, groundwater, and surface water at the site. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas. During characterization, we recommend contacting owners or occupants of previously unconfirmed properties to document WSW use.

2.5 Port Heiden Airport (PTH)

Our well search activities for the Port Heiden Airport identified 49 WSWs in the investigation area. Of these, we have collected samples from 38 WSWs. Our well search area is shown on Figure E1. Areas of known or suspected AFFF use are presented on Figure E2.

In October 2022, we sent a letter to inform residents that our personnel would be mobilizing to Port Heiden in November 2022 to perform a door-to-door survey effort to identify and sample wells. A copy of the letter is included in Appendix E. As of the submittal date of this report, we have not received any responses.

We sampled 28 WSWs in Port Heiden in November 2022. In August 2023, we returned to Port Heiden to continue our well search. We resampled the following WSWs meeting monitoring criteria: PTH-205, PTH-206, and PTH-046 (ARFF building). We also collected samples from ten additional WSWs. Field logs are provided in Appendix E.

WSW PTH-201 meets monitoring criteria but was not resampled in 2023. The property was reported to be unoccupied, and we were unable to access the home. We hung a door tag requesting the owner or occupant contact us but did not receive a response. Risk of exposure is low at this property as the WSW is not in use.

We have identified 46 category 1 wells, two category 2 wells, and one category 5 well. Unsampled wells include properties that are vacant and properties where owners were not available during our sampling events or denied access to collect a sample. Our well search results are presented in Exhibit 2-8.

Exhibit 2-8: Port Heiden Well Search Results

Total Well Search Locations	**64**
Total Abandoned Properties[1]	6
Total Confirmed No Well	6
Total Unknown Well Status	2
In Development, Potential Future Well	1
Total Identified Wells	**49**
Category 1	46
Category 2	2
Category 5	1
Total Sampled Wells	**38**
Category 1	36
Category 2	2
Total Unsampled Vacant Properties[2]	8
Total Wells Needing First-time Sample[3]	2
Total Active Refusals	1

NOTES:
1 Homes in condition that would prevent occupancy.
2 Unoccupied homes that may be occupied in the future, well confirmed, not sampled.
3 Properties where owners have confirmed well use, but owners were unavailable during sampling events. Not sampled.

2.5.1 Analytical Results

We collected samples from 28 WSWs during our November 2022 mobilization to Port Heiden and an additional ten WSWs in August 2023. PFAS were detected in samples collected at the 17 locations summarized in Exhibit 2-9. Tables E1 and E2 provided in Appendix E summarize the full set of analytical data for November 2022 and August 2023,

respectively. Figure E3 shows the highest sum of PFOS and PFOA for WSW samples in Port Heiden.

Results were communicated to residents via letter or email at the owner's or occupant's request. Results letters included pages of the laboratory report that apply to the WSW sample. A copy of the results letter is provided in Appendix E.

Exhibit 2-9: Port Heiden Water Supply Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡					
			PFOS	PFOA	PFBS	PFHpA	PFHxS	PFHxA
PTH-008	8/3/2023	ng/L	–	1.0 J	–	–	–	–
PTH-012	8/1/2023	ng/L	–	–	1.0 J	–	0.65 J	–
PTH-013	11/11/2022	ng/L	—	—	0.34 J	—	0.70 J	0.65 J
PTH-016	11/10/2022	ng/L	0.50 J	—	—	—	—	—
PTH-020	11/10/2022	ng/L	—	—	1.7 J*	0.47 J*	5.8 J*	1.3 J*
PTH-021	8/2/2023	ng/L	1.3 J	3.8	19	4.7	75	11
PTH-025	11/9/2022	ng/L	—	—	9.9	1.1 J	35	4.8
PTH-031	11/9/2022	ng/L	1.3 J	2.0	—	0.24 J	—	—
PTH-032	11/9/2022	ng/L	—	—	1.2 J	—	0.60 J	—
PTH-033	11/10/2022	ng/L	—	—	0.22 J	—	—	—
PTH-042	11/10/2022	ng/L	0.64 J	—	—	—	—	—
PTH-046	11/10/2022	ng/L	36	22	110	21	250	89
	8/1/2023	ng/L	18	8.3	57	12	140	43
PTH-201	11/11/2022	ng/L	—	—	0.33 J*	—	—	—
PTH-202	11/11/2022	ng/L	—	3.1	2.3	1.0 J	4.9	1.7 J
PTH-205	11/11/2022	ng/L	2.9 JH*	15	9.9	4.0	7.1	9.1
	8/2/2023	ng/L	2.3 JH*	13	8.3	3.8	6.1	7.8
PTH-206	11/11/2022	ng/L	—	—	0.74 J	—	—	—
	8/2/2023	ng/L	—	—	1.1 J	—	—	—
PTH-213	11/10/2022	ng/L	—	—	0.41 J	—	—	—

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix E for further information.

– The analyte was not detected above the laboratory's method detection limit (i.e., not-detected result).

J The analyte was detected at an estimated concentration greater than the detection limit but less than the reporting limit.

J* The result is considered an estimated concentration due to quality control failures. Flag applied by Shannon & Wilson.

JH* The result is considered an estimated concentration, biased high, due to quality control failures. Flag applied by Shannon & Wilson.

ng/L nanograms per liter

2.5.2 Discussion and Recommendations

PFAS were not detected above the DEC drinking water action level in WSWs sampled in Port Heiden during this investigation. In November 2022, the sum of PFOS and PFOA concentrations detected at location PTH-046 was greater than 50% of the DEC drinking

water action level (i.e., 35 ng/L) and location PTH-205 was greater than 25% of the DEC drinking water action level (i.e., 17.5 ng/L). In August 2023, results for PTH-046 and PTH-205 showed decreases in the sum of PFOS and PFOA concentrations. PTH-046 reported concentrations greater than 25% of the action level; however, PTH-205 fell below 25% of the action level. Locations PTH-201 and PTH-206 are located within approximately 500 feet of either PTH-205 or PTH-046.

In Exhibit 2-10 below, we summarize information collected during our well search regarding WSW usage at the properties where PFAS was detected in Port Heiden.

Exhibit 2-10: Port Heiden Water Supply Wells Usage Summary for Wells with PFAS Detections

Sample Name	Description	Well Category	Notes
PTH-008	Storage building	2	WSW may be used for indoor plumbing.
PTH-012	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-013	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-016	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-020	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-021	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-025	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-031	Residential	1	WSW is used for drinking, food preparation/cooking, and gardening.
PTH-032	Residential	1	WSW is used for drinking, food preparation/cooking, and gardening.
PTH-033	Residential	1	WSW use noted as "1" however well broken at time of sampling.
PTH-042	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-046	DOT&PF Utility Well	2	WSW is used for filling ARFF Truck.
PTH-201	Residential	1	WSW use is unknown; property is unoccupied. Well category implied based on location of water sample (kitchen sink).
PTH-202	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-205	Residential	1	WSW is used for drinking, food preparation/cooking, and gardening.
PTH-206	Residential	1	WSW is used for drinking and food preparation/cooking.
PTH-213	Residential	1	WSW is used for drinking and food preparation/cooking.

During our site visit, we observed several locations with water treatment systems in their homes due to groundwater contamination identified during a previous project unrelated to the DOT&PF. In some instances, the system was observed to be in the home's yard. It is unclear if these systems have been maintained; we did not collect post-treatment samples to evaluate these systems' effectiveness.

The WSW at PTH-008 is not regularly used. Indoor taps in the building were not functional. Samples were collected from a spigot from the heating system/boiler. The property is owned by the City of Port Heiden. During our visit in August 2023, representatives from the City of Port Heiden were not able to provide details on the well use, but assumed the well system

was broken as the indoor spigots do not work. The building is rarely used other than to store the village fire truck and fire equipment. It is unclear whether the fire truck is stored with full water tanks, or where the truck water tank is filled.

We recommend coordinating with DEC to develop additional steps to characterize and delineate PFAS-affected soil, groundwater, and surface water at the site. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas.

Despite decreases in PFAS concentrations, we recommend monitoring for locations PTH-046, PTH-205, PTH-201, and PTH-206. Due to the potential for seasonal variability, we recommend including a summer and winter event for a minimum of one year prior to decreasing sampling frequency. We recommend remobilizing to Port Heiden to coordinate sample collection with property owners who were unavailable during sampling events and to revisit properties where we have been unable to confirm well-use.

2.6 Sand Point Airport (SDP)

The Sand Point Airport is located approximately two miles southwest of the community of Sand Point. Waterlines for the municipal water system do not extend to the airport property; domestic water for the Sand Point Airport vicinity is supplied either by WSWs or water hauled by truck from Sand Point. The community's water source, Humboldt Creek Reservoir, is located near Sand Point, and outside of the current investigation area. The area of influence for the municipal water source and the well search area are shown on Figure F1 in Appendix F.

Locations of known or suspected AFFF use at the Sand Point Airport are presented in Figure F2 (Appendix F).

2.6.1 Sand Point Analytical Results

We mobilized to Sand Point in February 2023 to collect samples from three WSWs identified in the investigation area. Field logs are provided in Appendix F. PFAS analytes detected in the WSW samples are summarized in Exhibit 2-11 below. The full set of data is presented in Table F1. Figure F3 shows the sum of PFOS and PFOA results for WSW samples collected in Sand point.

Exhibit 2-11: Sand Point Water Supply Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡							
			PFOS	PFOA	PFBS	PFDA	PFHpA	PFHxS	PFHxA	PFNA
SDP-001	2/8/2023	ng/L	—	—	—	—	—	0.86 J	—	—
SDP-002	2/8/2023	ng/L	20	4.4	1.7 J	0.50 JH*	24	16	76	1.8

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix F for further information.

— The analyte was not detected above the laboratory's method detection limit (i.e., not-detected result).

J The analyte was detected at an estimated concentration greater than the detection limit but less than the reporting limit.

JH* The result is considered an estimated concentration, biased high, due to quality control failures. Flag applied by Shannon & Wilson.

ng/L nanograms per liter

Results were communicated to residents via letter or email at the owner's or occupant's request. Results letters included pages of the laboratory report that apply to the WSW sample. A copy of the result letter is included in Appendix F.

2.6.2 Discussion and Recommendations

PFOS and PFOA were not detected above the DEC drinking water action level in locations sampled in Sand Point during this investigation. Concentrations of PFOS and PFOA detected at location SDP-002 were greater than 25% of the DEC drinking water action level (i.e., 17.5 ng/L), which we understand is the threshold used by DOT&PF to determine if WSWs should be included in a routine monitoring Based on our interviews with the property occupants, it does not appear that the WSW is used for drinking water.

In Exhibit 2-12 below, we summarize information collected during our well search regarding WSW usage at the properties where PFAS was detected in Sand Point. Information for each WSW located in Sand Point is provided in Appendix F.

Exhibit 2-12: Sand Point Water Supply Wells Usage Summary for Wells with PFAS Detections

Sample Name	Description	Well Category	Notes
SDP-001	Tribally-Owned Airline Service Building	2	WSW is used for bathrooms.
SDP-002	DOT&PF SREB	2	WSW is used for bathrooms and maintenance activities.
SDP-003	Commercial Seafoods	1	WSW is used for bathrooms/laundry. Water for coffee is treated with a Brita filter.

We recommend coordinating with DEC to develop additional steps to characterize and delineate PFAS-affected soil, groundwater, and surface water at the site. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that

could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas.

2.7 Sitka Airport (SIT)

Our well search activities for the Sitka Airport site did not identify WSWs within the current investigation area. The airport is located on Japonski Island, separated from Sitka on Baranoff Island by the Sitka Channel. We understand the airport is supplied by Sitka's municipal water system whose source is located on Baranoff Island and not within the current investigation area (Figure G1). SWA Leasing informed us that leasing contracts at the airport prohibit the installation of drinking water wells where local water utility service is available. We understand this prohibition was instated at the request of the U.S. Coast Guard (USCG), likely due to historical contamination on Japonski Island related to former military operations. We also contacted the Environmental Superintendent with the City of Sitka's Department of Public Works who confirmed that there were no WSWs on Japonski Island and water is supplied by the municipal water system. The operations supervisor with the University of Alaska Southeast (located on Japonski Island) also confirmed that the facility was supplied by the municipal water system.

In November 2022, we mailed WSW search questionnaire letters to property owners in the well search area. Mailing addresses were obtained from the contract public relations consultant, HDR, Inc. We received three responses. One respondent indicated their house was connected to the municipal water system and two respondents noted their properties were currently vacant lots and they planned to connect to the municipal water system once structures were built. Copies of the mailing letter and the responses received are included in Appendix G.

Due to the lack of WSWs identified in the investigation area, we did not mobilize to Sitka to perform sampling activities. Locations of known or suspected AFFF use at the Sitka Airport are presented in Figure G2 (Appendix G).

2.7.1 Discussion and Recommendations

Our well search activities for the Sitka Airport site did not identify WSWs within the current investigation area. We recommend coordinating with DEC and the USCG to determine additional steps for investigating potential effects on soil and groundwater quality resulting from the use of AFFF at the site.

2.8 St. Mary's Airport (KSM)

Our well search activities for the St. Mary's Airport site indicated properties with WSWs in the investigation area were likely limited to the airport property. The airport serves the communities of St. Mary's and Pitka's Point, which are both located several thousand feet from the airport and within separate watersheds (i.e., outside of the current investigation area). Well search areas are depicted on Figure H1 and Figure H2 shows the St. Mary's Airport area.

We mobilized to St. Mary's in February 2023 to identify WSWs or MWs in the investigation area. We collected samples from one WSW and two groundwater MWs on airport property. The WSW provides indoor plumbing to the DOT&PF Snow Removal Equipment Building (SREB). Bottled water is provided for drinking at this location.

In August 2023, we mobilized to St. Mary's for an unrelated DOT&PF project and revisited well search locations with unknown well status to confirm the absence of wells. We also resampled one WSW and two MWs. We collected samples from one temporary well point (TWP), and two newly-installed MWs (installed as part of the other DOT&PF investigation). During our initial wells search and revisit, we were informed of at least two wells present at the former Boreal Fisheries, Inc. processing plant located on the bank of the Yukon River within our well search boundary. This property is approximately one mile southwest of the airport. We understand the property is not in use, and is currently owned by DOT&PF. We were unable to collect samples at the processing plant because the wells are currently inoperable. Field logs are provided in Appendix H.

2.8.1 St. Mary's Analytical Results

We collected samples from one WSW and two groundwater MWs at the airport property during our February 2023 mobilization to St. Mary's. We resampled the WSW and two MWs during an August 2023 mobilization to St. Mary's. In addition, we sampled one TWP and two newly-installed MWs in August 2023 for a total of six sample locations at the airport. PFAS analytes detected in the WSW sampled in St. Mary's are summarized in Exhibit 2-13 below. The full set of WSW analytical data is presented in Table H1 (February 2023) and Table H2 (August 2023) in Appendix H.

Exhibit 2-13: St. Mary's Water Supply Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡		
			PFOS	PFHxS	PFHxA
KSM-05	2/24/2023	ng/L	4.4	1.6J	1.5J
	8/28/23	ng/L	3.8	1.3J	1.3J

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix H for further information.

ng/L nanograms per liter

PFAS analytes detected in samples collected from the TWP and MWs are summarized in Exhibit 2-14 below. The full set of analytical data is presented in Table H3 (February 2023) and H4 (August 2023) in Appendix H.

Exhibit 2-14: St. Mary's Monitoring Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡						
			PFOS	PFOA	PFBS	PFHpA	PFHxS	PFHxA	PFNA
SM-MW22-1	2/24/2023	ng/L	9.2	0.94J	0.63J	0.70J	5.0	5.1	—
	8/31/23	ng/L	50	2.1	1.7J	0.98J	19	5.3	0.29J
SM-MW22-2	2/24/2023	ng/L	**250**	**7.9**	13	2.9	120	47	—
	8/31/23	ng/L	**1,200**	**18**	25	6.7	320	66	0.91J
SM-MW23-3	8/30/23	ng/L	**280**	**7.1**	9.7	3.0	130	34	—
SM-MW23-4	8/30/23	ng/L	**67**	**6.6**	3.4	3.7	59	10	0.35J
SM-TWP23-1	8/28/23	ng/L	**270 J***	**6.0 J***	8.5 J*	2.8 J*	110 J*	35 J*	0.26 J*

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix H for further information.

Bold = result exceeds the DEC action level of 70 ng/L for the sum of PFOS and PFOA.

J = Estimated concentration detected greater than the detection limit and less than the limit of quantitation. Flag applied by the laboratory.

J* = Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc.

ng/L nanograms per liter

Results were communicated to residents via letter or email at the owner's or occupant's request. Results letters included pages of the laboratory report that apply to the WSW sample. A copy of the result letter is included in Appendix H.

2.8.2 Discussion and Recommendations

Our well search indicated the only WSW on airport property is located at the DOT&PF SREB. Additionally, we identified inoperable wells at the former Boreal Fisheries processing plant. Concentrations of PFAS detected in the SREB well (KSM-05) were below the DEC drinking water action level. Based on our interviews with DOT&PF personnel during our mobilizations, we understand that drinking water for properties at the airport is delivered from St. Mary's. According to DOT&PF personnel, the SREB well is used for indoor plumbing, but not drinking water, as described in Exhibit 2-15 below.

Exhibit 2-15: St. Mary's Water Supply Wells Usage Summary for Wells with PFAS Detections

Sample Name	Description	Well Category	Notes
KSM-05	DOT&PF SREB	2	WSW is used for bathrooms and maintenance activities.

PFOS and PFOA were detected at a concentration greater than the DEC drinking water action level at monitoring well SM-MW22-2, SM-MW23-3, SM-MW-23-4, and TWP SM-TWP23-1. The concentration of PFOS in SM-MW22-2 also exceeded the DEC groundwater cleanup level of 400 ng/L in August 2023. Differences in PFAS concentrations between the MWs and WSW may be associated with the difference in well depths. The MWs were installed as part of an unrelated DOT&PF project to approximately 25 feet below ground surface (bgs) and the WSW is thought to be installed to approximately 388 feet bgs. The boring logs for the MWs are included in Appendix H.

We recommend coordinating with DEC to develop additional steps to characterize and delineate potentially affected soil, groundwater, and surface water at the site. We recommend remobilizing to the site if the status of the Boreal Fisheries processing plant changes. We note that current well operations would require additional coordination for a power supply source to operate the wells. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas.

2.9 St. Paul Airport (SNP)

Our well search activities for the St. Paul Airport site identified municipal WSWs and MWs in the investigation area (Figure I1). In January 2023, we mobilized to St. Paul to collect groundwater samples from three municipal WSWs and two groundwater MWs.

Areas of known or suspected AFFF use are shown on Figure I2.

We contacted the National Oceanic and Atmospheric Association (NOAA) environmental engineer in December 2022, to request access to the MW at the National Weather Service (NWS) location at the St. Paul Airport. NOAA was not aware of wells at the site. During our site visit, the NWS completed a WSW survey which did not identify WSWs at the facilities. The well-survey indicated the NOAA building and adjacent residences (SNP-002) are connected to city water but are not in service during the winter. It is unknown if there are historical, unused wells at the NWS facility.

We also contacted the USCG prior to our initial well search, to request permission to sample MWs at USCG Long Range Navigation (LORAN) facilities near the St. Paul Airport (SNP-004). The USCG declined permission to sample MWs during our initial site visit, but indicated sampling may be possible with advanced notice in the future. We confirmed the USCG buildings are connected to municipal water during our January 2023 well search. It is unknown if there are historical, unused wells at the LORAN facility. The USCG representative also indicated that USGS performed a preliminary investigation for PFAS at the LORAN facility. We were informed that the study did not find evidence that PFAS contaminating compounds were used or stored at the facility. Analytical samples were not collected as a part of the preliminary USCG investigation.

We continued our well search by contacting owners and local occupants of buildings near the St. Paul Airport where we were not able to confirm well status during our initial site visit. In August 2023, the DOT&PF airport manager for the St. Paul Airport confirmed SNP-003 and nearby buildings are DOT&PF buildings. The current use of the buildings is unknown, and the manager did not know if there is an unused well at the property. The DOT&PF buildings are connected to municipal utilities, which are turned on seasonally. At the time of our visit and phone call, the buildings were not operating.

In August 2023, we contacted the City of St. Paul to discuss the status of the source wells for the municipal water system. We confirmed SNP-NWell, SNP-WellF-2, and SNPF-5 remained the sources for the municipal water system. Two of the additional source wells, SNP-WellF-1 and SNP-WellF-3 will be used after repairs. Source well SNP-SWell (south well) was offline during our site visit and phone call, but may be used as an alternative source, or to meet high demand. SNP-WellF-4 is planned to be decommissioned.

During the site visit, we confirmed the landfill buildings (SNP-005) are connected to municipal water. It is unknown if there are historical, unused wells at the landfill. Our follow-up study identified an additional NOAA MW at the landfill.

2.9.1 St. Paul Analytical Results

PFOS was detected in two municipal WSWs sampled in January 2023 as summarized in Exhibit 2-16 below. The full set of analytical data is presented in Table I1. Sum of PFOS and PFOA results for sample locations are presented on Figure I3.

Exhibit 2-16: St. Paul Water Supply Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡ PFOS
SNP-WellF2	1/17/2023	ng/L	1.2 J
SNP-WellF5	1/17/2023	ng/L	0.83 J

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix I for further information.

J The analyte was detected at an estimated concentration greater than the detection limit but less than the reporting limit.

Perfluoroheptanoic acid (PFHpA) was also detected in one MW sampled at the St. Paul Airport in January 2023 as summarized in Exhibit 2-17 below. The full set of analytical data is presented in table I2.

Exhibit 2-17: St. Paul Monitoring Wells PFAS Detections Summary

Sample Name	Sample Date	Units	Detected Analytes‡ PFHpA
SNP-MWNW512	1/18/2023	ng/L	0.28 J

NOTES:

‡ Only detected analytes are summarized in this table. For field duplicate pairs, the maximum result for each analyte in the duplicate pair is presented. Refer to the analytical data in Appendix I for further information.

J The analyte was detected at an estimated concentration greater than the detection limit but less than the reporting limit.

Results were communicated the municipal water operator via letter. The results letter included pages of the laboratory report that apply to the WSW samples. A copy of the result letter is included in Appendix I.

2.9.2 Discussion and Recommendations

PFOS and PFOA were not detected above the DEC drinking water action level in locations sampled in St. Paul during this investigation. Exhibit 2-18 below summarizes water usage for the WSWs where PFAS was detected in Sand Point.

Exhibit 2-18: St. Paul Water Supply Wells Usage Summary for Wells with PFAS Detections

Sample Name	Description	Well Category	Notes
SNP-WellF2	Municipal WSW	1	St. Paul municipal water supply well.
SNP-WellF5	Municipal WSW	1	St. Paul municipal water supply well.

We recommend coordinating with DEC to develop additional steps to characterize and delineate potentially affected soil, groundwater, and surface water at the site. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently

unaffected areas. We further recommend annual contact with the St. Paul water utility to confirm the source wells for the municipal supply. When alternative or additional source wells are used, we recommend mobilization to St. Paul to collect samples.

Although we do not currently recommend a second mobilization to St. Paul to continue well search and sampling efforts, remaining well search tasks should be included when planning site characterization activities or other mobilizations to St. Paul. We recommended sampling landfill MWs and coordinating with the USCG to access MWs at the LORAN site. We also recommend revisiting seasonally active buildings in the summer to confirm well status.

2.10 Unalaska Airport (DUT)

Our well search activities for the Unalaska Airport site did not identify WSWs within the current investigation area. Domestic water for the airport and community is supplied by the Unalaska WTP (DEC Water System Number AK2260309) and sourced from surface water bodies several miles outside of the current investigation area (Figure J1).

Areas of known or suspected AFFF use at the Unalaska Airport are indicated on Figure J2.

In December 2022, we obtained addresses from the City of Unalaska online Geographic Information Systems service and mailed WSW search questionnaire letters to property owners in the investigation area. As of the submittal date of this report, we have not received any responses. A copy of the mailing letter is included in Appendix J. We also contacted the City of Unalaska Water Division Supervisor who indicated that water in the investigation area was supplied by the municipal water system, and he was not aware of WSWs.

Due to the lack of WSWs identified in the investigation area, we did not mobilize to Unalaska to perform well search and sampling activities.

2.10.1 Discussion and Recommendations

Our well search activities for the Unalaska Airport site did not identify WSWs within the investigation area. We recommend coordinating with DEC to develop additional steps to characterize and delineate potentially affected soil, groundwater, and surface water at the site. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas.

2.11 Utqiaġvik Airport (BRW)

Our well search activities for the Utqiaġvik Airport site did not identify WSWs within the investigation area. Information obtained during our office-based research indicated domestic water for the airport and community is supplied by the Utqiaġvik municipal WTP (DEC Water System Number: AK2320078) and sourced from the Isatkoak Reservoir located adjacent to the east extent of the airport runway. The Utqiaġvik WTP is operated by Barrow Utilities and Electric Coop, Inc. (BUECI).

Areas of known or suspected AFFF use at the Utqiaġvik Airport are indicated on Figure K2.

In February 2023, we mailed WSW search questionnaire letters to Utqiaġvik addresses (zip code 99723) using the USPS EDDM bulk mailing service. A copy of the mailing letter and completed questionnaires are included in Appendix K.

One respondent indicated their property was connected to the municipal water system and that they did not have a WSW. We also received a call from one respondent from outside the search area who indicated a freshwater lake south of the airport was previously used for a water source by the community and verified their property was supplied by the municipal water system.

2.11.1 Utqiaġvik Analytical Results

Due to the lack of WSWs in the investigation area, we did not mobilize to Utqiaġvik to perform sampling activities. However, we did acquire PFOS and PFOA sampling results from monthly samples collected in 2021 at the Utqiaġvik WTP. Laboratory reports are provided in Appendix J.

Exhibit 2-19 below summarizes PFAS analytes detected in the water samples collected at the Utqiaġvik WTP. The analytical laboratory reports are included in Appendix K.

Exhibit 2-19: Utqiaġvik Water Treatment Plant PFAS Sampling Results Summary

Event Date	Sample Name	Sample Date	Units	Detected Analytes‡	
				PFOS	PFOA
January 2021	Raw Water Tap	1/5/2021	ng/L	44	4.3
	MG Tank	1/5/2021	ng/L	—	—
February 2021	Raw Water Tap	2/1/2021	ng/L	50	5.6
	MG Tank	2/1/2021	ng/L	—	—
March 2021	Raw Water Tap	3/2/2021	ng/L	54	5.4
	MG Tank	3/2/2021	ng/L	—	—
April 2021	Raw Water Tap	4/7/2021	ng/L	62	6.0
	MG Tank	4/7/2021	ng/L	—	—
May 2021	Raw Water Tap	5/4/2021	ng/L	52	5.8
	MG Tank	5/4/2021	ng/L	—	—
June 2021	Raw Water Tap	6/7/2021	ng/L	69	7.3
	MG Tank	6/7/2021	ng/L	—	—
July 2021	Raw Water Tap	7/13/2021	ng/L	45	4.2
	MG Tank	7/13/2021	ng/L	—	—
August 2021	Raw Water Tap	8/9/2021	ng/L	43	3.6
	MG Tank	8/9/2021	ng/L	—	—
September 2021	Raw Water Tap	9/7/2021	ng/L	50	4.5
	MG Tank	9/7/2021	ng/L	—	—
October 2021	Raw Water Tap	10/25/2021	ng/L	61	5.3
	MG Tank	10/25/2021	ng/L	—	—
November 2021	Raw Water Tap	11/1/2021	ng/L	53	4.8
	MG Tank	11/1/2021	ng/L	—	—
December 2021	Raw Water Tap	12/7/2021	ng/L	61	5.7
	MG Tank	12/7/2021	ng/L	—	—

NOTES:

‡ The data was supplied by BUECI; Shannon & Wilson did not perform a quality-assurance/quality-control assessment for the data. The analytical data packets are presented in Appendix K.

— The analyte was not detected above the laboratory's method detection limit (i.e., not-detected result).

2.11.2 Discussion and Recommendations

PFOS was detected at concentrations up to 69 ng/L and PFOA was detected at concentrations up to 7.3 ng/L in samples collected at the Utqiaġvik WTP. Based on information obtained from the WTP, we understand that the "Raw Water Tap" sample location is located upstream of water treatment systems at the facility. Notably, non-detected results were reported for PFOS and PFOA in samples collected after treatment at the Utqiaġvik WTP (i.e., samples identified as "MG Tank" in the analytical data reports in Appendix K).

PFAS concentrations detected in the Utqiaġvik WTP source water in June 2021 exceeded the DEC drinking water action level. Based on analytical results provided by BUECI, water treatment processes in effect at the WTP in 2021 appear to have reduced concentrations of PFOS and PFOA to below regulatory limits.

We recommend coordinating with the Utqiaġvik WTP to expand the PFAS sampling program to include additional PFAS analytes prior to the finalization of the EPA MCL. We further recommend coordinating with DEC to develop additional steps to characterize and delineate potentially affected soil, groundwater, and surface water at the site. We also recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the site and verify that affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas.

2.12 Galbraith Lake and Prospect Creek

DEC's June 2022 request for assessments of Part 139 airports also included sites at Galbraith Lake and Prospect Creek. These properties are now owned and operated by Alyeska Pipeline Service Company (APSC). APSC informed DOT&PF that there are no wells present in the vicinity of the airports. We did not perform any site assessment activities for these airports.

3 QUALITY ASSURANCE/ QUALITY CONTROL

We reviewed the laboratory QC sample data and conducted our own QA assessment for analytical results obtained from sampling performed by Shannon and Wilson for this project. We did not perform a QA/QC assessment for analytical results provided to us by other parties.

Our QA/QC procedures included evaluating the accuracy and precision of the analytical data and verifying analyses were sufficiently sensitive to detect analytes at levels below regulatory standards. We also reviewed chain of custody (COC) records and laboratory sample-receipt forms to check that we followed proper custody procedures, met sample-holding times, and kept samples properly chilled during shipping. Details regarding the QA/QC assessments are summarized in the DEC Laboratory Data Review Checklists included in appended documents for each site.

4 RESULTS NOTIFICATION

After receiving and reviewing analytical results, we mailed letters summarizing the results to each WSW owner/user sampled and attempted to contact the owner/user by telephone. Where requested, we emailed the results letters. Templates of the results notification letters for each site, which were prepared in coordination with DOT&PF, are included in Appendices A through K, where applicable.

5 CONCEPTUAL SITE MODELS

A conceptual site model (CSM) describes potential pathways between a contaminant source and possible receptors (i.e., people, animals, and plants) and is used to determine who may be at risk of exposure to those contaminants. We appended a DEC *Human Health Conceptual Site Model Graphic Form* and *Human Health Conceptual Site Model Scoping Form* for each site based on our preliminary understanding of site conditions. CSMs for each site are provided in Appendices A through K.

Potentially affected media at the project sites include soil, groundwater, surface water, sediment, and biota. Potential human exposure pathways include:

- Incidental soil ingestion;
- Dermal absorption of contaminants from soil, groundwater, or surface water;
- Inhalation of fugitive dust;
- Ingestion of groundwater and surface water;
- Direct contact with sediment; and
- Ingestion of wild or farmed foods.

6 STATEWIDE PROJECT DISCUSSION

In addition to the sites discussed above, DOT&PF is investigating potential or known PFAS impacts related to AFFF use at several Part 139 airports in communities across Alaska. Site locations are depicted in Figure 1. An updated status summary for the Part 139 airport PFAS investigation sites under the DOT&PF Statewide contract is presented in Table 1.

6.1 General Project Recommendations

We recommend coordinating with DEC to develop additional steps to characterize and delineate potentially affected soil, groundwater, and surface water at the sites. We also

recommend continued coordination to provide updated information to community residents, local agencies, and other project stakeholders regarding PFAS at the sites.

We recommend that SWA Leasing impose restrictions on new WSW installations at the airport properties and coordinate with lessees regarding the use of existing WSWs to ensure PFAS-affected water is not being used for domestic purposes or in other ways that could present a potential exposure pathway or lead to migration of PFAS to currently unaffected areas.

We also recommend DOT&PF provide internal training to staff who may engage in construction projects at the airports. Training should include, but not be limited to, known concentrations of PFAS in project areas, how PFAS-contaminated media can impact construction projects, a generalized timeline of PFAS assessment activities prior to construction, an understanding of potential health impacts to constructor workers, and communication of this information to contractors.

7 REFERENCES

Alaska Department of Environmental Conservation (DEC), *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites*, March 2017.

Alaska Department of Environmental Conservation (DEC), *Field Sampling Guidance,* January 2022.

Alaska Department of Environmental Conservation (DEC), *18 AAC 75: Oil and Other Hazardous Substances Pollution Control*, February 2023.

Alaska Department of Environmental Conservation (DEC), *18 AAC 80: Drinking Water,* May 2019.

Alaska Department of Environmental Conservation (DEC), Division of Environmental Health, Drinking Water Program, Drinking Water Watch online database. Available at https://dec.alaska.gov/dww/.

Alaska Department of Natural Resources (DNR), Well Log Tracking System (WELTS) online database. Available at: https://dnr.alaska.gov/welts/.

Coffman Associates, Inc., *Airport Master Plan and F.A.R Part 150 Noise Compatibility Study for Ketchikan International Airport*. May 1989

Shannon & Wilson, Inc., *DOT&PF Statewide PFAS General Work Plan*, July 2020.

Table 1 – Updated Status of DOT&PF Airports as of January 2024

Airport Name	Airport Location	Airport Code	DOT&PF Region [2]	Site Type	Status as of January 2024	Is groundwater used as a drinking water source? (Yes/No)	Are there impacted drinking water wells? (Yes/No) Impacted = any detectable PFAS
Adak	Adak	ADK	Southcoast	Part 139	PFAS work to be completed by DoD, per DOT&PF.	Well search to be completed by DoD. Information unknown.	Unknown
Ted Stevens Anchorage International	Anchorage	ANC	Central [3]	Part 139	Active well search, results reported to DEC in September 2023.	Yes, although waterline is available in area and aquifer is classified as non-drinking water.	Yes
Aniak	Aniak	ANI	Central	FP139 or FDoD	DEC screened site for water supply well impacts, noted no action for DOT&PF under current drinking water action levels.	Yes	Yes
Bethel	Bethel	BET	Central	Part 139	DEC screened site for water supply well impacts, noted no action for DOT&PF under current drinking water action levels; 1 well within monitoring criteria.	Yes	Yes
Cold Bay	Cold Bay	CDB	Southcoast	Part 139	Bottled water provided. Feasibility study drafted and sent to DOT&PF in January 2024, defines alternative water options for the impacted municipal water supply.	Yes	Yes
Merle K (Mudhole) Smith	Cordova	CDV	Northern	Part 139	DEC screened site for water supply well impacts, all results ND, passed along as no action for DOT&PF under current drinking water action levels. PFAS present on site and factored into construction projects by DOT&PF. Well sampled at ARFF under S&W project associated with construction had PFAS detections; well not used for drinking.	Yes	No
Deadhorse Airport	Deadhorse	SCC	Northern	Part 139	Letters sent to community to determine if water supply wells are present; no wells reported or likely. However, known water reservoir impacts, although unknown source of PFAS contamination. Several potential responsible parties in the area.	No, although surface water is used by the public water system in Deadhorse and has PFAS detections, per discussions with system operator.	Yes; see note to left
Dillingham	Dillingham	DLG	Central	Part 139	Monitoring; affected locations provided interim bottled water, long-term alternative water solutions in progress.	Yes	Yes
Fairbanks International	Fairbanks	FAI	Northern [3]	Part 139	Monitoring; long-term alternative water provided to affected residents (waterline connection).	Yes, although waterline is available in area.	Yes
Galbraith Lake	Galbraith Lake	GBH	Northern	FP139 [4]	Information provided by Alyeska, no wells present at airport.	No	N/A
Gustavus	Gustavus	GST	Southcoast	Part 139	Monitoring; affected locations provided interim bottled water, long-term alternative water solutions in progress (rain-catchment cisterns).	Yes	Yes
Homer	Homer	HOM	Central	Part 139	Well search completed; no impacts to drinking water wells. PFAS known at site and is factored into construction projects.	Wells near airport not used for drinking.	No
Iliamna	Iliamna	ILI	Southcoast	FP139 or FDoD	Monitoring; no alternative water required under current drinking water action level.	Yes	Yes
Ketchikan International	Ketchikan	KTN	Southcoast	Part 139	No wells discovered during site visit. Airport on separate island from main portion of Ketchikan.	Not near airport	N/A
King Salmon	King Salmon	AKN	Southcoast	Part 139	Monitoring; interim solutions provided to the two affected locations, long-term alternative water solutions in progress.	Yes	Yes
Kodiak	Kodiak	ADQ	Southcoast	Part 139	PFAS work to be completed by DoD, per DOT&PF. S&W assisting DOT&PF with sampling/CMMP plans prior to construction projects, where requested. PFAS detected and known at site.	Well search to be completed by DoD. Information unknown.	?
Ralph Wien Memorial	Kotzebue	OTZ	Northern	Part 139	Letters sent to community to determine if water supply wells are present; no wells reported or likely. PFAS detected at site during pre-construction sampling event.	No	N/A

Table 1 – Updated Status of DOT&PF Airports as of January 2024

Airport Name	Airport Location	Airport Code	DOT&PF Region [2]	Site Type	Status as of January 2024	Is groundwater used as a drinking water source? (Yes/No)	Are there impacted drinking water wells? (Yes/No) Impacted = any detectable PFAS
McGrath Airport	McGrath	MCG	Central	FP139 or FDoD	Two rounds of well searching completed in January 2023 and August 2023. PFAS detections encountered below current drinking water limits. See section 2.4 of the report.	Yes, although waterline is available in area that receives water from river (sample collected; no PFAS detections). Several garden wells present in community.	Yes
Nome	Nome	OME	Northern	Part 139	Well search completed; no impacts to drinking water wells. PFAS known at site and is factored into construction projects.	Wells near airport not used for drinking.	No
Petersburg James Johnson	Petersburg	PSG	Southcoast	Part 139	DEC screened site for water supply well impacts, noted no action for DOT&PF under current drinking water action levels.	Yes	Yes
Port Heiden	Port Heiden	PTH	Southcoast	FP139 or FDoD	Two rounds of well searching completed in November 2022 and August 2023. PFAS detections encountered below current drinking water limits. See section 2.5 of the report.	Yes	Yes
Prospect Creek	Prospect Creek	PPC	Northern	FP139 [4]	Information provided by Alyeska, no wells present at airport.	No	N/A
Sand Point Airport	Sand Point	SDP	Southcoast	Part 139	Detections within monitoring criteria, alternative water not required under current drinking water limits; see section 2.6 of the report.	Wells with PFAS detections near airport are not used for drinking, but are connected to indoor plumbing and used for fish processing.	No; see note to left
Sitka Rocky Gutierrez	Sitka	SIT	Southcoast	Part 139	Letters sent to community to determine if water supply wells are present; no wells reported or likely. Wells not allowed on Japonski Island where airport is located. Waterline supplies water near airport.	No	N/A
St. Mary's Airport	St. Mary's	KSM	Southcoast	Part 139	Two rounds of well searching compelted in February 2023 and August 2023; see section 2.8 of the report.	Wells near airport not used for drinking, but are connected to indoor plumbing.	No; see note to left
St. Paul Island Airport	St. Paul	SNP	Southcoast	FP139 or FDoD	Initial well search complete; see section 2.9.2 of the report.	Yes	Yes
Tom Madsen	Unalaska	DUT	Southcoast	Part 139	Letters sent to community to determine if water supply wells are present; no wells reported or likely. Waterline supplies water near airport.	No	N/A
Wiley Post-Will Rogers Memorial	Utqiagvik	BRW	Northern	Part 139	Letters sent to community to determine if water supply wells are present; no wells reported or likely. However, known water reservoir impacts. Treatment by city appears to be effective. Further coordination may be needed to discuss the current system upon regulation changes.	No; however, reservoir near airport is impacted and used as drinking water source.	Yes; see note to left
Valdez	Valdez	VDZ	Northern	Part 139	DEC screened site for water supply well impacts, noted no action for DOT&PF under current drinking water action levels.	Yes	Yes
Wrangell	Wrangell	WRG	Southcoast	Part 139	DEC screened site for water supply well impacts, no action for DOT&PF under current drinking water action levels. S&W working with a DOT&PF contractor to address PFAS during construction projects. PFAS detected onsite.	Yes	Yes
Yakutat	Yakutat	YAK	Southcoast	Part 139	Monitoring; interim alternative water provided by DOT&PF, long-term alternative water solutions in progress.	Yes	Yes

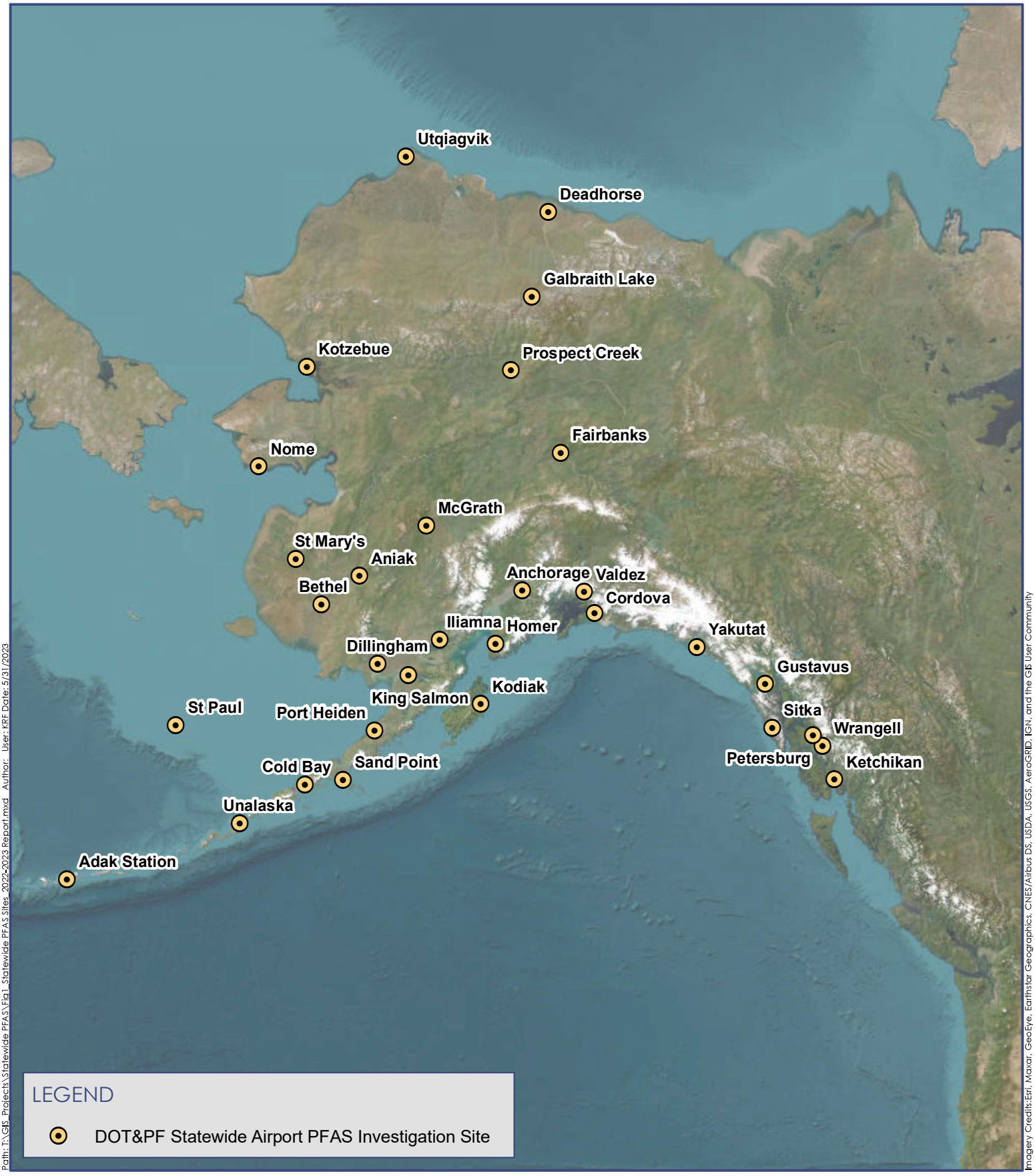
NOTES:

1 Current list as of Part 139 or former Part 139 DOT&PF managed airports as of February 2023.

2 DOT&PF region responsible for the airport.

3 Fairbanks and Anchorage International Airports are part of DOT&PF Northern and Central Regions, respectively. However, they are separate from their respective regions as they are also part of the Alaska International Airport System.

4 Former Alyeska Part 139 airport.



January 2024

DOT&PF STATEWIDE AIRPORT PFAS INVESTIGATION SITES

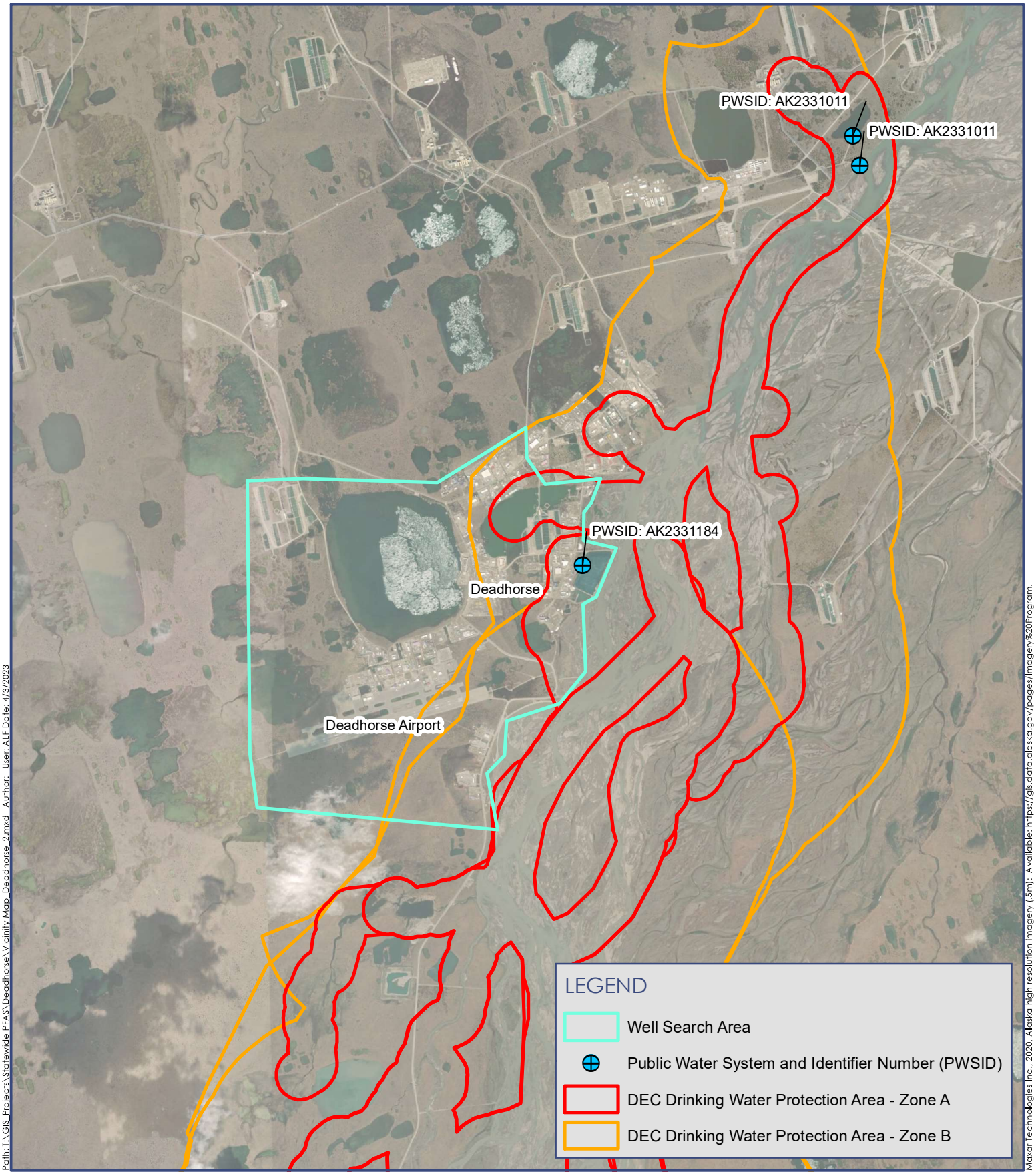
Figure 1

APPENDIX A: DEADHORSE AIRPORT SUPPORTING DOCUMENTS

Appendix A

Deadhorse Airport Supporting Documents

CONTENTS



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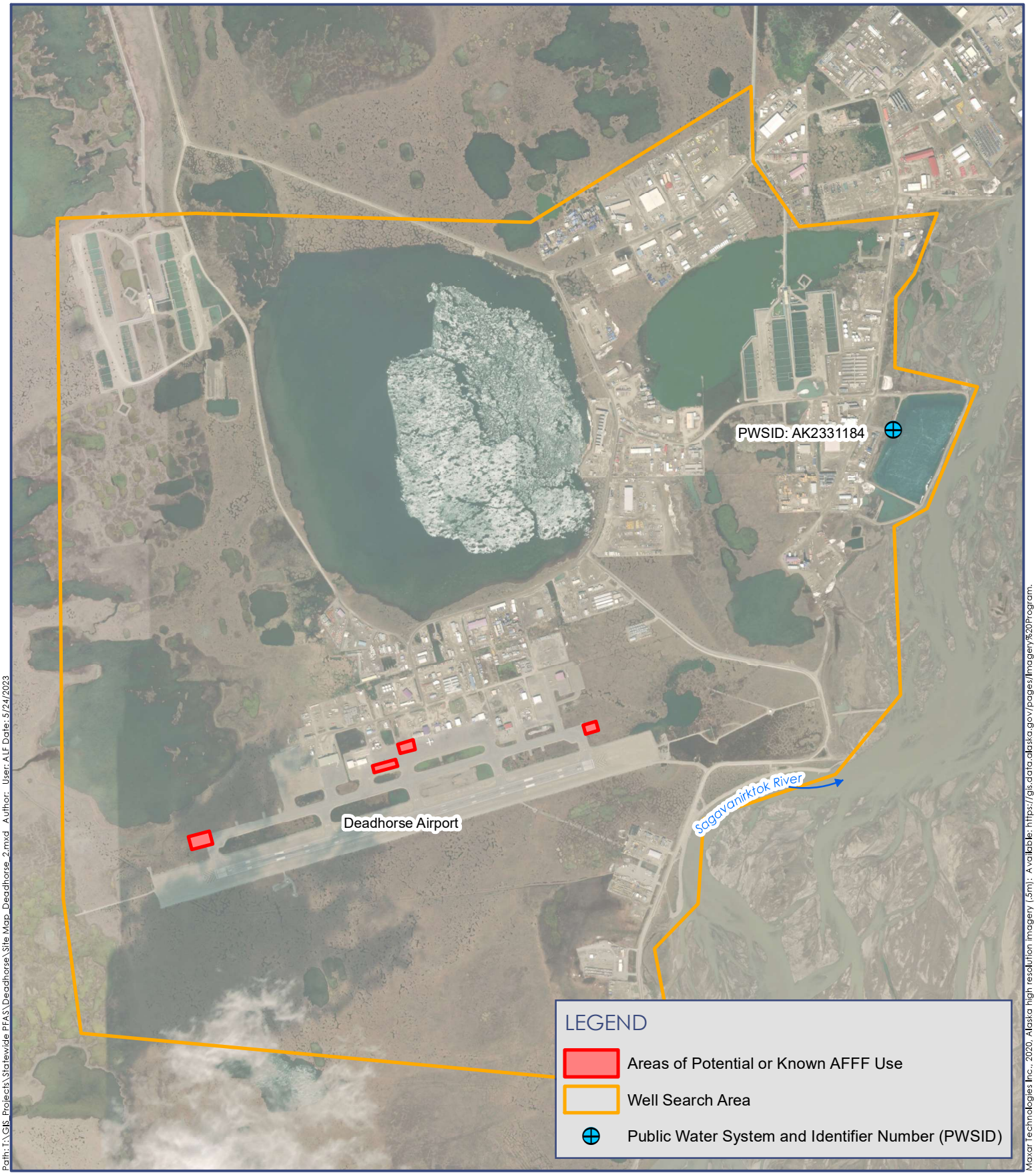
Miles

January 2024

VICINITY MAP

Figure A1



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January 2024

SITE MAP

Figure A2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

January 2023

Dear Property Owner or Occupant:

The Department of Transportation and Public Facilities (DOT&PF) is conducting a comprehensive evaluation of per- and polyfluoroalkyl substances (PFAS) contamination at state owned airports across the state. Firefighters at the Deadhorse Airport (SCC) have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, to extinguish hydrocarbon fires during training exercises and emergency events.

The DOT&PF has contracted with environmental consulting firm, Shannon & Wilson, Inc., to collect groundwater samples from water supply wells near the airport in Deadhorse. Prior to the sampling event, DOT&PF and their representatives will also reach out to the community leadership to discuss the project and address questions.

If you have an active well within the search area (see attached map), please complete the enclosed water supply well survey and return to the address below, or call (907) 458-3146.

Shannon & Wilson
2355 Hill Road
Fairbanks, AK 99709

Water supply well sample results will be compared to the Alaska Department of Conservation (DEC) drinking water action level of 70 parts per trillion for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two compounds within the PFAS family. PFAS are emerging contaminants, and the research into the health effects of exposure to PFAS is ongoing. Results for the water samples will be shared with property owners and residents. If your drinking-water well is found to have PFAS above the action level, DOT&PF will assist with access to alternative drinking water.

If you have any questions, please contact me, or see the enclosed contact list to identify the most appropriate person or agency for your inquiry. We appreciate your patience as we work through this process.

Sincerely,

Sammy Cummings

Sammy Cummings
PFAS Program Manager, DOT&PF Statewide Aviation

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Water Supply Well Inventory Survey Form

Date: _____

Parcel: _____

Name (Owner): _____

Name (Occupant): _____

Physical Address: _____

Mailing Address: _____

Email Address (optional): _____

Contact Phone Number: (owner) _____ (occupant) _____

Number of persons residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: _____ Full-Time ☐ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Water Supply Utility ☐ b) Well Water ☐
   c) Water Delivery ☐ d) Other ☐

2) If you have a water well, please answer the following questions:
   a) Where is the well located on the property? _____
   b) Is the well in use? Yes ☐ No ☐
   c) If yes, please check all that apply regarding the usage of your well water:
      Drinking ☐ Cooking ☐ Gardening ☐ Pets ☐ Other _____
   d) If no, is the well usable, unusable, or properly abandoned?
      Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   e) When was the well installed? _____
   f) What is the well depth? _____ Do you have the well log? ☐ Yes ☐ No
   g) What is the well diameter? _____
   h) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   i) Do you have any treatment on your well (e.g. water softener)? Please describe. _____
      _____

3) Sample Permission
   Does the Alaska Department of Transportation & Public Facilities (DOT&PF) have permission to sample your private water well? ☐ Yes ☐ No

_____ _____
Signature Date

Path: I:\GIS_Projects\Statewide PFAS\Deadhorse\Site Map_Deadhorse.mxd Author: User: MSC Date: 1/25/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/imagery%20Program.

N

0 0.5

Miles

Notes:
1. AFFF: Aqueous Film Foarming Foam
2. Search area is approximate

January 2023

SITE MAP

Figure 2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet – Deadhorse Airport

January 2023

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

POLLEN ENVIRONMENTAL, LLC.
3536 International Street
Fairbanks, AK 99734
(907) 479-8368 Phone (907) 452-6853 Fax
Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

2018 PWS

CLIENT INFORMATION		Requested Analysis	Page 1 of 1
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**	Perservative Added	
Address: **Pouch 340044**	**PWS # 331184 - special, non-routine**		
City, State Zip: **Prudhoe Bay, AK 99734**			
Phone: **(907) 659-9060**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **(907) 659-9061**	v Yes ☐ No		
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		☐ RUSH ____ day(s)
Project Name: **NSB SA-10 WTP**	2018-839		
Sampled By: Carl Cornforth			

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by EPA 537*	Sample Comments
Raw Water Pondhouse	11-17-18	2:32 pm	W	PEF45655		1	X	
* Field Blank ~~RAW water Plant Sample port~~	11-17-18	10:52 am	W	PEF45656		1	X	
Raw tank UF Feed	11-17-18	1:04 pm	W	PEF45657		1	X	
UF 1 Permeate	11-17-18	10:08 am	W	PEF45658		1	X	
UF 2 Permeate	11-18-18	1:08 pm	W	PEF45659		1	X	
Potable Tanks combined	11-17-18	10:36 am	W	PEF45660		1	X	
POTABLE FILL 4	11-17-18	6:56 am	W	PEF45661		1	X	
Potable Truck 19518	11-17-18	8:05 am	W	PEF45662		1	X	
Potable Truck 19520	11-17-18	10:17 am	W	PEF45663		1	X	
Potable Truck 7-21	11-17-18	9:41 am	W	PEF45664		1	X	

Possible Hazard Identification:
☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☑ Unknown

Sample Condition:
Pollen Env Temperature on arrival: 5.9 °C COC Seal: ☑ Intact ☐ Broken ☐ Absent
NTL Alaska Temperature on arrival: °C COC Seal: ☐ Intact ☐ Broken ☐ Absent

Special Instructions/QC Requirements & Comments: * PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA

* raw water plant sample port sample broken upon arrival @ Pollen Env. Field Blank sample was provided, but not originally on coc

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
	Ice Services		Jerry Pollen	Pollen Environmental	11-19-18 @ 1600
Jerry Pollen	Pollen Env	11-20-18 @ 1100am			
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

NSB SA-10 (Ice Services)
Attn: Rich Helinski
Pouch 340044
Prudhoe Bay, AK 99734
Phone: 907-659-9060
Fax: 907-659-9061
rhelinski@iceservices.net

Report Date: 7/31/2018
Received Date: 7/12/2018
Received Time: 4:00 PM
Sampled By: Carl Cornforth

Project Name: NSB SA-10 WTP - PFAS Monitoring
PWS ID: AK2331184 - Special Samples
Analysis: PFAS - Method EPA 537

Comments: Samples analyzed by Eurofins Eaton Analytical in South Bend, IN.

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Pondhouse	PEF45655	4132459	11/17/2018	2:32 PM
Field Blank	PEF45656	4132460	11/17/2018	10:33 AM
Raw Tank UF Feed	PEF45657	4132461	11/17/2018	1:04 PM
UF1 Permeate	PEF45658	4132462	11/17/2018	10:08 AM
UF2 Permeate	PEF45659	4132463	11/18/2018	1:08 PM
Potable Tanks Combined	PEF45660	4132464	11/17/2018	10:36 AM
Potable Fill 4	PEF45661	4132465	11/17/2018	6:56 AM
Potable Truck 19518	PEF45662	4132466	11/17/2018	8:05 AM
Potable Truck 19520	PEF45663	4132467	11/17/2018	10:17 AM
Potable Truck 7-21	PEF45664	4132468	11/17/2018	9:41 AM

Jerry Pollen
Pollen Environmental, LLC

eurofins | Eaton Analytical

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN035	New Jersey*	IN598
Colorado Radiochemistry	IN035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074-001
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA180008	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 01/02/2018

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 436923
Priority: Standard Written
Status: Final
PWS ID: AK2331184
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4132459	PEF45655RawWaterPondHouse	537	11/17/18 14:32	Client	11/27/18 10:00
4132460	PEF45656 FTB	537	11/17/18 10:33	Client	11/27/18 10:00
4132461	PEF45657RawTankUFFeed	537	11/17/18 13:04	Client	11/27/18 10:00
4132462	PEF45658 UF1 Permeate	537	11/17/18 10:08	Client	11/27/18 10:00
4132463	PEF45659 UF2 Permeate	537	11/18/18 13:08	Client	11/27/18 10:00
4132464	PEF45660PotableTanksCombined	537	11/17/18 10:36	Client	11/27/18 10:00
4132465	PEF45661 Potable Fill 4	537	11/17/18 06:56	Client	11/27/18 10:00
4132466	PEF45662 PotableTruck19518	537	11/17/18 08:05	Client	11/27/18 10:00
4132467	PEF45663 PotableTruck19520	537	11/17/18 10:17	Client	11/27/18 10:00
4132468	PEF45664 PotableTruck7-21	537	11/17/18 09:41	Client	11/27/18 10:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Traci Chlebowski ASM — 12/04/2018

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 436923

Sampling Point: PEF45655RawWaterPondHouse PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.1**	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.0**	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:29	4132459

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF45656 FTB PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:38	4132460

$ The state of origin does not offer certification for this parameter.

Client Name: Pollen Environmental LLC Report #: 436923

Sampling Point: PEF45657RawTankUFFeed PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.1**	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.2**	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.3**	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:12	4132461

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF45658 UF1 Permeate PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.4**	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.6**	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:04	4132462

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF45659 UF2 Permeate PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**2.9**	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.5**	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 23:46	4132463

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF45660PotableTanksCombined PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.1**	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:55	4132464

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF45661 Potable Fill 4 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.7**	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:13	4132465

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF45662 PotableTruck19518 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.3**	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.1**	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:30	4132466

$ The state of origin does not offer certification for this parameter.

Client Name: Pollen Environmental LLC Report #: 436923

Sampling Point: PEF45663 PotableTruck19520 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.3**	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.2**	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 22:21	4132467

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF45664 PotableTruck7-21 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
376-06-7	Perfluorotetradecanoic acid (PFTeDA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.9**	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	11/30/18 08:01	11/30/18 21:47	4132468

$ The state of origin does not offer certification for this parameter.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99734
(907) 479-8368 Phone (907) 452-6853 Fax
Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM 358534

2018 PWS
436923

CLIENT INFORMATION			
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**		Page 1 of 1
Address: **Pouch 340044**	PWS # **331184** - special, non-routine		
City, State Zip: **Prudhoe Bay, AK 99734**			
Phone: **(907) 659-9060**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **(907) 659-9061**	√ Yes ☐ No		
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		☐ RUSH ____ day(s)
Project Name: **NSB SA-10 WTP**	2018-839		
Sampled By: Carl Cornforth			

Requested Analysis

Perservative Added

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by EPA 537*	Sample Comments
Raw Water Pondhouse	11-17-18	2:32pm	W	PEF45655	4132459	1	X	CI-A
* Field Blank ~~Raw Water Plant Sample port~~	11-17-18	10:52am	W	PEF45656	460	1	X	Bottle shows time of 1033 SS 11-27-18 CI-A
Raw tank UF Feed	11-17-18	1:04pm	W	PEF45657	461	1	X	CI-A
UF 1 Permeate	11-17-18	10:08am	W	PEF45658	462	1	X	CI-A
UF 2 Permeate	11-17-18	1:08pm	W	PEF45659	463	1	X	CI-A
Potable Tanks combined	11-17-18	10:36 am	W	PEF45660	464	1	X	CI-A
POTABLE FILL 4	11-17-18	6:56am	W	PEF45661	465	1	X	CI-A
Potable Truck 19518	11-17-18	8:05am	W	PEF45662	466	1	X	CI-A
Potable Truck 19520	11-17-18	10:17am	W	PEF45663	467	1	X	CI-A
Potable Truck 7-21	11-17-18	9:41am	W	PEF45664	468	1	X	CI-A

SS 11-27-18

Cross Offs on COC by Client

Will use earliest time given

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☑ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 5.9 °C *COC Seal:* ☑ *Intact* ☐ *Broken* ☐ *Absent*

NTL Alaska Temperature on arrival: 0.8 °C *COC Seal:* ☒ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: * PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA

* raw water plant sample port sample broken upon arrival @ Pollen Env. Field Blank sample was provided, but not originally on coc

Relinquished by:	Company: Ice Services	Date & Time:	Received by:	Company: Pollen Environmental	Date & Time: 11-19-18 @ 1600
Relinquished by:	Company: Pollen Env	Date & Time: 11-20-18 @ 1100am	Received by:	Company: EEA	Date & Time: 11-27-18 1000
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **252173** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4136485		OS	FL	11/30/2018 19:32	113018M537a-FL-PFC14.mdb
LRB	4136476		RW	FL	11/30/2018 20:06	113018M537a-FL-PFC14.mdb
FBH	4136477		RW	FL	11/30/2018 20:39	113018M537a-FL-PFC14.mdb
FS	4132465	PEF45661 Potable Fill 4	DW	FL	11/30/2018 21:13	113018M537a-FL-PFC14.mdb
FS	4132466	PEF45662 PotableTruck19518	DW	FL	11/30/2018 21:30	113018M537a-FL-PFC14.mdb
FS	4132468	PEF45664 PotableTruck7-21	DW	FL	11/30/2018 21:47	113018M537a-FL-PFC14.mdb
FS	4132462	PEF45658 UF1 Permeate	DW	FL	11/30/2018 22:04	113018M537a-FL-PFC14.mdb
FS	4132467	PEF45663 PotableTruck19520	DW	FL	11/30/2018 22:21	113018M537a-FL-PFC14.mdb
FTB	4132460	PEF45656 FTB	RW	FL	11/30/2018 22:38	113018M537a-FL-PFC14.mdb
FS	4132464	PEF45660PotableTanksCombined	DW	FL	11/30/2018 22:55	113018M537a-FL-PFC14.mdb
FS	4132461	PEF45657RawTankUFFeed	DW	FL	11/30/2018 23:12	113018M537a-FL-PFC14.mdb
FS	4132459	PEF45655RawWaterPondHouse	DW	FL	11/30/2018 23:29	113018M537a-FL-PFC14.mdb
FS	4132463	PEF45659 UF2 Permeate	DW	FL	11/30/2018 23:46	113018M537a-FL-PFC14.mdb
CCM	4136486		OS	FL	12/01/2018 00:20	113018M537a-FL-PFC14.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-NMeFOSAA-d3	537	N/A	---		1294530.00	1294530	ng/L	100	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	IS-PFOA-13C2	537	N/A	---		2475490.00	2475490	ng/L	100	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	IS-PFOS-13C4	537	N/A	---		523416.00	523416	ng/L	100	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	SS-NEtFOSAA-d5	537	N/A	---		203.0780	200	ng/L	102	70 - 130	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	SS-PFDA-13C2	537	N/A	---		102.7110	100	ng/L	103	70 - 130	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	SS-PFHxA-13C2	537	N/A	---		49.0474	50.0	ng/L	98	70 - 130	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		1.8383	2.0	ng/L	92	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		2.0132	2.0	ng/L	101	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9134	2.0	ng/L	96	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		1.8745	2.0	ng/L	94	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		1.9461	2.0	ng/L	97	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		2.0119	2.0	ng/L	101	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		2.0755	2.0	ng/L	104	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		2.0012	2.0	ng/L	100	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		1.9819	2.0	ng/L	99	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		1.9641	2.0	ng/L	98	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		2.0341	2.0	ng/L	102	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		2.0349	2.0	ng/L	102	50 - 150	---	---	1.0	11/28/2018 12:22	11/30/2018 19:32	4136485
LRB	IS-NMeFOSAA-d3	537	N/A	---		1010160.00	1294530	ng/L	78	50 - 150	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	IS-PFOA-13C2	537	N/A	---		1922450.00	2475490	ng/L	78	50 - 150	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	IS-PFOS-13C4	537	N/A	---		405522.00	523416	ng/L	77	50 - 150	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	SS-NEtFOSAA-d5	537	N/A	---		154.8440	200	ng/L	91	70 - 130	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	SS-PFDA-13C2	537	N/A	---		86.5953	100	ng/L	102	70 - 130	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	SS-PFHxA-13C2	537	N/A	---		44.1793	50.0	ng/L	104	70 - 130	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.85	11/30/2018 08:01	11/30/2018 20:06	4136476
FBH	IS-NMeFOSAA-d3	537	N/A	---		1214460.00	1294530	ng/L	94	50 - 150	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	IS-PFOA-13C2	537	N/A	---		2224740.00	2475490	ng/L	90	50 - 150	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	IS-PFOS-13C4	537	N/A	---		471864.00	523416	ng/L	90	50 - 150	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	SS-NEtFOSAA-d5	537	N/A	---		180.9960	200	ng/L	90	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBH	SS-PFDA-13C2	537	N/A	---		99.5585	100	ng/L	100	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	SS-PFHxA-13C2	537	N/A	---		50.6138	50.0	ng/L	101	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		203.8730	200	ng/L	102	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorodecanoic acid (PFDA)	537	2.0	---		200.4170	200	ng/L	100	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		201.2580	200	ng/L	101	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		203.9090	200	ng/L	102	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		200.9890	200	ng/L	100	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		188.2610	200	ng/L	94	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		188.5640	200	ng/L	94	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorononanoic acid (PFNA)	537	2.0	---		202.1160	200	ng/L	101	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		200.5410	200	ng/L	100	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorooctanoic acid (PFOA)	537	2.0	---		202.8790	200	ng/L	101	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		188.9090	200	ng/L	94	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FBH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		193.4620	200	ng/L	97	70 - 130	---	---	1.0	11/30/2018 08:01	11/30/2018 20:39	4136477
FS	IS-NMeFOSAA-d3	537	N/A	PEF45661 Potable Fill 4		1283960.00	1294530	ng/L	99	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	IS-PFOA-13C2	537	N/A	PEF45661 Potable Fill 4		2421710.00	2475490	ng/L	98	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	IS-PFOS-13C4	537	N/A	PEF45661 Potable Fill 4		511023.00	523416	ng/L	98	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	SS-NEtFOSAA-d5	537	N/A	PEF45661 Potable Fill 4		171.0720	200	ng/L	91	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	SS-PFDA-13C2	537	N/A	PEF45661 Potable Fill 4		92.7641	100	ng/L	99	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	SS-PFHxA-13C2	537	N/A	PEF45661 Potable Fill 4		46.7661	50.0	ng/L	100	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45661 Potable Fill 4		3.2		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45661 Potable Fill 4		2.3		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45661 Potable Fill 4		3.7		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45661 Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 21:13	4132465
FS	IS-NMeFOSAA-d3	537	N/A	PEF45662 PotableTruck19518		1156310.00	1294530	ng/L	89	50 - 150	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	IS-PFOA-13C2	537	N/A	PEF45662 PotableTruck19518		2191610.00	2475490	ng/L	89	50 - 150	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	IS-PFOS-13C4	537	N/A	PEF45662 PotableTruck19518		465269.00	523416	ng/L	89	50 - 150	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	SS-NEtFOSAA-d5	537	N/A	PEF45662 PotableTruck19518		171.9500	200	ng/L	94	70 - 130	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	SS-PFDA-13C2	537	N/A	PEF45662 PotableTruck19518		92.3271	100	ng/L	101	70 - 130	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	SS-PFHxA-13C2	537	N/A	PEF45662 PotableTruck19518		47.7513	50.0	ng/L	105	70 - 130	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45662 PotableTruck19518		3.3		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45662 PotableTruck19518		2.3		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45662 PotableTruck19518		4.1		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45662 PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	11/30/2018 08:01	11/30/2018 21:30	4132466
FS	IS-NMeFOSAA-d3	537	N/A	PEF45664 PotableTruck7-21		1212380.00	1294530	ng/L	94	50 - 150	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	IS-PFOA-13C2	537	N/A	PEF45664 PotableTruck7-21		2289060.00	2475490	ng/L	92	50 - 150	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	IS-PFOS-13C4	537	N/A	PEF45664 PotableTruck7-21		485125.00	523416	ng/L	93	50 - 150	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	SS-NEtFOSAA-d5	537	N/A	PEF45664 PotableTruck7-21		171.7530	200	ng/L	90	70 - 130	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	SS-PFDA-13C2	537	N/A	PEF45664 PotableTruck7-21		94.2664	100	ng/L	99	70 - 130	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	SS-PFHxA-13C2	537	N/A	PEF45664 PotableTruck7-21		48.4119	50.0	ng/L	102	70 - 130	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45664 PotableTruck7-21		3.2		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45664 PotableTruck7-21		2.3		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45664 PotableTruck7-21		3.9		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45664 PotableTruck7-21	<	2.0		ng/L	---	---	---	---	0.95	11/30/2018 08:01	11/30/2018 21:47	4132468
FS	IS-NMeFOSAA-d3	537	N/A	PEF45658 UF1 Permeate		1108150.00	1294530	ng/L	86	50 - 150	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	IS-PFOA-13C2	537	N/A	PEF45658 UF1 Permeate		2062720.00	2475490	ng/L	83	50 - 150	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	IS-PFOS-13C4	537	N/A	PEF45658 UF1 Permeate		437731.00	523416	ng/L	84	50 - 150	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	SS-NEtFOSAA-d5	537	N/A	PEF45658 UF1 Permeate		169.5630	200	ng/L	95	70 - 130	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	SS-PFDA-13C2	537	N/A	PEF45658 UF1 Permeate		93.3803	100	ng/L	105	70 - 130	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	SS-PFHxA-13C2	537	N/A	PEF45658 UF1 Permeate		49.2878	50.0	ng/L	111	70 - 130	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45658 UF1 Permeate		3.4		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45658 UF1 Permeate		2.3		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45658 UF1 Permeate		4.6		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45658 UF1 Permeate	<	2.0		ng/L	---	---	---	---	0.89	11/30/2018 08:01	11/30/2018 22:04	4132462
FS	IS-NMeFOSAA-d3	537	N/A	PEF45663 PotableTruck19520		1266540.00	1294530	ng/L	98	50 - 150	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	IS-PFOA-13C2	537	N/A	PEF45663 PotableTruck19520		2385560.00	2475490	ng/L	96	50 - 150	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	IS-PFOS-13C4	537	N/A	PEF45663 PotableTruck19520		503252.00	523416	ng/L	96	50 - 150	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	SS-NEtFOSAA-d5	537	N/A	PEF45663 PotableTruck19520		168.1870	200	ng/L	91	70 - 130	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	SS-PFDA-13C2	537	N/A	PEF45663 PotableTruck19520		91.1336	100	ng/L	99	70 - 130	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	SS-PFHxA-13C2	537	N/A	PEF45663 PotableTruck19520		46.8060	50.0	ng/L	102	70 - 130	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45663 PotableTruck19520		3.3		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45663 PotableTruck19520		2.3		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45663 PotableTruck19520		4.2		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45663 PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.92	11/30/2018 08:01	11/30/2018 22:21	4132467
FTB	IS-NMeFOSAA-d3	537	N/A	PEF45656 FTB		1294670.00	1294530	ng/L	100	50 - 150	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	IS-PFOA-13C2	537	N/A	PEF45656 FTB		2406140.00	2475490	ng/L	97	50 - 150	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	IS-PFOS-13C4	537	N/A	PEF45656 FTB		512768.00	523416	ng/L	98	50 - 150	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	SS-NEtFOSAA-d5	537	N/A	PEF45656 FTB		158.7190	200	ng/L	91	70 - 130	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	SS-PFDA-13C2	537	N/A	PEF45656 FTB		84.9735	100	ng/L	98	70 - 130	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	SS-PFHxA-13C2	537	N/A	PEF45656 FTB		44.7859	50.0	ng/L	103	70 - 130	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorononanoic acid (PFNA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FTB	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45656 FTB	<	2.0		ng/L	---	---	---	---	0.87	11/30/2018 08:01	11/30/2018 22:38	4132460
FS	IS-NMeFOSAA-d3	537	N/A	PEF45660PotableTanksCombined		1191050.00	1294530	ng/L	92	50 - 150	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	PEF45660PotableTanksCombined		2258610.00	2475490	ng/L	91	50 - 150	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	IS-PFOS-13C4	537	N/A	PEF45660PotableTanksCombined		475661.00	523416	ng/L	91	50 - 150	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	SS-NEtFOSAA-d5	537	N/A	PEF45660PotableTanksCombined		181.6830	200	ng/L	98	70 - 130	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	SS-PFDA-13C2	537	N/A	PEF45660PotableTanksCombined		97.0134	100	ng/L	104	70 - 130	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	SS-PFHxA-13C2	537	N/A	PEF45660PotableTanksCombined		49.0009	50.0	ng/L	105	70 - 130	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45660PotableTanksCombined		3.2		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45660PotableTanksCombined		2.3		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45660PotableTanksCombined		4.1		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45660PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 22:55	4132464
FS	IS-NMeFOSAA-d3	537	N/A	EF45657RawTankUFFee		1309390.00	1294530	ng/L	101	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	IS-PFOA-13C2	537	N/A	EF45657RawTankUFFee		2449570.00	2475490	ng/L	99	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	IS-PFOS-13C4	537	N/A	EF45657RawTankUFFee		516250.00	523416	ng/L	99	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	SS-NEtFOSAA-d5	537	N/A	EF45657RawTankUFFee		172.0090	200	ng/L	91	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	SS-PFDA-13C2	537	N/A	EF45657RawTankUFFee		91.7537	100	ng/L	98	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	SS-PFHxA-13C2	537	N/A	EF45657RawTankUFFee		47.2327	50.0	ng/L	100	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorodecanoic acid (PFDA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	EF45657RawTankUFFee		3.1		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	EF45657RawTankUFFee		2.2		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorononanoic acid (PFNA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	EF45657RawTankUFFee		4.3		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorooctanoic acid (PFOA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	EF45657RawTankUFFee	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:12	4132461
FS	IS-NMeFOSAA-d3	537	N/A	EF45655RawWaterPondHous		1331470.00	1294530	ng/L	103	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	IS-PFOA-13C2	537	N/A	EF45655RawWaterPondHous		2514950.00	2475490	ng/L	102	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	IS-PFOS-13C4	537	N/A	EF45655RawWaterPondHous		528863.00	523416	ng/L	101	50 - 150	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	SS-NEtFOSAA-d5	537	N/A	EF45655RawWaterPondHous		173.1150	200	ng/L	92	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	SS-PFDA-13C2	537	N/A	EF45655RawWaterPondHous		90.8236	100	ng/L	97	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	SS-PFHxA-13C2	537	N/A	EF45655RawWaterPondHous		46.6734	50.0	ng/L	99	70 - 130	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorodecanoic acid (PFDA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	EF45655RawWaterPondHous		3.1		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	EF45655RawWaterPondHous		2.3		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorononanoic acid (PFNA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	EF45655RawWaterPondHous		4.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorooctanoic acid (PFOA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	EF45655RawWaterPondHous	<	2.0		ng/L	---	---	---	---	0.94	11/30/2018 08:01	11/30/2018 23:29	4132459
FS	IS-NMeFOSAA-d3	537	N/A	PEF45659 UF2 Permeate		1246520.00	1294530	ng/L	96	50 - 150	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	IS-PFOA-13C2	537	N/A	PEF45659 UF2 Permeate		2388860.00	2475490	ng/L	97	50 - 150	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	IS-PFOS-13C4	537	N/A	PEF45659 UF2 Permeate		506839.00	523416	ng/L	97	50 - 150	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	SS-NEtFOSAA-d5	537	N/A	PEF45659 UF2 Permeate		163.3970	200	ng/L	88	70 - 130	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	SS-PFDA-13C2	537	N/A	PEF45659 UF2 Permeate		85.9475	100	ng/L	92	70 - 130	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	SS-PFHxA-13C2	537	N/A	PEF45659 UF2 Permeate		46.6326	50.0	ng/L	100	70 - 130	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF45659 UF2 Permeate		2.9		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF45659 UF2 Permeate		2.3		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF45659 UF2 Permeate		3.5		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF45659 UF2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	11/30/2018 08:01	11/30/2018 23:46	4132463
CCM	IS-NMeFOSAA-d3	537	N/A	---		1314970.00	1314970	ng/L	100	50 - 150	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	IS-PFOA-13C2	537	N/A	---		2417210.00	2417210	ng/L	100	50 - 150	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	IS-PFOS-13C4	537	N/A	---		515907.00	515907	ng/L	100	50 - 150	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	SS-NEtFOSAA-d5	537	N/A	---		199.9940	200	ng/L	100	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	SS-PFDA-13C2	537	N/A	---		98.7544	100	ng/L	99	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	SS-PFHxA-13C2	537	N/A	---		49.5319	50.0	ng/L	99	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		99.4087	100	ng/L	99	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		100.3450	100	ng/L	100	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		101.5710	100	ng/L	102	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		101.0310	100	ng/L	101	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		100.8330	100	ng/L	101	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		103.5060	100	ng/L	104	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		104.0070	100	ng/L	104	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		103.3320	100	ng/L	103	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		100.6390	100	ng/L	101	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		101.4020	100	ng/L	101	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		103.4750	100	ng/L	103	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		103.5960	100	ng/L	104	70 - 130	---	---	1.0	11/28/2018 12:22	12/01/2018 00:20	4136486

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FTB	Field Trip Blank		
FBH	Fortified Blank High		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.
3536 International Street
Fairbanks, AK 99734
(907) 479-8368 Phone (907) 452-6853 Fax
Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

2019 PFC

CLIENT INFORMATION		Requested Analysis	Page 1 of 1
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**	Perservative Added	
Address: **Pouch 340044**			
City, State Zip: **Prudhoe Bay, AK 99734**	**PWS # 331184 - special, non-routine**		
Phone: **(907) 659-9060**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **(907) 659-9061**	√ Yes ☐ No		
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		☐ RUSH ____ day(s)
Project Name: **NSB SA-10 WTP PFAS Monitoring**	2019-72		
Sampled By: STEVE SHABEDER w/LOGAN POINDEXTER			

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by EPA 537*	Sample Comments
Raw Water Pondhouse	1-27-19	10:34	W	PEF410980		1		Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Water Plant Sample Port LT2	1-27-19	10:15	W	PEF410981		1		Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Tank UF Feed	1-27-19	13:25	W	PEF410982		1		Facility ID: TP002 Sample Point ID: SPTP002EP
UF 1 Permeate	1-27-19	13:27	W	PEF410983		1		Facility ID: TP002 Sample Point ID: SPTP002EP
UF 2 Permeate	1-27-19	10:17	W	PEF410984		1		Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Tanks Combined	1-27-19	13:29	W	PEF410985		1		Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Fill 4	1-27-19	10:11	W	PEF410986		1		Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19518	1-27-19	~~09:55~~ 11:17	W	PEF410987		1		Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19520	1-27-19	11:50	W	PEF410988		1		Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 7-21	1-27-19	15:13	W	PEF410989		1		Facility ID: TP002 Sample Point ID: SPTP002EP
Field Blank NEAR NF UNIT	1-27-19	13:33	W	PEF410990		1		Facility ID: TP002 Sample Point ID: SPTP002EP

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☑ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 2.2 °C *COC Seal:* ☑ *Intact* ☐ *Broken* ☐ *Absent*
NTL Alaska Temperature on arrival: °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: * **PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA**

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
SHS	Ice Services	1-28-2019 / 7:00AM		Pollen Environmental	1-28-19@1600
	Company:	Date & Time:	Received by:	Company:	Date & Time:
	Pollen Env	1-31-19@1100am			
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

NSB SA-10 (Ice Services)
Attn: Rich Helinski
Pouch 340044
Prudhoe Bay, AK 99734
Phone: 907-659-9060
Fax: 907-659-9061
rhelinski@iceservices.net

Report Date: 2/12/2019
Received Date: 1/28/2019
Received Time: 4:00 PM
Sampled By: SS / LP

Project Name: NSB SA-10 WTP - PFAS Monitoring
PWS ID: AK2331184 - Special Samples
Analysis: PFAS - Method EPA 537

Comments: Samples analyzed by Eurofins Eaton Analytical in South Bend, IN.

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Pondhouse	PEF46980	4186531	1/27/2019	10:38 AM
Raw Water Plant Sample Port	PEF46981	4186532	1/27/2019	10:15 AM
Raw Tank UF Feed	PEF46982	4186533	1/27/2019	1:25 PM
UF1 Permeate	PEF46983	4186534	1/27/2019	1:27 PM
UF2 Permeate	PEF46984	4186535	1/27/2019	10:17 AM
Potable Tanks Combined	PEF46985	4186536	1/27/2019	1:29 PM
Potable Fill 4	PEF46986	4186537	1/27/2019	10:11 AM
Potable Truck 19518	PEF46987	4186538	1/27/2019	11:17 AM
Potable Truck 19520	PEF46988	4186539	1/27/2019	11:50 AM
Potable Truck 7-21	PEF46989	4186540	1/27/2019	3:13 PM
Field Blank (near NF Unit)	PEF46990	4186541	1/27/2019	1:33 PM

Jerry Pollen
Pollen Environmental, LLC

eurofins | Eaton Analytical

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN035	New Jersey*	IN598
Colorado Radiochemistry	IN035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074-001
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA180008	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 01/02/2018

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 442125
Priority: Standard Written
Status: Final
PWS ID: AK2331184
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4186531	PEF46980/RawWaterPondhouse	537	01/27/19 10:38	Client	02/01/19 10:00
4186532	PEF46981/RawWaterPlantSample	537	01/27/19 10:15	Client	02/01/19 10:00
4186533	PEF46982/Raw Tank UF Feed	537	01/27/19 13:25	Client	02/01/19 10:00
4186534	PEF46983/UF 1 Permeate	537	01/27/19 13:27	Client	02/01/19 10:00
4186535	PEF46984/UF 2 Permeate	537	01/27/19 10:17	Client	02/01/19 10:00
4186536	PEF46985/PotableTanksCombined	537	01/27/19 13:29	Client	02/01/19 10:00
4186537	PEF46986/Potable Fill 4	537	01/27/19 10:11	Client	02/01/19 10:00
4186538	PEF46987/PotableTruck19518	537	01/27/19 11:17	Client	02/01/19 10:00
4186539	PEF46988/PotableTruck19520	537	01/27/19 11:50	Client	02/01/19 10:00
4186540	PEF46989/Potable Truck 7-21	537	01/27/19 15:13	Client	02/01/19 10:00
4186541	PEF46990 FTB	537	01/27/19 13:33	Client	02/01/19 10:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Traci Chlebowski ASM — 02/12/2019

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 442125

Sampling Point: PEF46980/RawWaterPondhouse PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.5**	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.5**	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.6**	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:05	4186531

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46981/RawWaterPlantSample PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.3**	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.6**	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:14	4186532

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46982/Raw Tank UF Feed PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.4**	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.5**	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.6**	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:13	4186533

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46983/UF 1 Permeate PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.3**	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.5**	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.7**	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:30	4186534

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46984/UF 2 Permeate PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.4**	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.8**	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:31	4186535

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46985/PotableTanksCombined PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.4**	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.6**	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 03:47	4186536

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46986/Potable Fill 4 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.4**	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.5**	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.3**	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	**14**	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 01:48	4186537

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46987/PotableTruck19518 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.1**	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.3**	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.8**	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:39	4186538

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46988/PotableTruck19520 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.5**	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.2**	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 02:56	4186539

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF46989/Potable Truck 7-21 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.3**	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.4**	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.7**	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:21	4186540

$ The state of origin does not offer certification for this parameter.

Client Name: Pollen Environmental LLC Report #: 442125

Sampling Point: PEF46990 FTB PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	02/08/19 08:18	02/09/19 04:04	4186541

$ The state of origin does not offer certification for this parameter.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

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Fairbanks, AK 99734
(907) 479-8368 Phone (907) 452-6853 Fax
Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM 364213

2019 PFC 442125

CLIENT INFORMATION			Requested Analysis	Page 1 of 1
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**		Perservative Added	
Address: **Pouch 340044**	**PWS # 331184 - special, non-routine**			
City, State Zip: **Prudhoe Bay, AK 99734**				
Phone: **(907) 659-9060**	Send Results to ADEC:			☐ Normal Turnaround
Fax: **(907) 659-9061**	√ Yes ☐ No			
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:			☐ RUSH ____ day(s)
Project Name: **NSB SA-10 WTP PFAS Monitoring**	2019-72			
Sampled By: STEVE SHABEDER w/ LOGAN POINDEXTER				

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by EPA 537*						Sample Comments
Raw Water Pondhouse	1-27-19	10:34	W	PEF46980	4186,531	1		Cl-A					Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Water Plant Sample Port LT2	1-27-19	10:15	W	PEF46981	532	1		Cl-A					Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Tank UF Feed	1-27-19	13:25	W	PEF46982	533	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP
UF 1 Permeate	1-27-19	13:27	W	PEF46983	534	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP
UF 2 Permeate	1-27-19	10:17	W	PEF46984	535	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Tanks Combined	1-27-19	13:29	W	PEF46985	536	1		Cl-A	SS 2-2-19				Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Fill 4	1-27-19	10:11	W	PEF46986	537	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19518	1-27-19	~~09:55~~ 11:17	W	PEF46987	538	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19520	1-27-19	11:50	W	PEF46988	539	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 7-21	1-27-19	15:13	W	PEF46989	540	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP
Field Blank NEAR NF UNIT	1-27-19	13:33	W	PEF46990	√541	1		Cl-A					Facility ID: TP002 Sample Point ID: SPTP002EP

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☑ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 2.2 °C *COC Seal:* ☑ *Intact* ☐ *Broken* ☐ *Absent*
NTL Alaska Temperature on arrival: 2.8 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☑ *Absent*

Special Instructions/QC Requirements & Comments: * PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
SHS	Ice Services	1-27-2019 / 7:00AM		Pollen Environmental	1-28-19 @ 1600
	Pollen Env	1-31-19 @ 1100am		EEA	2-1-19 1000

Eurofins Eaton Analytical
Run Log

Run ID: **254904** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4191397		OS	FL	02/08/2019 19:34	020819M537a-FL-PFC12.mdb
LRB	4191386		RW	FL	02/08/2019 20:08	020819M537a-FL-PFC12.mdb
FBH	4191387		RW	FL	02/08/2019 20:42	020819M537a-FL-PFC12.mdb
FS	4186532	PEF46981/RawWaterPlantSample	DW	FL	02/09/2019 01:14	020819M537a-FL-PFC12.mdb
FS	4186535	PEF46984/UF 2 Permeate	DW	FL	02/09/2019 01:31	020819M537a-FL-PFC12.mdb
FS	4186537	PEF46986/Potable Fill 4	DW	FL	02/09/2019 01:48	020819M537a-FL-PFC12.mdb
FS	4186531	PEF46980/RawWaterPondhouse	DW	FL	02/09/2019 02:05	020819M537a-FL-PFC12.mdb
CCM	4191398		OS	FL	02/09/2019 02:22	020819M537a-FL-PFC12.mdb
FS	4186538	PEF46987/PotableTruck19518	DW	FL	02/09/2019 02:39	020819M537a-FL-PFC12.mdb
FS	4186539	PEF46988/PotableTruck19520	DW	FL	02/09/2019 02:56	020819M537a-FL-PFC12.mdb
FS	4186533	PEF46982/Raw Tank UF Feed	DW	FL	02/09/2019 03:13	020819M537a-FL-PFC12.mdb
FS	4186534	PEF46983/UF 1 Permeate	DW	FL	02/09/2019 03:30	020819M537a-FL-PFC12.mdb
FS	4186536	PEF46985/PotableTanksCombined	DW	FL	02/09/2019 03:47	020819M537a-FL-PFC12.mdb
FTB	4186541	PEF46990 FTB	RW	FL	02/09/2019 04:04	020819M537a-FL-PFC12.mdb
FS	4186540	PEF46989/Potable Truck 7-21	DW	FL	02/09/2019 04:21	020819M537a-FL-PFC12.mdb
CCH	4191399		OS	FL	02/09/2019 06:37	020819M537a-FL-PFC12.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		1989270.00	1989270	ng/L	100	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	IS-PFOS-13C4	537	N/A	---		367117.00	367117	ng/L	100	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	SS-PFDA-13C2	537	N/A	---		101.6160	100	ng/L	102	70 - 130	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	SS-PFHxA-13C2	537	N/A	---		50.4471	50.0	ng/L	101	70 - 130	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		1.8877	2.0	ng/L	94	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		2.0383	2.0	ng/L	102	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9423	2.0	ng/L	97	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		1.9331	2.0	ng/L	97	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		1.9985	2.0	ng/L	100	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		2.1234	2.0	ng/L	106	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		2.1786	2.0	ng/L	109	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		2.0362	2.0	ng/L	102	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		2.0394	2.0	ng/L	102	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		1.9839	2.0	ng/L	99	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		2.0971	2.0	ng/L	105	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		2.0573	2.0	ng/L	103	50 - 150	---	---	1.0	02/04/2019 14:13	02/08/2019 19:34	4191397
LRB	IS-PFOA-13C2	537	N/A	---		1829140.00	1989270	ng/L	92	50 - 150	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	IS-PFOS-13C4	537	N/A	---		335878.00	367117	ng/L	91	50 - 150	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	SS-PFDA-13C2	537	N/A	---		84.9038	100	ng/L	98	70 - 130	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	SS-PFHxA-13C2	537	N/A	---		43.3802	50.0	ng/L	100	70 - 130	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	02/08/2019 08:18	02/08/2019 20:08	4191386
FBH	IS-PFOA-13C2	537	N/A	---		1877210.00	1989270	ng/L	94	50 - 150	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	IS-PFOS-13C4	537	N/A	---		358396.00	367117	ng/L	98	50 - 150	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	SS-PFDA-13C2	537	N/A	---		97.4430	100	ng/L	97	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	SS-PFHxA-13C2	537	N/A	---		50.6438	50.0	ng/L	101	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		186.9220	200	ng/L	93	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorodecanoic acid (PFDA)	537	2.0	---		187.3800	200	ng/L	94	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		190.7180	200	ng/L	95	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		187.8520	200	ng/L	94	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		190.7040	200	ng/L	95	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		178.1780	200	ng/L	89	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		175.9270	200	ng/L	88	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorononanoic acid (PFNA)	537	2.0	---		189.7560	200	ng/L	95	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		182.5740	200	ng/L	91	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorooctanoic acid (PFOA)	537	2.0	---		189.6540	200	ng/L	95	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		176.5520	200	ng/L	88	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FBH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		181.0790	200	ng/L	91	70 - 130	---	---	1.0	02/08/2019 08:18	02/08/2019 20:42	4191387
FS	IS-PFOA-13C2	537	N/A	PEF46981/RawWaterPlantSample		2220250.00	1989270	ng/L	112	50 - 150	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	IS-PFOS-13C4	537	N/A	PEF46981/RawWaterPlantSample		397982.00	367117	ng/L	108	50 - 150	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	SS-PFDA-13C2	537	N/A	PEF46981/RawWaterPlantSample		87.2265	100	ng/L	93	70 - 130	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	SS-PFHxA-13C2	537	N/A	PEF46981/RawWaterPlantSample		47.4345	50.0	ng/L	101	70 - 130	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46981/RawWaterPlantSample		3.3		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46981/RawWaterPlantSample		2.3		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46981/RawWaterPlantSample		4.6		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46981/RawWaterPlantSample	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 01:14	4186532
FS	IS-PFOA-13C2	537	N/A	PEF46984/UF 2 Permeate		2166560.00	1989270	ng/L	109	50 - 150	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	IS-PFOS-13C4	537	N/A	PEF46984/UF 2 Permeate		391893.00	367117	ng/L	107	50 - 150	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	SS-PFDA-13C2	537	N/A	PEF46984/UF 2 Permeate		87.7597	100	ng/L	94	70 - 130	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	SS-PFHxA-13C2	537	N/A	PEF46984/UF 2 Permeate		45.5469	50.0	ng/L	98	70 - 130	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46984/UF 2 Permeate		3.2		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46984/UF 2 Permeate		2.4		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46984/UF 2 Permeate		3.8		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46984/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.93	02/08/2019 08:18	02/09/2019 01:31	4186535
FS	IS-PFOA-13C2	537	N/A	PEF46986/Potable Fill 4		2155890.00	1989270	ng/L	108	50 - 150	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOS-13C4	537	N/A	PEF46986/Potable Fill 4		388796.00	367117	ng/L	106	50 - 150	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	SS-PFDA-13C2	537	N/A	PEF46986/Potable Fill 4		87.1703	100	ng/L	98	70 - 130	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	SS-PFHxA-13C2	537	N/A	PEF46986/Potable Fill 4		46.8353	50.0	ng/L	105	70 - 130	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46986/Potable Fill 4		3.4		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46986/Potable Fill 4		2.5		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46986/Potable Fill 4		3.3		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46986/Potable Fill 4		14		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46986/Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 01:48	4186537
FS	IS-PFOA-13C2	537	N/A	PEF46980/RawWaterPondhouse		2090930.00	1989270	ng/L	105	50 - 150	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	IS-PFOS-13C4	537	N/A	PEF46980/RawWaterPondhouse		374390.00	367117	ng/L	102	50 - 150	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	SS-PFDA-13C2	537	N/A	PEF46980/RawWaterPondhouse		91.7470	100	ng/L	98	70 - 130	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	SS-PFHxA-13C2	537	N/A	PEF46980/RawWaterPondhouse		48.9041	50.0	ng/L	104	70 - 130	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46980/RawWaterPondhouse		3.5		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46980/RawWaterPondhouse		2.5		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46980/RawWaterPondhouse		4.6		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46980/RawWaterPondhouse	<	2.0		ng/L	---	---	---	---	0.94	02/08/2019 08:18	02/09/2019 02:05	4186531
CCM	IS-PFOA-13C2	537	N/A	---		2132870.00	2132870	ng/L	100	50 - 150	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	IS-PFOS-13C4	537	N/A	---		378090.00	378090	ng/L	100	50 - 150	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	SS-PFDA-13C2	537	N/A	---		100.2300	100	ng/L	100	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	SS-PFHxA-13C2	537	N/A	---		51.3598	50.0	ng/L	103	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		99.2670	100	ng/L	99	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		100.4810	100	ng/L	100	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		101.0000	100	ng/L	101	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		100.6950	100	ng/L	101	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		102.3410	100	ng/L	102	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		106.3830	100	ng/L	106	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		107.4380	100	ng/L	107	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		100.4410	100	ng/L	100	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		101.5550	100	ng/L	102	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		100.0600	100	ng/L	100	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		107.7920	100	ng/L	108	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		103.2410	100	ng/L	103	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 02:22	4191398
FS	IS-PFOA-13C2	537	N/A	PEF46987/PotableTruck19518		2059550.00	2132870	ng/L	97	50 - 150	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	IS-PFOS-13C4	537	N/A	PEF46987/PotableTruck19518		367869.00	378090	ng/L	97	50 - 150	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	SS-PFDA-13C2	537	N/A	PEF46987/PotableTruck19518		87.5946	100	ng/L	96	70 - 130	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	SS-PFHxA-13C2	537	N/A	PEF46987/PotableTruck19518		43.3016	50.0	ng/L	95	70 - 130	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46987/PotableTruck19518		3.1		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46987/PotableTruck19518		2.3		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46987/PotableTruck19518		3.8		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46987/PotableTruck19518	<	2.0		ng/L	---	---	---	---	0.91	02/08/2019 08:18	02/09/2019 02:39	4186538
FS	IS-PFOA-13C2	537	N/A	PEF46988/PotableTruck19520		2120890.00	2132870	ng/L	99	50 - 150	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	IS-PFOS-13C4	537	N/A	PEF46988/PotableTruck19520		359361.00	378090	ng/L	95	50 - 150	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	SS-PFDA-13C2	537	N/A	PEF46988/PotableTruck19520		90.7804	100	ng/L	102	70 - 130	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	SS-PFHxA-13C2	537	N/A	PEF46988/PotableTruck19520		46.7613	50.0	ng/L	105	70 - 130	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46988/PotableTruck19520		3.2		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46988/PotableTruck19520		2.5		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46988/PotableTruck19520		3.2		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46988/PotableTruck19520	<	2.0		ng/L	---	---	---	---	0.89	02/08/2019 08:18	02/09/2019 02:56	4186539
FS	IS-PFOA-13C2	537	N/A	PEF46982/Raw Tank UF Feed		2057640.00	2132870	ng/L	96	50 - 150	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	IS-PFOS-13C4	537	N/A	PEF46982/Raw Tank UF Feed		366441.00	378090	ng/L	97	50 - 150	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	SS-PFDA-13C2	537	N/A	PEF46982/Raw Tank UF Feed		87.6037	100	ng/L	95	70 - 130	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	SS-PFHxA-13C2	537	N/A	PEF46982/Raw Tank UF Feed		48.0511	50.0	ng/L	104	70 - 130	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46982/Raw Tank UF Feed		3.4		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46982/Raw Tank UF Feed		2.5		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46982/Raw Tank UF Feed		4.6		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46982/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:13	4186533
FS	IS-PFOA-13C2	537	N/A	PEF46983/UF 1 Permeate		1966690.00	2132870	ng/L	92	50 - 150	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	IS-PFOS-13C4	537	N/A	PEF46983/UF 1 Permeate		349573.00	378090	ng/L	92	50 - 150	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	SS-PFDA-13C2	537	N/A	PEF46983/UF 1 Permeate		92.7779	100	ng/L	101	70 - 130	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	SS-PFHxA-13C2	537	N/A	PEF46983/UF 1 Permeate		49.6085	50.0	ng/L	108	70 - 130	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46983/UF 1 Permeate		3.3		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46983/UF 1 Permeate		2.5		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46983/UF 1 Permeate		3.7		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46983/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.92	02/08/2019 08:18	02/09/2019 03:30	4186534
FS	IS-PFOA-13C2	537	N/A	PEF46985/PotableTanksCombined		2117110.00	2132870	ng/L	99	50 - 150	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	IS-PFOS-13C4	537	N/A	PEF46985/PotableTanksCombined		375795.00	378090	ng/L	99	50 - 150	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	SS-PFDA-13C2	537	N/A	PEF46985/PotableTanksCombined		83.4237	100	ng/L	95	70 - 130	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	SS-PFHxA-13C2	537	N/A	PEF46985/PotableTanksCombined		45.9929	50.0	ng/L	105	70 - 130	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46985/PotableTanksCombined		3.2		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46985/PotableTanksCombined		2.4		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46985/PotableTanksCombined		3.6		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46985/PotableTanksCombined	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 03:47	4186536
FTB	IS-PFOA-13C2	537	N/A	PEF46990 FTB		2083930.00	2132870	ng/L	98	50 - 150	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	IS-PFOS-13C4	537	N/A	PEF46990 FTB		375584.00	378090	ng/L	99	50 - 150	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	SS-PFDA-13C2	537	N/A	PEF46990 FTB		85.7148	100	ng/L	97	70 - 130	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	SS-PFHxA-13C2	537	N/A	PEF46990 FTB		44.3528	50.0	ng/L	101	70 - 130	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorononanoic acid (PFNA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FTB	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46990 FTB	<	2.0		ng/L	---	---	---	---	0.88	02/08/2019 08:18	02/09/2019 04:04	4186541
FS	IS-PFOA-13C2	537	N/A	PEF46989/Potable Truck 7-21		2193610.00	2132870	ng/L	103	50 - 150	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	IS-PFOS-13C4	537	N/A	PEF46989/Potable Truck 7-21		389974.00	378090	ng/L	103	50 - 150	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	SS-PFDA-13C2	537	N/A	PEF46989/Potable Truck 7-21		91.6725	100	ng/L	95	70 - 130	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	SS-PFHxA-13C2	537	N/A	PEF46989/Potable Truck 7-21		48.0829	50.0	ng/L	100	70 - 130	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF46989/Potable Truck 7-21		3.3		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF46989/Potable Truck 7-21		2.4		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF46989/Potable Truck 7-21		3.7		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF46989/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.96	02/08/2019 08:18	02/09/2019 04:21	4186540
CCH	IS-PFOA-13C2	537	N/A	---		2091330.00	2091330	ng/L	100	50 - 150	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	IS-PFOS-13C4	537	N/A	---		370142.00	370142	ng/L	100	50 - 150	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	SS-PFDA-13C2	537	N/A	---		99.3586	100	ng/L	99	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	SS-PFHxA-13C2	537	N/A	---		52.1327	50.0	ng/L	104	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		206.6990	200	ng/L	103	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	Perfluorodecanoic acid (PFDA)	537	2.0	---		206.2310	200	ng/L	103	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		211.4360	200	ng/L	106	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		207.3930	200	ng/L	104	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		213.5190	200	ng/L	107	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		219.2860	200	ng/L	110	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		223.0660	200	ng/L	112	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorononanoic acid (PFNA)	537	2.0	---		202.8370	200	ng/L	101	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		209.7240	200	ng/L	105	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorooctanoic acid (PFOA)	537	2.0	---		206.2470	200	ng/L	103	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		223.2080	200	ng/L	112	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399
CCH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		207.1040	200	ng/L	104	70 - 130	---	---	1.0	02/04/2019 14:13	02/09/2019 06:37	4191399

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FTB	Field Trip Blank		
FBH	Fortified Blank High		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.
3536 International Street
Fairbanks, AK 99734
(907) 479-8368 Phone (907) 452-6853 Fax
Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

2019 PFC

CLIENT INFORMATION			
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**		
Address: **Pouch 340044**			
City, State Zip: **Prudhoe Bay, AK 99734**	**PWS # 331184 - special, non-routine**		
Phone: **(907) 659-9060**	Send Results to ADEC:		
Fax: **(907) 659-9061**	√ Yes ☐ No		
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		
Project Name: **NSB SA-10 WTP PFAS Monitoring**	2019-223		
Sampled By: Carl Cornforth			

Page 1 of 1

☐ Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	Requested Analysis: Perservative Added — PFC's by EPA 537*	Sample Comments
POTABLE Truck Fill 4	4-1-19	11:25am	W	PEF48344		1	X	
RAW Water sample port	4-1-19	11:10am	W	PEF48345		1	X	
Field Blank	4-1-19	11:12am	W	PEF48346 Mod. 4/2/19		1	X	

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 1.7 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
NTL Alaska Temperature on arrival: °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: * PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
	Ice Services		Logan Cogley	Pollen Environmental	4/2/19 1420
Jerry Pollen	Pollen Env	4-4-19 @ 1200			

Accuracy, Precision, and Professional Service

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

NSB SA-10 (Ice Services)
Attn: Rich Helinski
Pouch 340044
Prudhoe Bay, AK 99734
Phone: 907-659-9060
Fax: 907-659-9061
rhelinski@iceservices.net

Report Date: 4/17/2019
Received Date: 4/2/2019
Received Time: 2:20 PM
Sampled By: CC

Project Name: NSB SA-10 WTP - PFAS Monitoring
PWS ID: AK2331184 - Special Samples
Analysis: PFAS - Method EPA 537

Comments: Samples analyzed by Eurofins Eaton Analytical in South Bend, IN.

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Potable Truck Fill 4	PEF48344	4249698	4/1/2019	11:25 AM
Raw Water Sample Port	PEF48345	4249699	4/1/2019	11:10 AM
Field Blank	PEF48346	4249700	4/1/2019	11:12 AM

Jerry Pollen
Pollen Environmental, LLC

eurofins | Eaton Analytical

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-18-12
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 03/14/2019

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 448080
Priority: Standard Written
Status: Final
PWS ID: Not Supplied
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4249698	PEF48344	537	04/01/19 11:25	Client	04/05/19 08:30
4249699	PEF48345	537	04/01/19 11:10	Client	04/05/19 08:30
4249700	PEF48346, Blank	537	04/01/19 11:12	Client	04/05/19 08:30

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Traci Chlebowski ASM — 04/17/2019

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 448080

Sampling Point: PEF48344 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.1**	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.2**	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 03:53	4249698

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF48345 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	**3.2**	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	**2.1**	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.3**	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	04/08/19 08:30	04/09/19 04:10	4249699

$ The state of origin does not offer certification for this parameter.

Client Name: Pollen Environmental LLC Report #: 448080

Sampling Point: PEF48346, Blank PWS ID: Not Supplied

EEA Methods

Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	04/10/19 07:55	04/11/19 18:03	4249700

$ The state of origin does not offer certification for this parameter.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

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Fairbanks, AK 99734
(907) 479-8368 Phone (907) 452-6853 Fax
Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM 369062

2019 PFC 448080

CLIENT INFORMATION		Requested Analysis	Page 1 of 1
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**	Perservative Added	
Address: **Pouch 340044**	**PWS # 331184 - special, non-routine**		
City, State Zip: **Prudhoe Bay, AK 99734**			☐ Normal Turnaround
Phone: **(907) 659-9060**	Send Results to ADEC:		
Fax: **(907) 659-9061**	√ Yes ☐ No		☐ RUSH ____ day(s)
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		
Project Name: **NSB SA-10 WTP PFAS Monitoring**	2019-223		
Sampled By: Carl Cornforth			

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by EPA 537*						Sample Comments
POTABLE Truck Fill 4	4-1-19	11:25am	W	PEF48344	4249698	1	X	1		Cl=A	dm 4/5/19		
Raw Water Sample Port	4-1-19	11:10am	W	PEF48345	699	1	X	1		Cl=A			
Field Blank	4-1-19	11:12am	W	PEF48346	700	1	X	1		Cl=A			

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 1.7 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
NTL Alaska Temperature on arrival: 0.2 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: * PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
[signature]	Ice Services		[signature]	Pollen Environmental	4/2/19 1420
[signature]	Pollen Env	4-4-19 @ 1200	[signature]	EEA-SB	4/5/19 0830

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **257555** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4251624		OS	FL	04/08/2019 19:24	040819M537a-FL-PFC-Ext.mdb
LRB	4251613		RW	FL	04/08/2019 19:58	040819M537a-FL-PFC-Ext.mdb
FBL	4251614		RW	FL	04/08/2019 20:15	040819M537a-FL-PFC-Ext.mdb
CCM	4251625		OS	FL	04/09/2019 01:21	040819M537a-FL-PFC-Ext.mdb
FS	4249698	PEF48344	DW	FL	04/09/2019 03:53	040819M537a-FL-PFC-Ext.mdb
FS	4249699	PEF48345	DW	FL	04/09/2019 04:10	040819M537a-FL-PFC-Ext.mdb
CCH	4251626		OS	FL	04/09/2019 05:01	040819M537a-FL-PFC-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-NMeFOSAA-d3	537	N/A	---		456607.00	456607	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	IS-PFOA-13C2	537	N/A	---		1396220.00	1396220	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	IS-PFOS-13C4	537	N/A	---		340002.00	340002	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	IS-GenX-13C3	537	N/A	---		97567.30	97567.3	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	SS-NEtFOSAA-d5	537	N/A	---		188.9410	200	ng/L	94	70 - 130	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	SS-PFDA-13C2	537	N/A	---		92.1489	100	ng/L	92	70 - 130	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	SS-PFHxA-13C2	537	N/A	---		45.4329	50.0	ng/L	91	70 - 130	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		1.8613	2.0	ng/L	93	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		1.9725	2.0	ng/L	99	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9282	2.0	ng/L	96	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		2.0317	2.0	ng/L	102	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		1.9529	2.0	ng/L	98	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		2.0130	2.0	ng/L	101	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		1.9310	2.0	ng/L	97	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		1.9607	2.0	ng/L	98	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		2.0057	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		1.9935	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		1.9324	2.0	ng/L	97	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		1.9990	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/08/2019 19:24	4251624
LRB	IS-NMeFOSAA-d3	537	N/A	---		360972.00	456607	ng/L	79	50 - 150	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	IS-PFOA-13C2	537	N/A	---		1090360.00	1396220	ng/L	78	50 - 150	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	IS-PFOS-13C4	537	N/A	---		257761.00	340002	ng/L	76	50 - 150	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	IS-GenX-13C3	537	N/A	---		73827.40	97567.3	ng/L	76	50 - 150	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	SS-NEtFOSAA-d5	537	N/A	---		157.9870	200	ng/L	91	70 - 130	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	SS-PFDA-13C2	537	N/A	---		85.1338	100	ng/L	98	70 - 130	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	SS-PFHxA-13C2	537	N/A	---		42.4210	50.0	ng/L	98	70 - 130	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.87	04/08/2019 08:30	04/08/2019 19:58	4251613
FBL	IS-NMeFOSAA-d3	537	N/A	---		395483.00	456607	ng/L	87	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	IS-PFOA-13C2	537	N/A	---		1204420.00	1396220	ng/L	86	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBL	IS-PFOS-13C4	537	N/A	---		284252.00	340002	ng/L	84	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	IS-GenX-13C3	537	N/A	---		78800.90	97567.3	ng/L	81	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	SS-NEtFOSAA-d5	537	N/A	---		171.5180	200	ng/L	86	70 - 130	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	SS-PFDA-13C2	537	N/A	---		93.1490	100	ng/L	93	70 - 130	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	SS-PFHxA-13C2	537	N/A	---		45.1886	50.0	ng/L	90	70 - 130	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		1.8418	2.0	ng/L	92	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorodecanoic acid (PFDA)	537	2.0	---		1.8516	2.0	ng/L	93	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9125	2.0	ng/L	96	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		1.9648	2.0	ng/L	98	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		1.8844	2.0	ng/L	94	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		1.7043	2.0	ng/L	85	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		1.7130	2.0	ng/L	86	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorononanoic acid (PFNA)	537	2.0	---		1.7710	2.0	ng/L	89	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		1.9018	2.0	ng/L	95	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorooctanoic acid (PFOA)	537	2.0	---		2.3594	2.0	ng/L	118	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		1.7411	2.0	ng/L	87	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
FBL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		1.7870	2.0	ng/L	89	50 - 150	---	---	1.0	04/08/2019 08:30	04/08/2019 20:15	4251614
CCM	IS-NMeFOSAA-d3	537	N/A	---		440494.00	440494	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	IS-PFOA-13C2	537	N/A	---		1341960.00	1341960	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	IS-PFOS-13C4	537	N/A	---		328399.00	328399	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	IS-GenX-13C3	537	N/A	---		92025.80	92025.8	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	SS-NEtFOSAA-d5	537	N/A	---		199.2030	200	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	SS-PFDA-13C2	537	N/A	---		99.6531	100	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	SS-PFHxA-13C2	537	N/A	---		48.0384	50.0	ng/L	96	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		95.0182	100	ng/L	95	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		100.0710	100	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		98.5567	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		101.9480	100	ng/L	102	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		92.7421	100	ng/L	93	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		95.4382	100	ng/L	95	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		91.5316	100	ng/L	92	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		98.0828	100	ng/L	98	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		99.1232	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		99.7026	100	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		92.1774	100	ng/L	92	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		97.9739	100	ng/L	98	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 01:21	4251625
FS	IS-NMeFOSAA-d3	537	N/A	PEF48344		387228.00	440494	ng/L	88	50 - 150	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	IS-PFOA-13C2	537	N/A	PEF48344		1196810.00	1341960	ng/L	89	50 - 150	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	IS-PFOS-13C4	537	N/A	PEF48344		282065.00	328399	ng/L	86	50 - 150	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	IS-GenX-13C3	537	N/A	PEF48344		74256.40	92025.8	ng/L	81	50 - 150	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	SS-NEtFOSAA-d5	537	N/A	PEF48344		163.7520	200	ng/L	88	70 - 130	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	SS-PFDA-13C2	537	N/A	PEF48344		89.1492	100	ng/L	96	70 - 130	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	SS-PFHxA-13C2	537	N/A	PEF48344		43.3311	50.0	ng/L	93	70 - 130	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF48344		3.2		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF48344		2.1		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF48344		4.2		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF48344	<	2.0		ng/L	---	---	---	---	0.93	04/08/2019 08:30	04/09/2019 03:53	4249698
FS	IS-NMeFOSAA-d3	537	N/A	PEF48345		423845.00	440494	ng/L	96	50 - 150	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	IS-PFOA-13C2	537	N/A	PEF48345		1297590.00	1341960	ng/L	97	50 - 150	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	IS-PFOS-13C4	537	N/A	PEF48345		305492.00	328399	ng/L	93	50 - 150	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	IS-GenX-13C3	537	N/A	PEF48345		82060.10	92025.8	ng/L	89	50 - 150	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	SS-NEtFOSAA-d5	537	N/A	PEF48345		161.8910	200	ng/L	88	70 - 130	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	SS-PFDA-13C2	537	N/A	PEF48345		85.3448	100	ng/L	93	70 - 130	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	SS-PFHxA-13C2	537	N/A	PEF48345		41.9197	50.0	ng/L	91	70 - 130	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF48345		3.2		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF48345		2.1		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF48345		4.3		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF48345	<	2.0		ng/L	---	---	---	---	0.92	04/08/2019 08:30	04/09/2019 04:10	4249699
CCH	IS-NMeFOSAA-d3	537	N/A	---		97582.10	97582.1	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	IS-PFOA-13C2	537	N/A	---		371008.00	371008	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	IS-PFOS-13C4	537	N/A	---		87823.10	87823.1	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	IS-GenX-13C3	537	N/A	---		14697.00	14697	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	SS-NEtFOSAA-d5	537	N/A	---		239.1560	200	ng/L	120	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	SS-PFDA-13C2	537	N/A	---		97.4317	100	ng/L	97	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	SS-PFHxA-13C2	537	N/A	---		42.0891	50.0	ng/L	84	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		147.3000	200	ng/L	74	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	Perfluorodecanoic acid (PFDA)	537	2.0	---		178.2720	200	ng/L	89	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		251.0030	200	ng/L	126	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		231.6230	200	ng/L	116	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		139.9890	200	ng/L	70	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		180.7710	200	ng/L	90	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		272.9610	200	ng/L	**136**	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorononanoic acid (PFNA)	537	2.0	---		180.9820	200	ng/L	90	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		205.3620	200	ng/L	103	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorooctanoic acid (PFOA)	537	2.0	---		200.7190	200	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		239.6740	200	ng/L	120	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626
CCH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		165.4880	200	ng/L	83	70 - 130	---	---	1.0	04/04/2019 11:46	04/09/2019 05:01	4251626

Eurofins Eaton Analytical
Run Log

Run ID: **257719** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4254008		OS	FL	04/11/2019 11:15	041119M537a-FL-PFC14.mdb
LRB	4254012		RW	FL	04/11/2019 11:49	041119M537a-FL-PFC14.mdb
FBH	4254013		RW	FL	04/11/2019 12:23	041119M537a-FL-PFC14.mdb
CCM	4254009		OS	FL	04/11/2019 17:12	041119M537a-FL-PFC14.mdb
FTB	4249700	PEF48346, Blank	RW	FL	04/11/2019 18:03	041119M537a-FL-PFC14.mdb
CCH	4254010		OS	FL	04/11/2019 19:11	041119M537a-FL-PFC14.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-NMeFOSAA-d3	537	N/A	---		807538.00	807538	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	IS-PFOA-13C2	537	N/A	---		1810880.00	1810880	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	IS-PFOS-13C4	537	N/A	---		411512.00	411512	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	SS-NEtFOSAA-d5	537	N/A	---		190.5250	200	ng/L	95	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	SS-PFDA-13C2	537	N/A	---		93.3751	100	ng/L	93	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	SS-PFHxA-13C2	537	N/A	---		46.4569	50.0	ng/L	93	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		1.8447	2.0	ng/L	92	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		2.0138	2.0	ng/L	101	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9734	2.0	ng/L	99	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		1.9644	2.0	ng/L	98	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		1.9686	2.0	ng/L	98	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		1.9989	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		2.0079	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		2.0042	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		2.0185	2.0	ng/L	101	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		2.0069	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		1.9999	2.0	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		2.0233	2.0	ng/L	101	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 11:15	4254008
LRB	IS-NMeFOSAA-d3	537	N/A	---		793805.00	807538	ng/L	98	50 - 150	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	IS-PFOA-13C2	537	N/A	---		1774440.00	1810880	ng/L	98	50 - 150	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	IS-PFOS-13C4	537	N/A	---		408380.00	411512	ng/L	99	50 - 150	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	SS-NEtFOSAA-d5	537	N/A	---		163.6190	200	ng/L	90	70 - 130	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	SS-PFDA-13C2	537	N/A	---		86.9917	100	ng/L	96	70 - 130	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	SS-PFHxA-13C2	537	N/A	---		45.3636	50.0	ng/L	100	70 - 130	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	04/10/2019 07:55	04/11/2019 11:49	4254012
FBH	IS-NMeFOSAA-d3	537	N/A	---		827261.00	807538	ng/L	102	50 - 150	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	IS-PFOA-13C2	537	N/A	---		1761460.00	1810880	ng/L	97	50 - 150	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	IS-PFOS-13C4	537	N/A	---		418198.00	411512	ng/L	102	50 - 150	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	SS-NEtFOSAA-d5	537	N/A	---		176.4540	200	ng/L	88	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBH	SS-PFDA-13C2	537	N/A	---		97.6941	100	ng/L	98	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	SS-PFHxA-13C2	537	N/A	---		52.6677	50.0	ng/L	105	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		200.3170	200	ng/L	100	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorodecanoic acid (PFDA)	537	2.0	---		194.9180	200	ng/L	97	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		193.1900	200	ng/L	97	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		196.5070	200	ng/L	98	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		201.2750	200	ng/L	101	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		186.2500	200	ng/L	93	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		186.6850	200	ng/L	93	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorononanoic acid (PFNA)	537	2.0	---		196.5030	200	ng/L	98	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		195.4590	200	ng/L	98	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorooctanoic acid (PFOA)	537	2.0	---		194.0500	200	ng/L	97	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		187.4800	200	ng/L	94	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
FBH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		189.4770	200	ng/L	95	70 - 130	---	---	1.0	04/10/2019 07:55	04/11/2019 12:23	4254013
CCM	IS-NMeFOSAA-d3	537	N/A	---		773792.00	773792	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	IS-PFOA-13C2	537	N/A	---		1650480.00	1650480	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	IS-PFOS-13C4	537	N/A	---		374388.00	374388	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	SS-NEtFOSAA-d5	537	N/A	---		199.0200	200	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	SS-PFDA-13C2	537	N/A	---		99.2809	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	SS-PFHxA-13C2	537	N/A	---		51.0611	50.0	ng/L	102	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		99.0018	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		99.2283	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		100.0800	100	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		99.3025	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		98.9150	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		100.3220	100	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		99.8675	100	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		98.8508	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		98.9390	100	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		99.5493	100	ng/L	100	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		100.7020	100	ng/L	101	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		100.8930	100	ng/L	101	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 17:12	4254009
FTB	IS-NMeFOSAA-d3	537	N/A	PEF48346, Blank		785575.00	773792	ng/L	102	50 - 150	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	IS-PFOA-13C2	537	N/A	PEF48346, Blank		1682070.00	1650480	ng/L	102	50 - 150	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	IS-PFOS-13C4	537	N/A	PEF48346, Blank		375226.00	374388	ng/L	100	50 - 150	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	SS-NEtFOSAA-d5	537	N/A	PEF48346, Blank		158.6710	200	ng/L	90	70 - 130	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	SS-PFDA-13C2	537	N/A	PEF48346, Blank		86.5384	100	ng/L	98	70 - 130	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	SS-PFHxA-13C2	537	N/A	PEF48346, Blank		44.4345	50.0	ng/L	101	70 - 130	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorodecanoic acid (PFDA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FTB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorononanoic acid (PFNA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorooctanoic acid (PFOA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
FTB	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF48346, Blank	<	2.0		ng/L	---	---	---	---	0.88	04/10/2019 07:55	04/11/2019 18:03	4249700
CCH	IS-NMeFOSAA-d3	537	N/A	---		808725.00	808725	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	IS-PFOA-13C2	537	N/A	---		1653370.00	1653370	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	IS-PFOS-13C4	537	N/A	---		377679.00	377679	ng/L	100	50 - 150	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	SS-NEtFOSAA-d5	537	N/A	---		220.2600	200	ng/L	110	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	SS-PFDA-13C2	537	N/A	---		114.8190	100	ng/L	115	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	SS-PFHxA-13C2	537	N/A	---		60.3277	50.0	ng/L	121	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		204.0080	200	ng/L	102	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorodecanoic acid (PFDA)	537	2.0	---		201.2770	200	ng/L	101	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		202.7930	200	ng/L	101	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		203.4170	200	ng/L	102	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		203.1550	200	ng/L	102	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		203.5330	200	ng/L	102	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		197.4020	200	ng/L	99	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorononanoic acid (PFNA)	537	2.0	---		196.9680	200	ng/L	98	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		204.1240	200	ng/L	102	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorooctanoic acid (PFOA)	537	2.0	---		202.8380	200	ng/L	101	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		201.5930	200	ng/L	101	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010
CCH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		201.7560	200	ng/L	101	70 - 130	---	---	1.0	04/04/2019 11:46	04/11/2019 19:11	4254010

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FTB	Field Trip Blank		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.
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Fairbanks, AK 99734
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Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

2019 PFC

CLIENT INFORMATION		
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**	
Address: **Pouch 340044**	**PWS # 331184 - special, non-routine**	
City, State Zip: **Prudhoe Bay, AK 99734**		
Phone: **(907) 659-9060**	Send Results to ADEC:	☐ Normal Turnaround
Fax: **(907) 659-9061**	√ Yes ☐ No	
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:	☐ RUSH ____ day(s)
Project Name: **NSB SA-10 WTP PFAS Monitoring**	2019-579	
Sampled By: CARL CORNFORTH		

Page 1 of 1

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	Requested Analysis: PFC's by EPA 537* (Perservative Added)	Sample Comments
Raw Water Pondhouse	8-5-19	1520	W	PEF52068		1	X	Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Water Plant Sample Port	8-5-19	1154	W	PEF52069		1	X	Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Tank UF Feed	8-5-19	1057	W	PEF52070		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
UF 1 Permeate	8-5-19	1100	W	PEF52071		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
UF 2 Permeate	8-5-19	1445	W	PEF52072		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Tanks Combined	8-5-19	1055	W	PEF52073		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Fill 4	8-5-19	1352	W	PEF52074		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19518	8-5-19	1110	W	PEF52075		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19520	8-5-19	1355	W	PEF52076		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 7-21	8-5-19	1435	W	PEF52077		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP
Field Blank	8-5-19	1050	W	PEF52078		1	X	Facility ID: TP002 Sample Point ID: SPTP002EP

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 4.2 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
NTL Alaska Temperature on arrival: °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: * **PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA**

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Jerry Pollen	Ice Services		Jerry Pollen	Pollen Environmental	8-6-19 @ 1415
Jerry Pollen	Pollen Env	8-7-19 @ 1100am			

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

NSB SA-10 (Ice Services)
Attn: Rich Helinski
Pouch 340044
Prudhoe Bay, AK 99734
Phone: 907-659-9060
Fax: 907-659-9061
rhelinski@iceservices.net

Report Date: 8/19/2019
Received Date: 8/6/2019
Received Time: 2:15 PM
Sampled By: CC

Project Name: NSB SA-10 WTP - PFAS Monitoring
PWS ID: AK2331184 - Special Samples
Analysis: PFAS - Method EPA 537

Comments: Samples analyzed by Eurofins Eaton Analytical in South Bend, IN.

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Pondhouse	PEF52068	4381214	8/5/2019	3:20 PM
Raw Water Plant Sample Port	PEF52069	4381215	8/5/2019	11:54 AM
Raw Tank UF Feed	PEF52070	4381216	8/5/2019	10:57 AM
UF1 Permeate	PEF52071	4381217	8/5/2019	11:00 AM
UF2 Permeate	PEF52072	4381218	8/5/2019	2:45 PM
Potable Tanks Combined	PEF52073	4381219	8/5/2019	10:55 AM
Potable Fill 4	PEF52074	4381220	8/5/2019	1:52 PM
Potable Truck 19518	PEF52075	4381221	8/5/2019	11:10 AM
Potable Truck 19520	PEF52076	4381222	8/5/2019	1:55 PM
Potable Truck 7-21	PEF52077	4381223	8/5/2019	2:35 PM
Field Blank (near NF Unit)	PEF52078	4381224	8/5/2019	10:50 AM

Jerry Pollen
Pollen Environmental, LLC

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-18-12
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 03/14/2019

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 461311
Priority: Standard Written
Status: Final
PWS ID: AK2331184
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4381214	PEF52068/Raw Water Pondhouse	537	08/05/19 15:20	Client	08/09/19 08:30
4381215	PEF52069/Raw Plant Sample Port	537	08/05/19 11:54	Client	08/09/19 08:30
4381216	PEF52070/Raw Tank UF Feed	537	08/05/19 10:57	Client	08/09/19 08:30
4381217	PEF52071/UF 1 Permeate	537	08/05/19 11:00	Client	08/09/19 08:30
4381218	PEF52072/UF 2 Permeate	537	08/05/19 14:45	Client	08/09/19 08:30
4381219	PEF52073/Potable Tanks Comb	537	08/05/19 10:55	Client	08/09/19 08:30
4381220	PEF52074Potable Fill 4	537	08/05/19 13:52	Client	08/09/19 08:30
4381221	PEF52075/Potable Truck 19518	537	08/05/19 11:10	Client	08/09/19 08:30
4381222	PEF52076/Potable Truck 19520	537	08/05/19 13:55	Client	08/09/19 08:30
4381223	PEF52077/Potable Truck 7-21	537	08/05/19 14:35	Client	08/09/19 08:30
4381224	PEF52078/Field Blank	537	08/05/19 10:50	Client	08/09/19 08:30

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Traci Chlebowski ASM — 08/19/2019

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 461311

Sampling Point: PEF52068/Raw Water Pondhouse PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**2.1**	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:15	4381214

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52069/Raw Plant Sample Port PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**2.9**	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:28	4381215

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52070/Raw Tank UF Feed PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**2.2**	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:41	4381216

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52071/UF 1 Permeate PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**7.5**	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/13/19 07:58	08/15/19 08:54	4381217

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52072/UF 2 Permeate PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**8.2**	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:01	4381218

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52073/Potable Tanks Comb PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.7**	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:14	4381219

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52074Potable Fill 4 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.9**	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:27	4381220

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52075/Potable Truck 19518 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.6**	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:40	4381221

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52076/Potable Truck 19520 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**4.0**	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 18:53	4381222

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF52077/Potable Truck 7-21 PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	**3.8**	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/14/19 08:04	08/15/19 19:06	4381223

$ The state of origin does not offer certification for this parameter.

Client Name: Pollen Environmental LLC Report #: 461311

Sampling Point: PEF52078/Field Blank PWS ID: AK2331184

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
375-73-5	Perfluorobutanesulfonic acid (PFBS) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
335-76-2	Perfluorodecanoic acid (PFDA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
375-85-9	Perfluoroheptanoic acid (PFHpA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
355-46-4	Perfluorohexanesulfonic acid (PFHxS) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
307-24-4	Perfluorohexanoic acid (PFHxA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
307-55-1	Perfluorododecanoic acid (PFDoA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
375-95-1	Perfluorononanoic acid (PFNA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
335-67-1	Perfluorooctanoic acid (PFOA)	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537	---	2.0	< 2.0	ng/L	08/15/19 08:01	08/17/19 03:51	4381224

$ The state of origin does not offer certification for this parameter.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

3784 34

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Jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

2019 PFC
461311

CLIENT INFORMATION			
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Chuck**		Page 1 of 1
Address: **Pouch 340044**			
City, State Zip: **Prudhoe Bay, AK 99734**	PWS # **331184** - special, non-routine		
Phone: **(907) 659-9060**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **(907) 659-9061**	√ Yes ☐ No		
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		☐ RUSH ____ day(s)
Project Name: **NSB SA-10 WTP PFAS Monitoring**	2019-579		
Sampled By: CARL CORNFORTH			

Requested Analysis

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	Perservative Added	PFC's by EPA 537* (Trizma pre set)	Sample Comments
Raw Water Pondhouse	8-5-19	1520	W	PEF52068	438214	1	X	CLA	Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Water Plant Sample Port	8-5-19	1154	W	PEF52069	215	1	X	CLA	Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Tank UF Feed	8-5-19	1057	W	PEF52070	216	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
UF 1 Permeate	8-5-19	1100	W	PEF52071	217	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
UF 2 Permeate	8-5-19	1445	W	PEF52072	218	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Tanks Combined	8-5-19	1055	W	PEF52073	219	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Fill 4	8-5-19	1352	W	PEF52074	220	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19518	8-5-19	1110	W	PEF52075	221	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 19520	8-5-19	1355	W	PEF52076	222	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
Potable Truck 7-21	8-5-19	1435	W	PEF52077	223	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP
Field Blank	8-5-19	1050	W	PEF52078	224	1	X	CLA	Facility ID: TP002 Sample Point ID: SPTP002EP

08092019 KD

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 4.2 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

NTL Alaska Temperature on arrival: 3.8 °C *COC Seal:* X *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: * PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
	Ice Services		Jerry Pollen	Pollen Environmental	8-6-19 @ 1415
Jerry Pollen	Pollen Env	8-7-19 @ 1100am			
			KDuw	EEA	8-9-19 0830

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **263297** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4384150		OS	FL	08/15/2019 02:49	081519M537a-FL-PFC-Ext.mdb
LRB	4384167		RW	FL	08/15/2019 03:15	081519M537a-FL-PFC-Ext.mdb
FBM	4383156		RW	FL	08/15/2019 03:41	081519M537a-FL-PFC-Ext.mdb
CCM	4384151		OS	FL	08/15/2019 06:44	081519M537a-FL-PFC-Ext.mdb
FS	4381214	PEF52068/Raw Water Pondhouse	DW	FL	08/15/2019 08:15	081519M537a-FL-PFC-Ext.mdb
FS	4381215	PEF52069/Raw Plant Sample Port	DW	FL	08/15/2019 08:28	081519M537a-FL-PFC-Ext.mdb
FS	4381216	PEF52070/Raw Tank UF Feed	DW	FL	08/15/2019 08:41	081519M537a-FL-PFC-Ext.mdb
FS	4381217	PEF52071/UF 1 Permeate	DW	FL	08/15/2019 08:54	081519M537a-FL-PFC-Ext.mdb
CCH	4384152		OS	FL	08/15/2019 11:55	081519M537a-FL-PFC-Ext.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-NMeFOSAA-d3	537	N/A	---		902499.00	902499	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	IS-PFOA-13C2	537	N/A	---		1472550.00	1472550	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	IS-PFOS-13C4	537	N/A	---		356546.00	356546	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	IS-GenX-13C3	537	N/A	---		134682.00	134682	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	SS-NEtFOSAA-d5	537	N/A	---		210.8830	200	ng/L	105	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	SS-PFDA-13C2	537	N/A	---		100.6050	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	SS-PFHxA-13C2	537	N/A	---		49.1698	50.0	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		2.0213	2.0	ng/L	101	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		2.0319	2.0	ng/L	102	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9442	2.0	ng/L	97	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		2.0508	2.0	ng/L	103	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		2.0160	2.0	ng/L	101	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		2.1910	2.0	ng/L	110	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		2.2096	2.0	ng/L	110	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		2.1458	2.0	ng/L	107	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		2.1927	2.0	ng/L	110	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		2.0326	2.0	ng/L	102	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		2.0989	2.0	ng/L	105	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		2.1597	2.0	ng/L	108	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 02:49	4384150
LRB	IS-NMeFOSAA-d3	537	N/A	---		1045980.00	902499	ng/L	116	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	IS-PFOA-13C2	537	N/A	---		1784120.00	1472550	ng/L	121	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	IS-PFOS-13C4	537	N/A	---		426258.00	356546	ng/L	120	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	IS-GenX-13C3	537	N/A	---		162040.00	134682	ng/L	120	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	SS-NEtFOSAA-d5	537	N/A	---		172.4440	200	ng/L	95	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	SS-PFDA-13C2	537	N/A	---		84.7529	100	ng/L	93	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	SS-PFHxA-13C2	537	N/A	---		42.2200	50.0	ng/L	93	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 03:15	4384167
FBM	IS-NMeFOSAA-d3	537	N/A	---		1057840.00	902499	ng/L	117	50 - 150	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	IS-PFOA-13C2	537	N/A	---		1719420.00	1472550	ng/L	117	50 - 150	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBM	IS-PFOS-13C4	537	N/A	---		423854.00	356546	ng/L	119	50 - 150	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	IS-GenX-13C3	537	N/A	---		156323.00	134682	ng/L	116	50 - 150	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	SS-NEtFOSAA-d5	537	N/A	---		180.3250	200	ng/L	90	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	SS-PFDA-13C2	537	N/A	---		95.4196	100	ng/L	95	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	SS-PFHxA-13C2	537	N/A	---		48.4293	50.0	ng/L	97	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		91.3153	100	ng/L	91	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorodecanoic acid (PFDA)	537	2.0	---		87.4023	100	ng/L	87	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		89.4289	100	ng/L	89	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		92.1733	100	ng/L	92	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		86.3962	100	ng/L	86	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		85.6656	100	ng/L	86	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		82.3658	100	ng/L	82	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorononanoic acid (PFNA)	537	2.0	---		90.6097	100	ng/L	91	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		89.7885	100	ng/L	90	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorooctanoic acid (PFOA)	537	2.0	---		89.3812	100	ng/L	89	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		83.0035	100	ng/L	83	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
FBM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		87.5775	100	ng/L	88	70 - 130	---	---	1.0	08/13/2019 07:58	08/15/2019 03:41	4383156
CCM	IS-NMeFOSAA-d3	537	N/A	---		890230.00	890230	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	IS-PFOA-13C2	537	N/A	---		1397460.00	1397460	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	IS-PFOS-13C4	537	N/A	---		343908.00	343908	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	IS-GenX-13C3	537	N/A	---		129552.00	129552	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	SS-NEtFOSAA-d5	537	N/A	---		199.4620	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	SS-PFDA-13C2	537	N/A	---		98.8127	100	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	SS-PFHxA-13C2	537	N/A	---		49.6082	50.0	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		100.9520	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		101.7980	100	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		98.8754	100	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		102.1760	100	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		98.2150	100	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		100.9520	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		99.5027	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		103.0370	100	ng/L	103	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		101.0560	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		100.4050	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		99.4637	100	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		101.5680	100	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 06:44	4384151
FS	IS-NMeFOSAA-d3	537	N/A	PEF52068/Raw Water Pondhouse		1019440.00	890230	ng/L	115	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	IS-PFOA-13C2	537	N/A	PEF52068/Raw Water Pondhouse		1625100.00	1397460	ng/L	116	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	IS-PFOS-13C4	537	N/A	PEF52068/Raw Water Pondhouse		386529.00	343908	ng/L	112	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	IS-GenX-13C3	537	N/A	PEF52068/Raw Water Pondhouse		142269.00	129552	ng/L	110	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	SS-NEtFOSAA-d5	537	N/A	PEF52068/Raw Water Pondhouse		174.9720	200	ng/L	96	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	SS-PFDA-13C2	537	N/A	PEF52068/Raw Water Pondhouse		87.9693	100	ng/L	97	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	SS-PFHxA-13C2	537	N/A	PEF52068/Raw Water Pondhouse		45.7770	50.0	ng/L	101	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52068/Raw Water Pondhouse		2.1		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52068/Raw Water Pondhouse	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:15	4381214
FS	IS-NMeFOSAA-d3	537	N/A	PEF52069/Raw Plant Sample Port		1058610.00	890230	ng/L	119	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	IS-PFOA-13C2	537	N/A	PEF52069/Raw Plant Sample Port		1687230.00	1397460	ng/L	121	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	IS-PFOS-13C4	537	N/A	PEF52069/Raw Plant Sample Port		404817.00	343908	ng/L	118	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	IS-GenX-13C3	537	N/A	PEF52069/Raw Plant Sample Port		148984.00	129552	ng/L	115	50 - 150	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	SS-NEtFOSAA-d5	537	N/A	PEF52069/Raw Plant Sample Port		163.5480	200	ng/L	90	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	SS-PFDA-13C2	537	N/A	PEF52069/Raw Plant Sample Port		83.9939	100	ng/L	92	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	SS-PFHxA-13C2	537	N/A	PEF52069/Raw Plant Sample Port		44.7790	50.0	ng/L	98	70 - 130	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52069/Raw Plant Sample Port		2.9		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52069/Raw Plant Sample Port	<	2.0		ng/L	---	---	---	---	0.91	08/13/2019 07:58	08/15/2019 08:28	4381215
FS	IS-NMeFOSAA-d3	537	N/A	PEF52070/Raw Tank UF Feed		1043980.00	890230	ng/L	117	50 - 150	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	IS-PFOA-13C2	537	N/A	PEF52070/Raw Tank UF Feed		1674490.00	1397460	ng/L	120	50 - 150	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	IS-PFOS-13C4	537	N/A	PEF52070/Raw Tank UF Feed		398958.00	343908	ng/L	116	50 - 150	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	IS-GenX-13C3	537	N/A	PEF52070/Raw Tank UF Feed		146631.00	129552	ng/L	113	50 - 150	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	SS-NEtFOSAA-d5	537	N/A	PEF52070/Raw Tank UF Feed		168.1500	200	ng/L	91	70 - 130	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	SS-PFDA-13C2	537	N/A	PEF52070/Raw Tank UF Feed		86.0974	100	ng/L	94	70 - 130	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	SS-PFHxA-13C2	537	N/A	PEF52070/Raw Tank UF Feed		45.1526	50.0	ng/L	98	70 - 130	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52070/Raw Tank UF Feed		2.2		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52070/Raw Tank UF Feed	<	2.0		ng/L	---	---	---	---	0.92	08/13/2019 07:58	08/15/2019 08:41	4381216
FS	IS-NMeFOSAA-d3	537	N/A	PEF52071/UF 1 Permeate		871104.00	890230	ng/L	98	50 - 150	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	IS-PFOA-13C2	537	N/A	PEF52071/UF 1 Permeate		1672190.00	1397460	ng/L	120	50 - 150	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	IS-PFOS-13C4	537	N/A	PEF52071/UF 1 Permeate		396608.00	343908	ng/L	115	50 - 150	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	IS-GenX-13C3	537	N/A	PEF52071/UF 1 Permeate		152711.00	129552	ng/L	118	50 - 150	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	SS-NEtFOSAA-d5	537	N/A	PEF52071/UF 1 Permeate		191.8420	200	ng/L	109	70 - 130	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	SS-PFDA-13C2	537	N/A	PEF52071/UF 1 Permeate		81.1611	100	ng/L	92	70 - 130	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	SS-PFHxA-13C2	537	N/A	PEF52071/UF 1 Permeate		43.6902	50.0	ng/L	99	70 - 130	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52071/UF 1 Permeate		7.5		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52071/UF 1 Permeate	<	2.0		ng/L	---	---	---	---	0.88	08/13/2019 07:58	08/15/2019 08:54	4381217
CCH	IS-NMeFOSAA-d3	537	N/A	---		892597.00	892597	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	IS-PFOA-13C2	537	N/A	---		1305350.00	1305350	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	IS-PFOS-13C4	537	N/A	---		324800.00	324800	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	IS-GenX-13C3	537	N/A	---		113733.00	113733	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	SS-NEtFOSAA-d5	537	N/A	---		190.2840	200	ng/L	95	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	SS-PFDA-13C2	537	N/A	---		98.4055	100	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	SS-PFHxA-13C2	537	N/A	---		50.0396	50.0	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		200.0000	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorodecanoic acid (PFDA)	537	2.0	---		202.1930	200	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		196.3220	200	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		200.9900	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		193.9800	200	ng/L	97	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		198.7400	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		208.8820	200	ng/L	104	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorononanoic acid (PFNA)	537	2.0	---		196.9960	200	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		199.2700	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorooctanoic acid (PFOA)	537	2.0	---		197.7610	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		198.4100	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152
CCH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		198.9670	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 11:55	4384152

Eurofins Eaton Analytical
Run Log

Run ID: **263304** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4384847		OS	FL	08/15/2019 13:39	081519M537b-FL-PFC14.mdb
LRB	4384830		RW	FL	08/15/2019 14:06	081519M537b-FL-PFC14.mdb
FBH	4384837		RW	FL	08/15/2019 14:32	081519M537b-FL-PFC14.mdb
CCM	4384849		OS	FL	08/15/2019 17:22	081519M537b-FL-PFC14.mdb
FS	4381218	PEF52072/UF 2 Permeate	DW	FL	08/15/2019 18:01	081519M537b-FL-PFC14.mdb
FS	4381219	PEF52073/Potable Tanks Comb	DW	FL	08/15/2019 18:14	081519M537b-FL-PFC14.mdb
FS	4381220	PEF52074Potable Fill 4	DW	FL	08/15/2019 18:27	081519M537b-FL-PFC14.mdb
FS	4381221	PEF52075/Potable Truck 19518	DW	FL	08/15/2019 18:40	081519M537b-FL-PFC14.mdb
FS	4381222	PEF52076/Potable Truck 19520	DW	FL	08/15/2019 18:53	081519M537b-FL-PFC14.mdb
FS	4381223	PEF52077/Potable Truck 7-21	DW	FL	08/15/2019 19:06	081519M537b-FL-PFC14.mdb
CCH	4384850		OS	FL	08/15/2019 21:04	081519M537b-FL-PFC14.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-NMeFOSAA-d3	537	N/A	---		939306.00	939306	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	IS-PFOA-13C2	537	N/A	---		1503700.00	1503700	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	IS-PFOS-13C4	537	N/A	---		343475.00	343475	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	SS-NEtFOSAA-d5	537	N/A	---		209.2840	200	ng/L	105	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	SS-PFDA-13C2	537	N/A	---		95.6177	100	ng/L	96	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	SS-PFHxA-13C2	537	N/A	---		48.6220	50.0	ng/L	97	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		1.9870	2.0	ng/L	99	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		2.0664	2.0	ng/L	103	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9602	2.0	ng/L	98	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		2.0182	2.0	ng/L	101	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		2.0234	2.0	ng/L	101	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		2.0730	2.0	ng/L	104	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		2.1480	2.0	ng/L	107	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		2.1166	2.0	ng/L	106	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		2.1809	2.0	ng/L	109	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		2.0497	2.0	ng/L	102	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		2.0704	2.0	ng/L	104	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		2.1078	2.0	ng/L	105	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 13:39	4384847
LRB	IS-NMeFOSAA-d3	537	N/A	---		940353.00	939306	ng/L	100	50 - 150	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	IS-PFOA-13C2	537	N/A	---		1528090.00	1503700	ng/L	102	50 - 150	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	IS-PFOS-13C4	537	N/A	---		345818.00	343475	ng/L	101	50 - 150	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	SS-NEtFOSAA-d5	537	N/A	---		170.3140	200	ng/L	96	70 - 130	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	SS-PFDA-13C2	537	N/A	---		81.2056	100	ng/L	91	70 - 130	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	SS-PFHxA-13C2	537	N/A	---		42.6465	50.0	ng/L	96	70 - 130	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.89	08/14/2019 08:04	08/15/2019 14:06	4384830
FBH	IS-NMeFOSAA-d3	537	N/A	---		943162.00	939306	ng/L	100	50 - 150	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	IS-PFOA-13C2	537	N/A	---		1452850.00	1503700	ng/L	97	50 - 150	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	IS-PFOS-13C4	537	N/A	---		345955.00	343475	ng/L	101	50 - 150	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	SS-NEtFOSAA-d5	537	N/A	---		175.8090	200	ng/L	88	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBH	SS-PFDA-13C2	537	N/A	---		96.6181	100	ng/L	97	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	SS-PFHxA-13C2	537	N/A	---		50.7343	50.0	ng/L	101	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		183.9620	200	ng/L	92	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorodecanoic acid (PFDA)	537	2.0	---		175.9250	200	ng/L	88	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		187.4830	200	ng/L	94	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		184.7560	200	ng/L	92	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		181.1260	200	ng/L	91	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		169.1710	200	ng/L	85	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		168.8620	200	ng/L	84	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorononanoic acid (PFNA)	537	2.0	---		179.0330	200	ng/L	90	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		181.7900	200	ng/L	91	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorooctanoic acid (PFOA)	537	2.0	---		183.1800	200	ng/L	92	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		167.9890	200	ng/L	84	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
FBH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		172.4690	200	ng/L	86	70 - 130	---	---	1.0	08/14/2019 08:04	08/15/2019 14:32	4384837
CCM	IS-NMeFOSAA-d3	537	N/A	---		932157.00	932157	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	IS-PFOA-13C2	537	N/A	---		1446790.00	1446790	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	IS-PFOS-13C4	537	N/A	---		336519.00	336519	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	SS-NEtFOSAA-d5	537	N/A	---		202.4500	200	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	SS-PFDA-13C2	537	N/A	---		97.9884	100	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	SS-PFHxA-13C2	537	N/A	---		49.6605	50.0	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		99.9543	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		98.5849	100	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		100.0140	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		100.5720	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		97.5429	100	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		101.5050	100	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		99.6930	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		100.4570	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		99.2208	100	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		100.2550	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		99.7932	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		100.9500	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 17:22	4384849
FS	IS-NMeFOSAA-d3	537	N/A	PEF52072/UF 2 Permeate		830215.00	932157	ng/L	89	50 - 150	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	IS-PFOA-13C2	537	N/A	PEF52072/UF 2 Permeate		1601400.00	1446790	ng/L	111	50 - 150	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	IS-PFOS-13C4	537	N/A	PEF52072/UF 2 Permeate		355934.00	336519	ng/L	106	50 - 150	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	SS-NEtFOSAA-d5	537	N/A	PEF52072/UF 2 Permeate		202.0770	200	ng/L	110	70 - 130	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	SS-PFDA-13C2	537	N/A	PEF52072/UF 2 Permeate		82.0140	100	ng/L	89	70 - 130	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	SS-PFHxA-13C2	537	N/A	PEF52072/UF 2 Permeate		44.8793	50.0	ng/L	98	70 - 130	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52072/UF 2 Permeate		8.2		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52072/UF 2 Permeate	<	2.0		ng/L	---	---	---	---	0.92	08/14/2019 08:04	08/15/2019 18:01	4381218
FS	IS-NMeFOSAA-d3	537	N/A	PEF52073/Potable Tanks Comb		842204.00	932157	ng/L	90	50 - 150	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	IS-PFOA-13C2	537	N/A	PEF52073/Potable Tanks Comb		1494160.00	1446790	ng/L	103	50 - 150	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	IS-PFOS-13C4	537	N/A	PEF52073/Potable Tanks Comb		335058.00	336519	ng/L	100	50 - 150	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	SS-NEtFOSAA-d5	537	N/A	PEF52073/Potable Tanks Comb		199.8230	200	ng/L	107	70 - 130	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	SS-PFDA-13C2	537	N/A	PEF52073/Potable Tanks Comb		86.7963	100	ng/L	93	70 - 130	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	SS-PFHxA-13C2	537	N/A	PEF52073/Potable Tanks Comb		47.0296	50.0	ng/L	101	70 - 130	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52073/Potable Tanks Comb		3.7		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52073/Potable Tanks Comb	<	2.0		ng/L	---	---	---	---	0.93	08/14/2019 08:04	08/15/2019 18:14	4381219
FS	IS-NMeFOSAA-d3	537	N/A	PEF52074Potable Fill 4		794325.00	932157	ng/L	85	50 - 150	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	IS-PFOA-13C2	537	N/A	PEF52074Potable Fill 4		1447040.00	1446790	ng/L	100	50 - 150	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	IS-PFOS-13C4	537	N/A	PEF52074Potable Fill 4		320486.00	336519	ng/L	95	50 - 150	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	SS-NEtFOSAA-d5	537	N/A	PEF52074Potable Fill 4		192.4150	200	ng/L	107	70 - 130	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	SS-PFDA-13C2	537	N/A	PEF52074Potable Fill 4		83.4117	100	ng/L	93	70 - 130	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	SS-PFHxA-13C2	537	N/A	PEF52074Potable Fill 4		44.2978	50.0	ng/L	98	70 - 130	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52074Potable Fill 4		3.9		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52074Potable Fill 4	<	2.0		ng/L	---	---	---	---	0.9	08/14/2019 08:04	08/15/2019 18:27	4381220
FS	IS-NMeFOSAA-d3	537	N/A	PEF52075/Potable Truck 19518		882425.00	932157	ng/L	95	50 - 150	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	IS-PFOA-13C2	537	N/A	PEF52075/Potable Truck 19518		1553020.00	1446790	ng/L	107	50 - 150	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	IS-PFOS-13C4	537	N/A	PEF52075/Potable Truck 19518		351846.00	336519	ng/L	105	50 - 150	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	SS-NEtFOSAA-d5	537	N/A	PEF52075/Potable Truck 19518		191.3580	200	ng/L	105	70 - 130	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	SS-PFDA-13C2	537	N/A	PEF52075/Potable Truck 19518		84.2135	100	ng/L	93	70 - 130	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	SS-PFHxA-13C2	537	N/A	PEF52075/Potable Truck 19518		45.6423	50.0	ng/L	100	70 - 130	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52075/Potable Truck 19518		3.6		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52075/Potable Truck 19518	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:40	4381221
FS	IS-NMeFOSAA-d3	537	N/A	PEF52076/Potable Truck 19520		862880.00	932157	ng/L	93	50 - 150	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	IS-PFOA-13C2	537	N/A	PEF52076/Potable Truck 19520		1552480.00	1446790	ng/L	107	50 - 150	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	IS-PFOS-13C4	537	N/A	PEF52076/Potable Truck 19520		348236.00	336519	ng/L	103	50 - 150	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	SS-NEtFOSAA-d5	537	N/A	PEF52076/Potable Truck 19520		199.2850	200	ng/L	109	70 - 130	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	SS-PFDA-13C2	537	N/A	PEF52076/Potable Truck 19520		86.7885	100	ng/L	95	70 - 130	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	SS-PFHxA-13C2	537	N/A	PEF52076/Potable Truck 19520		46.8637	50.0	ng/L	103	70 - 130	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52076/Potable Truck 19520		4.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52076/Potable Truck 19520	<	2.0		ng/L	---	---	---	---	0.91	08/14/2019 08:04	08/15/2019 18:53	4381222
FS	IS-NMeFOSAA-d3	537	N/A	PEF52077/Potable Truck 7-21		842631.00	932157	ng/L	90	50 - 150	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOA-13C2	537	N/A	PEF52077/Potable Truck 7-21		1528730.00	1446790	ng/L	106	50 - 150	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	IS-PFOS-13C4	537	N/A	PEF52077/Potable Truck 7-21		342439.00	336519	ng/L	102	50 - 150	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	SS-NEtFOSAA-d5	537	N/A	PEF52077/Potable Truck 7-21		191.1430	200	ng/L	109	70 - 130	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	SS-PFDA-13C2	537	N/A	PEF52077/Potable Truck 7-21		82.1576	100	ng/L	93	70 - 130	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	SS-PFHxA-13C2	537	N/A	PEF52077/Potable Truck 7-21		45.3706	50.0	ng/L	103	70 - 130	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorononanoic acid (PFNA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52077/Potable Truck 7-21		3.8		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
FS	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52077/Potable Truck 7-21	<	2.0		ng/L	---	---	---	---	0.88	08/14/2019 08:04	08/15/2019 19:06	4381223
CCH	IS-NMeFOSAA-d3	537	N/A	---		898199.00	898199	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	IS-PFOA-13C2	537	N/A	---		1345840.00	1345840	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	IS-PFOS-13C4	537	N/A	---		327029.00	327029	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	SS-NEtFOSAA-d5	537	N/A	---		191.9490	200	ng/L	96	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	SS-PFDA-13C2	537	N/A	---		98.3955	100	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	SS-PFHxA-13C2	537	N/A	---		51.8020	50.0	ng/L	104	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		197.1400	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorodecanoic acid (PFDA)	537	2.0	---		198.6530	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		201.0450	200	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		196.7000	200	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		199.3600	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		200.1050	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		211.0720	200	ng/L	106	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorononanoic acid (PFNA)	537	2.0	---		197.5880	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		198.7300	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorooctanoic acid (PFOA)	537	2.0	---		197.6870	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		197.0400	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850
CCH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		198.8480	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/15/2019 21:04	4384850

Eurofins Eaton Analytical
Run Log

Run ID: **263315** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4386880		OS	FL	08/16/2019 22:50	081619M537b-FL-PFC12.mdb
LRB	4386883		RW	FL	08/16/2019 23:16	081619M537b-FL-PFC12.mdb
FBM	4386884		RW	FL	08/16/2019 23:42	081619M537b-FL-PFC12.mdb
CCM	4386881		OS	FL	08/17/2019 02:58	081619M537b-FL-PFC12.mdb
FTB	4381224	PEF52078/Field Blank	RW	FL	08/17/2019 03:51	081619M537b-FL-PFC12.mdb
CCH	4386882		OS	FL	08/17/2019 06:27	081619M537b-FL-PFC12.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		1240890.00	1240890	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	IS-PFOS-13C4	537	N/A	---		327507.00	327507	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	SS-PFDA-13C2	537	N/A	---		98.0967	100	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	SS-PFHxA-13C2	537	N/A	---		49.9392	50.0	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		1.9867	2.0	ng/L	99	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		2.0864	2.0	ng/L	104	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		1.9667	2.0	ng/L	98	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		1.9350	2.0	ng/L	97	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		2.0414	2.0	ng/L	102	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		2.1318	2.0	ng/L	107	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		2.1193	2.0	ng/L	106	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		2.0750	2.0	ng/L	104	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		2.1835	2.0	ng/L	109	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		2.0051	2.0	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		2.0638	2.0	ng/L	103	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		2.1305	2.0	ng/L	107	50 - 150	---	---	1.0	08/08/2019 09:15	08/16/2019 22:50	4386880
LRB	IS-PFOA-13C2	537	N/A	---		1307540.00	1240890	ng/L	105	50 - 150	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	IS-PFOS-13C4	537	N/A	---		350928.00	327507	ng/L	107	50 - 150	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	SS-PFDA-13C2	537	N/A	---		102.3220	100	ng/L	111	70 - 130	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	SS-PFHxA-13C2	537	N/A	---		51.7400	50.0	ng/L	112	70 - 130	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	08/15/2019 08:01	08/16/2019 23:16	4386883
FBM	IS-PFOA-13C2	537	N/A	---		1488390.00	1240890	ng/L	120	50 - 150	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	IS-PFOS-13C4	537	N/A	---		401137.00	327507	ng/L	122	50 - 150	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	SS-PFDA-13C2	537	N/A	---		96.7323	100	ng/L	97	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	SS-PFHxA-13C2	537	N/A	---		48.2780	50.0	ng/L	97	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		87.1883	100	ng/L	87	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorodecanoic acid (PFDA)	537	2.0	---		84.5425	100	ng/L	85	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		83.5586	100	ng/L	84	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		86.6414	100	ng/L	87	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		83.2335	100	ng/L	83	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		85.6100	100	ng/L	86	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		81.0733	100	ng/L	81	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorononanoic acid (PFNA)	537	2.0	---		86.5919	100	ng/L	87	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		85.1268	100	ng/L	85	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorooctanoic acid (PFOA)	537	2.0	---		85.3983	100	ng/L	85	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		84.1157	100	ng/L	84	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
FBM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		84.5629	100	ng/L	85	70 - 130	---	---	1.0	08/15/2019 08:01	08/16/2019 23:42	4386884
CCM	IS-PFOA-13C2	537	N/A	---		1153010.00	1153010	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	IS-PFOS-13C4	537	N/A	---		322078.00	322078	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	SS-PFDA-13C2	537	N/A	---		104.3850	100	ng/L	104	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	SS-PFHxA-13C2	537	N/A	---		50.6021	50.0	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		99.6809	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		101.6570	100	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		101.2660	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		99.0154	100	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		100.8120	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		103.2530	100	ng/L	103	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		100.6290	100	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		103.2890	100	ng/L	103	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		99.4437	100	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		100.1930	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		103.0360	100	ng/L	103	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		102.1710	100	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 02:58	4386881
FTB	IS-PFOA-13C2	537	N/A	PEF52078/Field Blank		1515840.00	1153010	ng/L	131	50 - 150	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	IS-PFOS-13C4	537	N/A	PEF52078/Field Blank		412918.00	322078	ng/L	128	50 - 150	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	SS-PFDA-13C2	537	N/A	PEF52078/Field Blank		83.6416	100	ng/L	95	70 - 130	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	SS-PFHxA-13C2	537	N/A	PEF52078/Field Blank		42.0517	50.0	ng/L	96	70 - 130	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorodecanoic acid (PFDA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluoroheptanoic acid (PFHpA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorohexanoic acid (PFHxA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorododecanoic acid (PFDoA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorononanoic acid (PFNA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorooctanoic acid (PFOA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
FTB	Perfluoroundecanoic acid (PFUnA)	537	2.0	PEF52078/Field Blank	<	2.0		ng/L	---	---	---	---	0.88	08/15/2019 08:01	08/17/2019 03:51	4381224
CCH	IS-PFOA-13C2	537	N/A	---		1079380.00	1079380	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	IS-PFOS-13C4	537	N/A	---		311407.00	311407	ng/L	100	50 - 150	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	SS-PFDA-13C2	537	N/A	---		100.1620	100	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	SS-PFHxA-13C2	537	N/A	---		50.8725	50.0	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		196.1390	200	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorodecanoic acid (PFDA)	537	2.0	---		201.2050	200	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		200.3660	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		195.1090	200	ng/L	98	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		200.2260	200	ng/L	100	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		201.2800	200	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		201.8960	200	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorononanoic acid (PFNA)	537	2.0	---		194.9380	200	ng/L	97	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		198.7180	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorooctanoic acid (PFOA)	537	2.0	---		197.8740	200	ng/L	99	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		203.2930	200	ng/L	102	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882
CCH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		202.5290	200	ng/L	101	70 - 130	---	---	1.0	08/08/2019 09:15	08/17/2019 06:27	4386882

Eurofins Eaton Analytical
Run Log

Run ID: **263320** Method: **537**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4388190		OS	FL	08/17/2019 11:53	081719M537a-FL-PFC12.mdb
LRB	4388876		RW	FL	08/17/2019 12:19	081719M537a-FL-PFC12.mdb
FBH	4388877		RW	FL	08/17/2019 12:45	081719M537a-FL-PFC12.mdb
CCM	4388191		OS	FL	08/17/2019 15:22	081719M537a-FL-PFC12.mdb
CCH	4388192		OS	FL	08/17/2019 17:59	081719M537a-FL-PFC12.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	IS-PFOA-13C2	537	N/A	---		1247660.00	1247660	ng/L	100	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	IS-PFOS-13C4	537	N/A	---		316463.00	316463	ng/L	100	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	SS-PFDA-13C2	537	N/A	---		99.6059	100	ng/L	100	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	SS-PFHxA-13C2	537	N/A	---		48.4614	50.0	ng/L	97	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		2.0412	2.0	ng/L	102	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorodecanoic acid (PFDA)	537	2.0	---		2.1411	2.0	ng/L	107	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		2.0716	2.0	ng/L	104	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		2.1133	2.0	ng/L	106	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorohexanoic acid (PFHxA)	537	2.0	---		2.0737	2.0	ng/L	104	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorododecanoic acid (PFDoA)	537	2.0	---		2.1558	2.0	ng/L	108	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		2.2091	2.0	ng/L	110	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorononanoic acid (PFNA)	537	2.0	---		2.1935	2.0	ng/L	110	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		2.2634	2.0	ng/L	113	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorooctanoic acid (PFOA)	537	2.0	---		2.1087	2.0	ng/L	105	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		2.1803	2.0	ng/L	109	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
CCL	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		2.1817	2.0	ng/L	109	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 11:53	4388190
LRB	IS-PFOA-13C2	537	N/A	---		1248700.00	1247660	ng/L	100	50 - 150	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	IS-PFOS-13C4	537	N/A	---		311907.00	316463	ng/L	99	50 - 150	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	SS-PFDA-13C2	537	N/A	---		82.8778	100	ng/L	94	70 - 130	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	SS-PFHxA-13C2	537	N/A	---		40.9474	50.0	ng/L	93	70 - 130	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorodecanoic acid (PFDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluoroheptanoic acid (PFHpA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorohexanoic acid (PFHxA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorododecanoic acid (PFDoA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorononanoic acid (PFNA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorooctanoic acid (PFOA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
LRB	Perfluoroundecanoic acid (PFUnA)	537	2.0	---	<	2.0		ng/L	---	---	---	---	0.88	08/16/2019 06:50	08/17/2019 12:19	4388876
FBH	IS-PFOA-13C2	537	N/A	---		1150620.00	1247660	ng/L	92	50 - 150	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	IS-PFOS-13C4	537	N/A	---		297392.00	316463	ng/L	94	50 - 150	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	SS-PFDA-13C2	537	N/A	---		98.3179	100	ng/L	98	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	SS-PFHxA-13C2	537	N/A	---		48.2653	50.0	ng/L	97	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		210.9720	200	ng/L	105	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorodecanoic acid (PFDA)	537	2.0	---		203.6630	200	ng/L	102	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		202.1590	200	ng/L	101	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		207.8420	200	ng/L	104	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		201.0050	200	ng/L	101	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		203.0350	200	ng/L	102	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		194.0040	200	ng/L	97	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorononanoic acid (PFNA)	537	2.0	---		206.8160	200	ng/L	103	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		209.2630	200	ng/L	105	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorooctanoic acid (PFOA)	537	2.0	---		205.0130	200	ng/L	103	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		200.4270	200	ng/L	100	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
FBH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		196.6660	200	ng/L	98	70 - 130	---	---	1.0	08/16/2019 06:50	08/17/2019 12:45	4388877
CCM	IS-PFOA-13C2	537	N/A	---		1186270.00	1186270	ng/L	100	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	IS-PFOS-13C4	537	N/A	---		304731.00	304731	ng/L	100	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	SS-PFDA-13C2	537	N/A	---		100.4050	100	ng/L	100	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	SS-PFHxA-13C2	537	N/A	---		49.3384	50.0	ng/L	99	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		101.9790	100	ng/L	102	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorodecanoic acid (PFDA)	537	2.0	---		100.5040	100	ng/L	101	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		102.6660	100	ng/L	103	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		103.8500	100	ng/L	104	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorohexanoic acid (PFHxA)	537	2.0	---		100.0550	100	ng/L	100	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorododecanoic acid (PFDoA)	537	2.0	---		103.1030	100	ng/L	103	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		105.4800	100	ng/L	105	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorononanoic acid (PFNA)	537	2.0	---		104.8340	100	ng/L	105	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		101.5680	100	ng/L	102	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorooctanoic acid (PFOA)	537	2.0	---		102.9700	100	ng/L	103	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		102.8950	100	ng/L	103	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCM	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		103.2710	100	ng/L	103	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 15:22	4388191
CCH	IS-PFOA-13C2	537	N/A	---		1178570.00	1178570	ng/L	100	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	IS-PFOS-13C4	537	N/A	---		299365.00	299365	ng/L	100	50 - 150	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	SS-PFDA-13C2	537	N/A	---		97.2910	100	ng/L	97	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	SS-PFHxA-13C2	537	N/A	---		48.1246	50.0	ng/L	96	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorobutanesulfonic acid (PFBS)	537	2.0	---		182.7960	200	ng/L	91	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorodecanoic acid (PFDA)	537	2.0	---		181.7470	200	ng/L	91	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluoroheptanoic acid (PFHpA)	537	2.0	---		179.4160	200	ng/L	90	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorohexanesulfonic acid (PFHxS)	537	2.0	---		186.6170	200	ng/L	93	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorohexanoic acid (PFHxA)	537	2.0	---		175.4520	200	ng/L	88	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorododecanoic acid (PFDoA)	537	2.0	---		182.0620	200	ng/L	91	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorotetradecanoic acid (PFTeDA)	537	2.0	---		183.2930	200	ng/L	92	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorononanoic acid (PFNA)	537	2.0	---		179.5460	200	ng/L	90	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorooctanesulfonic acid (PFOS)	537	2.0	---		183.8220	200	ng/L	92	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorooctanoic acid (PFOA)	537	2.0	---		183.6180	200	ng/L	92	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluorotridecanoic acid (PFTrDA)	537	2.0	---		179.0000	200	ng/L	90	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192
CCH	Perfluoroundecanoic acid (PFUnA)	537	2.0	---		179.7540	200	ng/L	90	70 - 130	---	---	1.0	08/15/2019 16:15	08/17/2019 17:59	4388192

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FTB	Field Trip Blank		
FBH	Fortified Blank High		
FBM	Fortified Blank Mid		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.
3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC - 2020 Slant PFC's

CLIENT INFORMATION			Requested Analysis	Page 1 of 1
Company: **Ice Services NSB SA-10**	Contact Person: **Rich Helinski**		Perservative Added	
Address: **Pouch 340044**	**PWS ID #**			
City, State Zip: **Prudhoe Bay, AK 99734**				
Phone: **(907) 659-9060**	Send Results to ADEC:			☐ Normal Turnaround
Fax: **(907) 659-9061**	☐ Yes ☒ No			
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:			☐ RUSH ____ day(s)
Project Name: **Slant Well Testing**	2020-667			
Sampled By: Logan Pondelick				

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by epa 537*	Sample Comments
Well 1	8/24/20	0840	W	PEF 61091		1	X	
Well 2	8/24/20	0840	W	PEF 61092		1	X	
Raw Surface Water	8/24/20	0830	W	PEF 61093		1	X	
~~Travel Blank~~			W			1	X	

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 5.0 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
NTL Alaska Temperature on arrival: ____ °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: ***PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA**

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
			Morgan Cagley	Pollen Env	8/25/20 @ 0930
Jerry Bellen	Pollen Env	8-25-20 @ 1100am	Received by:	Company:	Date & Time:
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

Report Date: 9/23/2020
Received Date: 8/25/2020

NSB SA-10 (Ice Services)
Attn: Rich Helinski
Pouch 340044
Prudhoe Bay, AK 99734
Phone: 907-659-9060
Fax: 907-659-9061
rhelinski@iceservices.net

Project Name: Slant Well Testing
Sampled By: Logan Poindexter

Sample ID:	Pollen Env ID:	Eurofins Report:	Date:	Time:
Well 1	PEF61091	4709013	8/24/2020	8:40 AM
Well 2	PEF61092	4709014	8/24/2020	8:40 AM
Raw Surface Water	PEF61093	4709015	8/24/2020	8:30 AM

Jerry Pollen
Pollen Environmental, LLC

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-18-12
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 03/14/2019

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 496073
Priority: Standard Written
Status: Final
PWS ID: Not Supplied
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4709013	PEF61091/Well 1	537.1	08/24/20 08:40	Client	08/26/20 10:00
4709014	PEF61092/Well 2	537.1	08/24/20 08:40	Client	08/26/20 10:00
4709015	PEF61093/Raw Surface Water	537.1	08/24/20 08:30	Client	08/26/20 10:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Traci Chlebowski ASM — 09/08/2020

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 496073

Sampling Point: PEF61091/Well 1 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**24**	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
375-85-9	Perfluoroheptanoic acid (PFHpA)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537.1	---	2.0	**5.2**	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
375-95-1	Perfluorononanoic acid (PFNA)	537.1	---	2.0	**3.4**	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
335-76-2	Perfluorodecanoic acid (PFDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
307-24-4	Perfluorohexanoic acid (PFHxA) $	537.1	---	2.0	**2.9**	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
307-55-1	Perfluorododecanoic acid (PFDoA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:02	4709013

$ The state of origin does not offer certification for this parameter.

Sampling Point: PEF61092/Well 2 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**14**	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
375-85-9	Perfluoroheptanoic acid (PFHpA)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537.1	---	2.0	**4.5**	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
375-95-1	Perfluorononanoic acid (PFNA)	537.1	---	2.0	**2.5**	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
335-76-2	Perfluorodecanoic acid (PFDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
307-24-4	Perfluorohexanoic acid (PFHxA) $	537.1	---	2.0	**2.3**	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
307-55-1	Perfluorododecanoic acid (PFDoA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:15	4709014

$ The state of origin does not offer certification for this parameter.

Client Name: Pollen Environmental LLC Report #: 496073

Sampling Point: PEF61093/Raw Surface Water PWS ID: Not Supplied

EEA Methods

Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**2.4**	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
375-73-5	Perfluorobutanesulfonic acid (PFBS)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
375-85-9	Perfluoroheptanoic acid (PFHpA)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
375-95-1	Perfluorononanoic acid (PFNA)	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
335-76-2	Perfluorodecanoic acid (PFDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
307-24-4	Perfluorohexanoic acid (PFHxA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
307-55-1	Perfluorododecanoic acid (PFDoA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
72629-94-8	Perfluorotridecanoic acid (PFTrDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
2058-94-8	Perfluoroundecanoic acid (PFUnA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015
376-06-7	Perfluorotetradecanoic acid (PFTeDA) $	537.1	---	2.0	< 2.0	ng/L	09/03/20 08:05	09/04/20 16:29	4709015

$ The state of origin does not offer certification for this parameter.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

406081

POLLEN ENVIRONMENTAL, LLC.

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Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC - 2020 Slant PFC's

496073

CLIENT INFORMATION		Requested Analysis	Page 1 of 1
Company: **Ice Services NSB SA-10**	Contact Person: **Rich Helinski**	Perservative Added	
Address: **Pouch 340044**	**PWS ID #**		
City, State Zip: **Prudhoe Bay, AK 99734**			
Phone: **(907) 659-9060**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **(907) 659-9061**	☐ Yes ☒ No		
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		☐ RUSH ____ day(s)
Project Name: **Slant Well Testing**	2020-667		
Sampled By: Logan Pondelick			

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by epa 537*	Sample Comments
Well 1	8/24/20	0840	W	PEF 61091		1	X	4708013
Well 2	8/24/20	0840	W	PEF 61092		1	X	014
Raw Surface Water	8/24/20	0830	W	PEF-61093		1	X	015
								08242020KD
~~Travel Blank~~			W			1	X	

Cross Off on COC by Client

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 5.0 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

NTL Alaska Temperature on arrival: 3.4 °C *COC Seal:* ☒ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments: ***PFBS, PFDA, FPHpA, PFHxS, PFHxA, PFDoA, PFTeDA, PFNA, PFOS, PFOA, PFTrDA, PFUnA**

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
			Morgan Coffey	Pollen Env	8/25/20 @ 0930
Relinquished by:	Company: Pollen Env	Date & Time: 8-25-20@1100am	Received by:	Company:	Date & Time:
Relinquished by:	Company:	Date & Time:	Received by:	Company: FEA	Date & Time: 8-26-2020 1000

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **279286** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4715752		OS	FL	09/04/2020 11:29	090420M537_1a-FL.mdb
LRB	4715759		RW	FL	09/04/2020 11:55	090420M537_1a-FL.mdb
FBL	4715763		RW	FL	09/04/2020 12:08	090420M537_1a-FL.mdb
FBH	4715766		RW	FL	09/04/2020 12:21	090420M537_1a-FL.mdb
CCM	4715755		OS	FL	09/04/2020 15:10	090420M537_1a-FL.mdb
FS	4709013	PEF61091/Well 1	DW	FL	09/04/2020 16:02	090420M537_1a-FL.mdb
FS	4709014	PEF61092/Well 2	DW	FL	09/04/2020 16:15	090420M537_1a-FL.mdb
FS	4709015	PEF61093/Raw Surface Water	DW	FL	09/04/2020 16:29	090420M537_1a-FL.mdb
CCH	4715757		OS	FL	09/04/2020 17:21	090420M537_1a-FL.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		2.0014	2.0	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		2.0622	2.0	ng/L	103	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		808556	808556	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	IS-PFOA-13C2	537.1	N/A	---		1164140	1164140	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	IS-PFOS-13C4	537.1	N/A	---		422506	422506	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		169.0770	160	ng/L	106	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	SS-PFDA-13C2	537.1	N/A	---		40.0526	40.0	ng/L	100	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	SS-PFHxA-13C2	537.1	N/A	---		39.7127	40.0	ng/L	99	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	---		1.9107	2.0	ng/L	96	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	---		2.0637	2.0	ng/L	103	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	---		2.0124	2.0	ng/L	101	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorononanoic acid (PFNA)	537.1	2.0	---		1.9551	2.0	ng/L	98	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorodecanoic acid (PFDA)	537.1	2.0	---		2.0115	2.0	ng/L	101	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorohexanoic acid (PFHxA)	537.1	2.0	---		1.9112	2.0	ng/L	96	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorododecanoic acid (PFDoA)	537.1	2.0	---		2.0880	2.0	ng/L	104	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	---		2.0884	2.0	ng/L	104	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	---		2.0838	2.0	ng/L	104	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	---		2.1720	2.0	ng/L	109	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		40.0784	40.0	ng/L	100	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 11:29	4715752
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		798741	808556	ng/L	99	50 - 150	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	IS-PFOA-13C2	537.1	N/A	---		1209660	1164140	ng/L	104	50 - 150	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	IS-PFOS-13C4	537.1	N/A	---		436057	422506	ng/L	103	50 - 150	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		139.9520	160	ng/L	95	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	SS-PFDA-13C2	537.1	N/A	---		33.9155	40.0	ng/L	92	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	SS-PFHxA-13C2	537.1	N/A	---		34.0122	40.0	ng/L	92	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorononanoic acid (PFNA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorodecanoic acid (PFDA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorohexanoic acid (PFHxA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorododecanoic acid (PFDoA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		34.1553	40.0	ng/L	93	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 11:55	4715759
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.7536	2.0	ng/L	88	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.8580	2.0	ng/L	93	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		851449	808556	ng/L	105	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	IS-PFOA-13C2	537.1	N/A	---		1273490	1164140	ng/L	109	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	IS-PFOS-13C4	537.1	N/A	---		452602	422506	ng/L	107	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		148.9850	160	ng/L	93	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	SS-PFDA-13C2	537.1	N/A	---		36.2069	40.0	ng/L	91	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	SS-PFHxA-13C2	537.1	N/A	---		32.1879	40.0	ng/L	80	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	---		1.4716	2.0	ng/L	74	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	---		1.7584	2.0	ng/L	88	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	---		1.8048	2.0	ng/L	90	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorononanoic acid (PFNA)	537.1	2.0	---		1.6622	2.0	ng/L	83	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorodecanoic acid (PFDA)	537.1	2.0	---		1.7126	2.0	ng/L	86	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorohexanoic acid (PFHxA)	537.1	2.0	---		1.4887	2.0	ng/L	74	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorododecanoic acid (PFDoA)	537.1	2.0	---		1.7183	2.0	ng/L	86	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	---		1.6125	2.0	ng/L	81	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	---		1.7929	2.0	ng/L	90	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	---		1.6675	2.0	ng/L	83	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		31.7531	40.0	ng/L	79	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:08	4715763
FBH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		190.7540	200	ng/L	95	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		194.9740	200	ng/L	97	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	IS-NMeFOSAA-d3	537.1	N/A	---		822493	808556	ng/L	102	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	IS-PFOA-13C2	537.1	N/A	---		1201620	1164140	ng/L	103	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	IS-PFOS-13C4	537.1	N/A	---		458833	422506	ng/L	109	50 - 150	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	SS-NEtFOSAA-d5	537.1	N/A	---		143.5000	160	ng/L	90	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	SS-PFDA-13C2	537.1	N/A	---		36.3378	40.0	ng/L	91	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	SS-PFHxA-13C2	537.1	N/A	---		38.6462	40.0	ng/L	97	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	---		180.3180	200	ng/L	90	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	---		185.1760	200	ng/L	93	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	---		191.7670	200	ng/L	96	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorononanoic acid (PFNA)	537.1	2.0	---		184.9910	200	ng/L	92	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorodecanoic acid (PFDA)	537.1	2.0	---		185.9930	200	ng/L	93	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorohexanoic acid (PFHxA)	537.1	2.0	---		186.5550	200	ng/L	93	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorododecanoic acid (PFDoA)	537.1	2.0	---		185.5120	200	ng/L	93	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	---		184.4030	200	ng/L	92	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	---		183.0840	200	ng/L	92	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	---		181.6660	200	ng/L	91	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
FBH	SS-HFPO-DA-13C3	537.1	N/A	---		37.4546	40.0	ng/L	94	70 - 130	---	---	1.0	09/03/2020 08:05	09/04/2020 12:21	4715766
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		98.3970	100	ng/L	98	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		98.1731	100	ng/L	98	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		894710	894710	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	IS-PFOA-13C2	537.1	N/A	---		1202810	1202810	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	IS-PFOS-13C4	537.1	N/A	---		453311	453311	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		161.9070	160	ng/L	101	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	SS-PFDA-13C2	537.1	N/A	---		40.2423	40.0	ng/L	101	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	SS-PFHxA-13C2	537.1	N/A	---		42.0735	40.0	ng/L	105	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	---		96.0364	100	ng/L	96	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	---		104.0540	100	ng/L	104	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	---		99.8969	100	ng/L	100	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorononanoic acid (PFNA)	537.1	2.0	---		99.1467	100	ng/L	99	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorodecanoic acid (PFDA)	537.1	2.0	---		101.8030	100	ng/L	102	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorohexanoic acid (PFHxA)	537.1	2.0	---		100.6780	100	ng/L	101	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorododecanoic acid (PFDoA)	537.1	2.0	---		103.2510	100	ng/L	103	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	---		107.2910	100	ng/L	107	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	---		103.1870	100	ng/L	103	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	---		111.4210	100	ng/L	111	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		42.9099	40.0	ng/L	107	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 15:10	4715755
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF61091/Well 1		24		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF61091/Well 1		874265	894710	ng/L	98	50 - 150	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	IS-PFOA-13C2	537.1	N/A	PEF61091/Well 1		1224940	1202810	ng/L	102	50 - 150	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	IS-PFOS-13C4	537.1	N/A	PEF61091/Well 1		470481	453311	ng/L	104	50 - 150	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF61091/Well 1		126.8940	160	ng/L	87	70 - 130	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	SS-PFDA-13C2	537.1	N/A	PEF61091/Well 1		34.5273	40.0	ng/L	95	70 - 130	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	SS-PFHxA-13C2	537.1	N/A	PEF61091/Well 1		38.7757	40.0	ng/L	107	70 - 130	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	PEF61091/Well 1		5.2		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorononanoic acid (PFNA)	537.1	2.0	PEF61091/Well 1		3.4		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorodecanoic acid (PFDA)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorohexanoic acid (PFHxA)	537.1	2.0	PEF61091/Well 1		2.9		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorododecanoic acid (PFDoA)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	PEF61091/Well 1	<	2.0		ng/L	---	---	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF61091/Well 1		38.6482	40.0	ng/L	106	70 - 130	---	---	0.91	09/03/2020 08:05	09/04/2020 16:02	4709013
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF61092/Well 2		14		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF61092/Well 2		859539	894710	ng/L	96	50 - 150	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	IS-PFOA-13C2	537.1	N/A	PEF61092/Well 2		1266600	1202810	ng/L	105	50 - 150	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	IS-PFOS-13C4	537.1	N/A	PEF61092/Well 2		454018	453311	ng/L	100	50 - 150	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF61092/Well 2		121.0990	160	ng/L	82	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	SS-PFDA-13C2	537.1	N/A	PEF61092/Well 2		32.8978	40.0	ng/L	89	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	SS-PFHxA-13C2	537.1	N/A	PEF61092/Well 2		35.4248	40.0	ng/L	96	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	PEF61092/Well 2		4.5		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorononanoic acid (PFNA)	537.1	2.0	PEF61092/Well 2		2.5		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorodecanoic acid (PFDA)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorohexanoic acid (PFHxA)	537.1	2.0	PEF61092/Well 2		2.3		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorododecanoic acid (PFDoA)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	PEF61092/Well 2	<	2.0		ng/L	---	---	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF61092/Well 2		35.3457	40.0	ng/L	96	70 - 130	---	---	0.92	09/03/2020 08:05	09/04/2020 16:15	4709014
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF61093/Raw Surface Water		2.4		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF61093/Raw Surface Water		838824	894710	ng/L	94	50 - 150	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	IS-PFOA-13C2	537.1	N/A	PEF61093/Raw Surface Water		1238840	1202810	ng/L	103	50 - 150	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	IS-PFOS-13C4	537.1	N/A	PEF61093/Raw Surface Water		450358	453311	ng/L	99	50 - 150	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF61093/Raw Surface Water		126.7430	160	ng/L	89	70 - 130	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	SS-PFDA-13C2	537.1	N/A	PEF61093/Raw Surface Water		32.3765	40.0	ng/L	91	70 - 130	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	SS-PFHxA-13C2	537.1	N/A	PEF61093/Raw Surface Water		35.0396	40.0	ng/L	98	70 - 130	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorononanoic acid (PFNA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorodecanoic acid (PFDA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorohexanoic acid (PFHxA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorododecanoic acid (PFDoA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	PEF61093/Raw Surface Water	<	2.0		ng/L	---	---	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF61093/Raw Surface Water		33.3792	40.0	ng/L	94	70 - 130	---	---	0.89	09/03/2020 08:05	09/04/2020 16:29	4709015
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		200.7790	200	ng/L	100	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		199.7340	200	ng/L	100	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		776811	776811	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	IS-PFOA-13C2	537.1	N/A	---		1005700	1005700	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	IS-PFOS-13C4	537.1	N/A	---		423352	423352	ng/L	100	50 - 150	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		158.6630	160	ng/L	99	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	SS-PFDA-13C2	537.1	N/A	---		40.8864	40.0	ng/L	102	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	SS-PFHxA-13C2	537.1	N/A	---		41.4796	40.0	ng/L	104	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorobutanesulfonic acid (PFBS)	537.1	2.0	---		195.9760	200	ng/L	98	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluoroheptanoic acid (PFHpA)	537.1	2.0	---		208.2260	200	ng/L	104	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorohexanesulfonic acid (PFHxS)	537.1	2.0	---		196.5760	200	ng/L	98	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	Perfluorononanoic acid (PFNA)	537.1	2.0	---		202.2580	200	ng/L	101	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorodecanoic acid (PFDA)	537.1	2.0	---		210.0180	200	ng/L	105	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorohexanoic acid (PFHxA)	537.1	2.0	---		202.7370	200	ng/L	101	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorododecanoic acid (PFDoA)	537.1	2.0	---		214.1160	200	ng/L	107	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorotridecanoic acid (PFTrDA)	537.1	2.0	---		224.8290	200	ng/L	112	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluoroundecanoic acid (PFUnA)	537.1	2.0	---		205.2990	200	ng/L	103	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	Perfluorotetradecanoic acid (PFTeDA)	537.1	2.0	---		232.9000	200	ng/L	116	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		44.8997	40.0	ng/L	112	70 - 130	---	---	1.0	09/03/2020 13:15	09/04/2020 17:21	4715757

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

2022 PFC

CLIENT INFORMATION			
Company: **NSB SA-10 (Ice Services)**	Contact Person: **Rich Helinski** Operators: **Logan / Carl**		
Address: **Pouch 340044**			
City, State Zip: **Prudhoe Bay, AK 99734**	**PWS # 331184 - special, non-routine**		
Phone: **(907) 659-9060**	Send Results to ADEC:		
Fax: **(907) 659-9061**	∨ Yes ☐ No		
Email: **rhelinski@iceservices.net**	Purchase Order/Charge Code:		
Project Name: **NSB SA-10 WTP PFAS Monitoring**	2022-931		
Sampled By: CARL CORNFORTH			

Requested Analysis

Perservative Added

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#	Number of Containers	PFC's by EPA 537*	Sample Comments
Raw Water Pondhouse	9-12-22	1350	W	PEF79385		2	X	Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Water Plant Sample Port	9-11-22	1417	W	PEF79386		2	X	Facility ID: IN001 Sample Point ID: SPIN001RAW
UF 1 Permeate	9-11-22	1405	W	PEF79387		2	X	Facility ID: TP002 Sample Point ID: SPTP002EP
UF 2 Permeate	9-12-22	1125	W	PEF79388		2	X	Facility ID: TP002 Sample Point ID: SPTP002EP
CFE Post Cl2	9-11-22	1424	W	PEF79389		2	X	Facility ID: TP002 Sample Point ID: SPTP002EP

Page 1 of 1

☐ Normal Turnaround

☐ RUSH ____ day(s)

Special Instructions/QC Requirements & Comments:

Sample Condition:

Pollen Env Temperature on arrival: 2.8 °C

Sub Lab Temperature on arrival: _____ °C

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
[signature]	ICE Services Inc.	9-13-22 / 0630	MMR	Pollen Env	9/13/22 1530
[signature]	Pollen Env	9-15-22 @1100			
[signature]					

Accuracy, Precision, and Professional Service

POLLEN
ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Report Date: 9/27/2022
Received Date: 9/13/2022

NSB SA-10 (Ice Services)
Attn: Rich Helinski
Pouch 340044
Prudhoe Bay, AK 99734
Phone: 907-659-9060
Fax: 907-659-9061
rhelinski@iceservices.net

Project Name: NSB SA-10 WTP PFAS Monitoring
Sampled By: Carl Cornforth

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Pondhouse	PEF79385	810-37687-1	9/12/2022	1:50 PM
Raw Water Plant Sample Port	PEF79386	810-37687-2	9/11/2022	2:17 PM
UF 1 Permeate	PEF79387	810-37687-3	9/11/2022	2:05 PM
UF 2 Permeate	PEF79388	810-37687-4	9/12/2022	11:25 AM
CFE Post Cl2	PEF79389	810-37687-5	9/11/2022	2:24 PM

Jerry Pollen
Pollen Environmental, LLC

POLLEN
ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

SAMPLE RECEIPT CHECKLIST

Date & Time Received 9/13/22 1530 Initials MR

Laboratory Identification PEF79385-79389

N/A	YES	NO	
☐	☒	☐	Custody Seals intact? (N/A if hand delivered)
☐	☒	☐	Chain of Custody (COC) present and properly filled out?
☐	☒	☐	Samples received in hold time?
☐	☒	☐	Proper container and preservatives used?
☐	☒	☐	Bottles received intact and properly labeled
☐	☒	☐	Do sample labels match the COC?
☐	☒	☐	Sufficient volume of sample for all analysis?
☐	☒	☐	Temperature Blank received in cooler?
☐	☒	☐	Did samples arrive in container with ice/ice packs?
☒	☐	☐	If samples are above 6 Degrees Celsius, were samples taken within two hours of delivery to lab? If so, mark ITTC (Insufficient Time To Cool) on COC form.
☒	☐	☐	Are air bubbles present in VOA vials?

Notes: _____

*Temperature upon receipt at the laboratory 2.8 °C

☐ internal sample kit thermometer ☒ infra-red thermometer

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-37687-1
Client Project/Site: 2022-931

For:
Pollen Environmental LLC
3039 Davis Road
Fairbanks, Alaska 99709

Attn: Jerry Pollen

Authorized for release by:
9/26/2022 4:10:13 PM

Traci Chlebowski, Project Manager
(574)233-4777
Traci.Chlebowski@et.eurofinsus.com

Table of Contents

Client: Pollen Environmental LLC
Job ID: 810-37687-1
Project/Site: 2022-931

Qualifiers

LCMS

Qualifier	Qualifier Description
	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 810-37687-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-37687-1

Receipt

The samples were received on 9/16/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C

PFAS

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

Detection Summary

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Client Sample ID: Raw Water Pondhouse-PEF79385 — Lab Sample ID: 810-37687-1

PWSID Number: AK2331184

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.0		2.0		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.2		2.0		ng/L	1		537.1	Total/NA

Client Sample ID: Raw Water Plant Sample Port-PEF79386 — Lab Sample ID: 810-37687-2

PWSID Number: AK2331184

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.1		1.9		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.1		1.9		ng/L	1		537.1	Total/NA

Client Sample ID: UF 1 Permeate-PEF79387 — Lab Sample ID: 810-37687-3

PWSID Number: AK2331184

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	2.8		1.9		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.2		1.9		ng/L	1		537.1	Total/NA

Client Sample ID: UF 2 Permeate-PEF79388 — Lab Sample ID: 810-37687-4

PWSID Number: AK2331184

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.2		1.9		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.2		1.9		ng/L	1		537.1	Total/NA

Client Sample ID: CFE Post Cl2-PEF79389 — Lab Sample ID: 810-37687-5

PWSID Number: AK2331184

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.0		1.9		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.3		1.9		ng/L	1		537.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Client Sample ID: Raw Water Pondhouse-PEF79385

Lab Sample ID: 810-37687-1
Date Collected: 09/12/22 13:50
Matrix: Drinking Water
Date Received: 09/16/22 09:30
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**3.0**		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorohexanesulfonic acid (PFHxS)	**2.2**		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorotetradecanoic acid (PFTeDA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		09/23/22 06:54	09/24/22 16:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*109*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:22*	
13C2 PFDA	*94*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:22*	
13C3 HFPO-DA	*107*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:22*	
d5-NEtFOSAA	*81*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:22*	

Client Sample ID: Raw Water Plant Sample Port-PEF79386

Lab Sample ID: 810-37687-2
Date Collected: 09/11/22 14:17
Matrix: Drinking Water
Date Received: 09/16/22 09:30
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**3.1**		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorohexanesulfonic acid (PFHxS)	**2.1**		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorotetradecanoic acid (PFTeDA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Perfluorotridecanoic acid (PFTrDA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Client Sample ID: Raw Water Plant Sample Port-PEF79386

Lab Sample ID: 810-37687-2
Date Collected: 09/11/22 14:17
Matrix: Drinking Water
Date Received: 09/16/22 09:30
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		09/21/22 07:05	09/22/22 00:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*70 - 130*	*09/21/22 07:05*	*09/22/22 00:25*	
13C2 PFDA	*95*		*70 - 130*	*09/21/22 07:05*	*09/22/22 00:25*	
13C3 HFPO-DA	*101*		*70 - 130*	*09/21/22 07:05*	*09/22/22 00:25*	
d5-NEtFOSAA	*80*		*70 - 130*	*09/21/22 07:05*	*09/22/22 00:25*	

Client Sample ID: UF 1 Permeate-PEF79387

Lab Sample ID: 810-37687-3
Date Collected: 09/11/22 14:05
Matrix: Drinking Water
Date Received: 09/16/22 09:30
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**2.8**		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorohexanesulfonic acid (PFHxS)	**2.2**		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorotetradecanoic acid (PFTeDA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Perfluorotridecanoic acid (PFTrDA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:04*	

Client Sample ID: UF 1 Permeate-PEF79387

Lab Sample ID: 810-37687-3

Date Collected: 09/11/22 14:05
Matrix: Drinking Water
Date Received: 09/16/22 09:30
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*92*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:04*	
13C3 HFPO-DA	*97*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:04*	
d5-NEtFOSAA	*87*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:04*	

Client Sample ID: UF 2 Permeate-PEF79388

Lab Sample ID: 810-37687-4

Date Collected: 09/12/22 11:25
Matrix: Drinking Water
Date Received: 09/16/22 09:30
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**3.2**		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorohexanesulfonic acid (PFHxS)	**2.2**		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorotetradecanoic acid (PFTeDA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Perfluorotridecanoic acid (PFTrDA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		09/23/22 06:54	09/24/22 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:33*	
13C2 PFDA	*97*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:33*	
13C3 HFPO-DA	*98*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:33*	
d5-NEtFOSAA	*89*		*70 - 130*	*09/23/22 06:54*	*09/24/22 16:33*	

Client Sample ID: CFE Post Cl2-PEF79389

Lab Sample ID: 810-37687-5

Date Collected: 09/11/22 14:24
Matrix: Drinking Water
Date Received: 09/16/22 09:30
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**3.0**		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Client Sample ID: CFE Post CI2-PEF79389
Date Collected: 09/11/22 14:24
Date Received: 09/16/22 09:30

Lab Sample ID: 810-37687-5
Matrix: Drinking Water
PWSID Number: AK2331184

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorohexanesulfonic acid (PFHxS)	**2.3**		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorotetradecanoic acid (PFTeDA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Perfluorotridecanoic acid (PFTrDA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		09/21/22 07:10	09/22/22 03:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:15*	*1*
13C2 PFDA	*90*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:15*	*1*
13C3 HFPO-DA	*97*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:15*	*1*
d5-NEtFOSAA	*75*		*70 - 130*	*09/21/22 07:10*	*09/22/22 03:15*	*1*

Surrogate Summary

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		PFHxA	PFDA	HFPODA	d5NEFOS
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
810-37687-1	Raw Water Pondhouse-PEF79385	109	94	107	81
810-37687-2	Raw Water Plant Sample Port-PEF79386	104	95	101	80
810-37687-3	UF 1 Permeate-PEF79387	99	92	97	87
810-37687-4	UF 2 Permeate-PEF79388	106	97	98	89
810-37687-5	CFE Post Cl2-PEF79389	99	90	97	75
LCS 810-32424/3-A	Lab Control Sample	97	88	95	88
LLCS 810-32424/2-A	Lab Control Sample	111	102	105	90
LLCS 810-32427/2-A	Lab Control Sample	104	102	101	90
LLCS 810-32712/2-A	Lab Control Sample	103	92	102	84
MBL 810-32424/1-A	Method Blank	96	98	99	88
MBL 810-32427/1-A	Method Blank	95	87	92	84
MBL 810-32712/1-A	Method Blank	96	100	101	92

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
HFPODA = 13C3 HFPO-DA
d5NEFOS = d5-NEtFOSAA

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MBL 810-32424/1-A
Matrix: Drinking Water
Analysis Batch: 32504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32424

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<0.40		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluoroundecanoic acid (PFUnA)	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorohexanoic acid (PFHxA)	<0.40		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorododecanoic acid (PFDoA)	<0.40		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorooctanoic acid (PFOA)	<0.40		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorodecanoic acid (PFDA)	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorobutanesulfonic acid (PFBS)	<0.40		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorononanoic acid (PFNA)	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorotetradecanoic acid (PFTeDA)	<0.60		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Perfluorotridecanoic acid (PFTrDA)	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.60		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.50		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.61		2.0		ng/L		09/21/22 07:05	09/21/22 20:43	1

Surrogate	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*70 - 130*	*09/21/22 07:05*	*09/21/22 20:43*	*1*
13C2 PFDA	*98*		*70 - 130*	*09/21/22 07:05*	*09/21/22 20:43*	*1*
13C3 HFPO-DA	*99*		*70 - 130*	*09/21/22 07:05*	*09/21/22 20:43*	*1*
d5-NEtFOSAA	*88*		*70 - 130*	*09/21/22 07:05*	*09/21/22 20:43*	*1*

Lab Sample ID: LCS 810-32424/3-A
Matrix: Drinking Water
Analysis Batch: 32504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32424

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluorooctanesulfonic acid (PFOS)			190	170		ng/L		89	70 - 130		
Perfluoroundecanoic acid (PFUnA)			190	166		ng/L		87	70 - 130		
Perfluorohexanoic acid (PFHxA)			190	173		ng/L		91	70 - 130		
Perfluorododecanoic acid (PFDoA)			190	160		ng/L		84	70 - 130		
Perfluorooctanoic acid (PFOA)			190	174		ng/L		92	70 - 130		
Perfluorodecanoic acid (PFDA)			190	166		ng/L		87	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			190	184		ng/L		97	70 - 130		
Perfluorobutanesulfonic acid (PFBS)			190	160		ng/L		84	70 - 130		
Perfluoroheptanoic acid (PFHpA)			190	182		ng/L		96	70 - 130		
Perfluorononanoic acid (PFNA)			190	180		ng/L		95	70 - 130		

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 810-32424/3-A
Matrix: Drinking Water
Analysis Batch: 32504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32424

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotetradecanoic acid (PFTeDA)	190	164		ng/L		86	70 - 130
Perfluorotridecanoic acid (PFTrDA)	190	163		ng/L		86	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	190	160		ng/L		84	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	190	160		ng/L		84	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	190	176		ng/L		93	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	190	175		ng/L		92	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	190	165		ng/L		87	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	190	185		ng/L		98	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*97*		*70 - 130*
13C2 PFDA	*88*		*70 - 130*
13C3 HFPO-DA	*95*		*70 - 130*
d5-NEtFOSAA	*88*		*70 - 130*

Lab Sample ID: LLCS 810-32424/2-A
Matrix: Drinking Water
Analysis Batch: 32504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32424

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanesulfonic acid (PFOS)	1.88	1.76		ng/L		94	50 - 150
Perfluoroundecanoic acid (PFUnA)	1.88	1.69		ng/L		90	50 - 150
Perfluorohexanoic acid (PFHxA)	1.88	1.88		ng/L		100	50 - 150
Perfluorododecanoic acid (PFDoA)	1.88	1.75		ng/L		93	50 - 150
Perfluorooctanoic acid (PFOA)	1.88	1.85		ng/L		98	50 - 150
Perfluorodecanoic acid (PFDA)	1.88	1.76		ng/L		93	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.88	1.74		ng/L		92	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.88	1.50		ng/L		80	50 - 150
Perfluoroheptanoic acid (PFHpA)	1.88	1.83		ng/L		97	50 - 150
Perfluorononanoic acid (PFNA)	1.88	1.81		ng/L		96	50 - 150
Perfluorotetradecanoic acid (PFTeDA)	1.88	1.66		ng/L		88	50 - 150
Perfluorotridecanoic acid (PFTrDA)	1.88	1.77		ng/L		94	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.88	1.44		ng/L		76	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.88	1.61		ng/L		86	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	1.88	1.76		ng/L		94	50 - 150

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 810-32424/2-A
Matrix: Drinking Water
Analysis Batch: 32504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32424

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.88	1.62		ng/L		86	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	1.58		ng/L		84	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	1.78		ng/L		94	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA			*70 - 130*
13C2 PFDA	*102*		*70 - 130*
13C3 HFPO-DA	*105*		*70 - 130*
d5-NEtFOSAA	*90*		*70 - 130*

Lab Sample ID: MBL 810-32427/1-A
Matrix: Drinking Water
Analysis Batch: 32506

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32427

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<0.40		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluoroundecanoic acid (PFUnA)	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorohexanoic acid (PFHxA)	<0.40		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorododecanoic acid (PFDoA)	<0.40		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorooctanoic acid (PFOA)	<0.40		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorodecanoic acid (PFDA)	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorobutanesulfonic acid (PFBS)	<0.40		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorononanoic acid (PFNA)	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorotetradecanoic acid (PFTeDA)	<0.60		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Perfluorotridecanoic acid (PFTrDA)	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.60		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.50		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.61		2.0	ng/L		09/21/22 07:10	09/22/22 02:43	1

Surrogate	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*09/21/22 07:10*	*09/22/22 02:43*	
13C2 PFDA	*87*		*70 - 130*	*09/21/22 07:10*	*09/22/22 02:43*	
13C3 HFPO-DA	*92*		*70 - 130*	*09/21/22 07:10*	*09/22/22 02:43*	
d5-NEtFOSAA	*84*		*70 - 130*	*09/21/22 07:10*	*09/22/22 02:43*	

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 810-32427/2-A
Matrix: Drinking Water
Analysis Batch: 32506

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32427

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanesulfonic acid (PFOS)	1.88	1.84		ng/L		98	50 - 150
Perfluoroundecanoic acid (PFUnA)	1.88	1.81		ng/L		96	50 - 150
Perfluorohexanoic acid (PFHxA)	1.88	1.84		ng/L		98	50 - 150
Perfluorododecanoic acid (PFDoA)	1.88	1.60		ng/L		85	50 - 150
Perfluorooctanoic acid (PFOA)	1.88	1.84		ng/L		98	50 - 150
Perfluorodecanoic acid (PFDA)	1.88	1.71		ng/L		91	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.88	1.65		ng/L		88	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.88	1.69		ng/L		90	50 - 150
Perfluoroheptanoic acid (PFHpA)	1.88	1.90		ng/L		101	50 - 150
Perfluorononanoic acid (PFNA)	1.88	1.93		ng/L		102	50 - 150
Perfluorotetradecanoic acid (PFTeDA)	1.88	1.66		ng/L		88	50 - 150
Perfluorotridecanoic acid (PFTrDA)	1.88	1.67		ng/L		89	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.88	1.68		ng/L		89	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.88	1.66		ng/L		88	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	1.88	1.79		ng/L		95	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.88	1.56		ng/L		83	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	1.63		ng/L		87	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	1.79		ng/L		95	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*104*		*70 - 130*
13C2 PFDA	*102*		*70 - 130*
13C3 HFPO-DA	*101*		*70 - 130*
d5-NEtFOSAA	*90*		*70 - 130*

Lab Sample ID: MBL 810-32712/1-A
Matrix: Drinking Water
Analysis Batch: 32824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32712

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<0.40		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluoroundecanoic acid (PFUnA)	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorohexanoic acid (PFHxA)	<0.40		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorododecanoic acid (PFDoA)	<0.40		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorooctanoic acid (PFOA)	<0.40		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorodecanoic acid (PFDA)	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorobutanesulfonic acid (PFBS)	<0.40		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MBL 810-32712/1-A
Matrix: Drinking Water
Analysis Batch: 32824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32712

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorononanoic acid (PFNA)	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorotetradecanoic acid (PFTeDA)	<0.60		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Perfluorotridecanoic acid (PFTrDA)	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.60		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.50		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.61		2.0	ng/L		09/23/22 06:54	09/24/22 13:44	1

Surrogate	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*70 - 130*	*09/23/22 06:54*	*09/24/22 13:44*	
13C2 PFDA	*100*		*70 - 130*	*09/23/22 06:54*	*09/24/22 13:44*	
13C3 HFPO-DA	*101*		*70 - 130*	*09/23/22 06:54*	*09/24/22 13:44*	
d5-NEtFOSAA	*92*		*70 - 130*	*09/23/22 06:54*	*09/24/22 13:44*	

Lab Sample ID: LLCS 810-32712/2-A
Matrix: Drinking Water
Analysis Batch: 32824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32712

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanesulfonic acid (PFOS)	1.93	1.75		ng/L		91	50 - 150
Perfluoroundecanoic acid (PFUnA)	1.93	1.66		ng/L		86	50 - 150
Perfluorohexanoic acid (PFHxA)	1.93	1.93		ng/L		100	50 - 150
Perfluorododecanoic acid (PFDoA)	1.93	1.68		ng/L		87	50 - 150
Perfluorooctanoic acid (PFOA)	1.93	1.89		ng/L		98	50 - 150
Perfluorodecanoic acid (PFDA)	1.93	1.78		ng/L		92	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.93	1.83		ng/L		95	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.93	1.67		ng/L		87	50 - 150
Perfluoroheptanoic acid (PFHpA)	1.93	2.10		ng/L		109	50 - 150
Perfluorononanoic acid (PFNA)	1.93	1.80		ng/L		93	50 - 150
Perfluorotetradecanoic acid (PFTeDA)	1.93	1.73		ng/L		90	50 - 150
Perfluorotridecanoic acid (PFTrDA)	1.93	1.67		ng/L		86	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.93	1.55		ng/L		80	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.93	1.54		ng/L		80	50 - 150

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 810-32712/2-A
Matrix: Drinking Water
Analysis Batch: 32824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32712

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	1.93	1.86	J	ng/L		96	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.93	1.48	J	ng/L		77	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.93	1.46	J	ng/L		76	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.93	1.87	J	ng/L		97	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*103*		*70 - 130*
13C2 PFDA	*92*		*70 - 130*
13C3 HFPO-DA	*102*		*70 - 130*
d5-NEtFOSAA	*84*		*70 - 130*

LCMS

Prep Batch: 32424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37687-2	Raw Water Plant Sample Port-PEF79386	Total/NA	Drinking Water	537.1 DW	
MBL 810-32424/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LCS 810-32424/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	
LLCS 810-32424/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Prep Batch: 32427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37687-3	UF 1 Permeate-PEF79387	Total/NA	Drinking Water	537.1 DW	
810-37687-5	CFE Post Cl2-PEF79389	Total/NA	Drinking Water	537.1 DW	
MBL 810-32427/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LLCS 810-32427/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 32504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37687-2	Raw Water Plant Sample Port-PEF79386	Total/NA	Drinking Water	537.1	32424
MBL 810-32424/1-A	Method Blank	Total/NA	Drinking Water	537.1	32424
LCS 810-32424/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1	32424
LLCS 810-32424/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1	32424

Analysis Batch: 32506

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37687-3	UF 1 Permeate-PEF79387	Total/NA	Drinking Water	537.1	32427
810-37687-5	CFE Post Cl2-PEF79389	Total/NA	Drinking Water	537.1	32427
MBL 810-32427/1-A	Method Blank	Total/NA	Drinking Water	537.1	32427
LLCS 810-32427/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1	32427

Prep Batch: 32712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37687-1	Raw Water Pondhouse-PEF79385	Total/NA	Drinking Water	537.1 DW	
810-37687-4	UF 2 Permeate-PEF79388	Total/NA	Drinking Water	537.1 DW	
MBL 810-32712/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LLCS 810-32712/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 32824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37687-1	Raw Water Pondhouse-PEF79385	Total/NA	Drinking Water	537.1	32712
810-37687-4	UF 2 Permeate-PEF79388	Total/NA	Drinking Water	537.1	32712
MBL 810-32712/1-A	Method Blank	Total/NA	Drinking Water	537.1	32712
LLCS 810-32712/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1	32712

Lab Chronicle

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Client Sample ID: Raw Water Pondhouse-PEF79385

Lab Sample ID: 810-37687-1

Date Collected: 09/12/22 13:50
Matrix: Drinking Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			32712	SS	EA SB	09/23/22 06:54
Total/NA	Analysis	537.1		1	32824	MH	EA SB	09/24/22 16:22

Client Sample ID: Raw Water Plant Sample Port-PEF79386

Lab Sample ID: 810-37687-2

Date Collected: 09/11/22 14:17
Matrix: Drinking Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			32424	SS	EA SB	09/21/22 07:05
Total/NA	Analysis	537.1		1	32504	MH	EA SB	09/22/22 00:25

Client Sample ID: UF 1 Permeate-PEF79387

Lab Sample ID: 810-37687-3

Date Collected: 09/11/22 14:05
Matrix: Drinking Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			32427	SS	EA SB	09/21/22 07:10
Total/NA	Analysis	537.1		1	32506	MH	EA SB	09/22/22 03:04

Client Sample ID: UF 2 Permeate-PEF79388

Lab Sample ID: 810-37687-4

Date Collected: 09/12/22 11:25
Matrix: Drinking Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			32712	SS	EA SB	09/23/22 06:54
Total/NA	Analysis	537.1		1	32824	MH	EA SB	09/24/22 16:33

Client Sample ID: CFE Post Cl2-PEF79389

Lab Sample ID: 810-37687-5

Date Collected: 09/11/22 14:24
Matrix: Drinking Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			32427	SS	EA SB	09/21/22 07:10
Total/NA	Analysis	537.1		1	32506	MH	EA SB	09/22/22 03:15

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537.1	537.1 DW	Drinking Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
537.1	537.1 DW	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1	537.1 DW	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
537.1	537.1 DW	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
537.1	537.1 DW	Drinking Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537.1	537.1 DW	Drinking Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537.1	537.1 DW	Drinking Water	Perfluorodecanoic acid (PFDA)
537.1	537.1 DW	Drinking Water	Perfluorododecanoic acid (PFDoA)
537.1	537.1 DW	Drinking Water	Perfluorohexanoic acid (PFHxA)
537.1	537.1 DW	Drinking Water	Perfluorotetradecanoic acid (PFTeDA)
537.1	537.1 DW	Drinking Water	Perfluorotridecanoic acid (PFTrDA)
537.1	537.1 DW	Drinking Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Method	Method Description	Protocol	Laboratory
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Pollen Environmental LLC
Project/Site: 2022-931

Job ID: 810-37687-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-37687-1	Raw Water Pondhouse-PEF79385	Drinking Water	09/12/22 13:50	09/16/22 09:30	AK2331184
810-37687-2	Raw Water Plant Sample Port-PEF79386	Drinking Water	09/11/22 14:17	09/16/22 09:30	AK2331184
810-37687-3	UF 1 Permeate-PEF79387	Drinking Water	09/11/22 14:05	09/16/22 09:30	AK2331184
810-37687-4	UF 2 Permeate-PEF79388	Drinking Water	09/12/22 11:25	09/16/22 09:30	AK2331184
810-37687-5	CFE Post Cl2-PEF79389	Drinking Water	09/11/22 14:24	09/16/22 09:30	AK2331184

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

2022 PFC

Page 1 of 1

CLIENT INFORMATION	
Company: NSB SA-10 (Ice Services)	Contact Person: Rich Helinski Logan / Carl Operators:
Address: Pouch 340044	PWS # 331184 - special, non-routine
City, State Zip: Prudhoe Bay, AK 99734	Send Results to ADEC:
Phone: (907) 659-9060	☑ Yes ☐ No
Fax: (907) 659-9061	Purchase Order/Charge Code:
Email: rhelinski@iceservices.net	2022-931
Project Name: NSB SA-10 WTP PFAS Monitoring	
Sampled By: CARL CORNFORTH	

Requested Analysis

Perservative Added

PFC's by EPA 537*

810-37687 Chain of Custody

☐ Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Date	Sample Time	Matrix	PE Lab ID#	PEF Lab ID#		Sample Comments
Raw Water Pondhouse	9-12-22	1350	W	PEF79385		x (1)	Facility ID: IN001 Sample Point ID: SPIN001RAW
Raw Water Plant Sample Port	9-11-22	1417	W	PEF79386		x	Facility ID: IN001 Sample Point ID: SPIN001RAW
UF 1 Permeate	9-11-22	1405	W	PEF79387		x	Facility ID: TP002 Sample Point ID: SPTP002EP
UF 2 Permeate	9-12-22	1125	W	PEF79388		x	Facility ID: TP002 Sample Point ID: SPTP002EP
CFE Post Cl2	9-11-22	1424	W	PEF79389		x	Facility ID: TP002 Sample Point ID: SPTP002EP

Special Instructions/QC Requirements & Comments:

Shipping straps intact upon receipt

Sample Condition:

Pollen Env Temperature on arrival: 2.8 °C

Sub Lab Temperature on arrival: 0.6 °C

wet/Blue #21

Relinquished by:	Company: ICE Services Inc.	Date & Time: 9-13-22 / 0630	Received by:	Company: Pollen Env	Date & Time: 9/13/22 1530
Relinquished by:	Company: Pollen Env	Date & Time: 9-15-22 @1100	Received by:	Company: EEA	Date & Time: 9-16-22 0930
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

Login Sample Receipt Checklist

Client: Pollen Environmental LLC

Job Number: 810-37687-1

Login Number: 37687

List Source: Eurofins Eaton South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF Deadhorse Airport Sitewide PFAS

File Number: 300.38.327

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

S&W is aware of soil PFAS contamination present at the SCC.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Surface water is used as a drinking water source in Deadhorse

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

The Sagavanirktok River (Sag River) is used as a drinking water source for Deadhorse. The river is directly east of the runway. PFAS have been detected. Source of PFAS is unknown and may not be associated with the airport.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

S&W is aware of PFAS contamination present in surface soil at the SCC.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

To our knowledge, no sediment samples have been collected at the SCC. However, AFFF was likely release to the ground surface in unpaved and/or lightly graveled areas are open to DOT&PF employees and the public.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Deadhorse Airport - ADOT&PF Statewide Airport PFAS Investigation

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Volatilization — check air	☐ groundwater	☐ Ingestion of Groundwater							
	☑ Runoff or erosion — check surface water		☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☑ Uptake by plants or animals — check biota		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Other (list):	☐ air	☐ Inhalation of Outdoor Air							
☑ Subsurface Soil (2-15 ft bgs)	Direct release to subsurface soil — check soil		☐ Inhalation of Indoor Air							
	☑ Migration to groundwater — check groundwater		☐ Inhalation of Fugitive Dust							
	☐ Volatilization — check air	☑ surface water	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Uptake by plants or animals — check biota		☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☐ Other (list):		☐ Inhalation of Volatile Compounds in Tap Water							
☑ Ground-water	Direct release to groundwater — check groundwater	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Volatilization — check air	☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Flow to surface water body — check surface water									
	☑ Flow to sediment — check sediment									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Surface Water	Direct release to surface water — check surface water									
	☐ Volatilization — check air									
	☑ Sedimentation — check sediment									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Sediment	Direct release to sediment — check sediment									
	☑ Resuspension, runoff, or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									

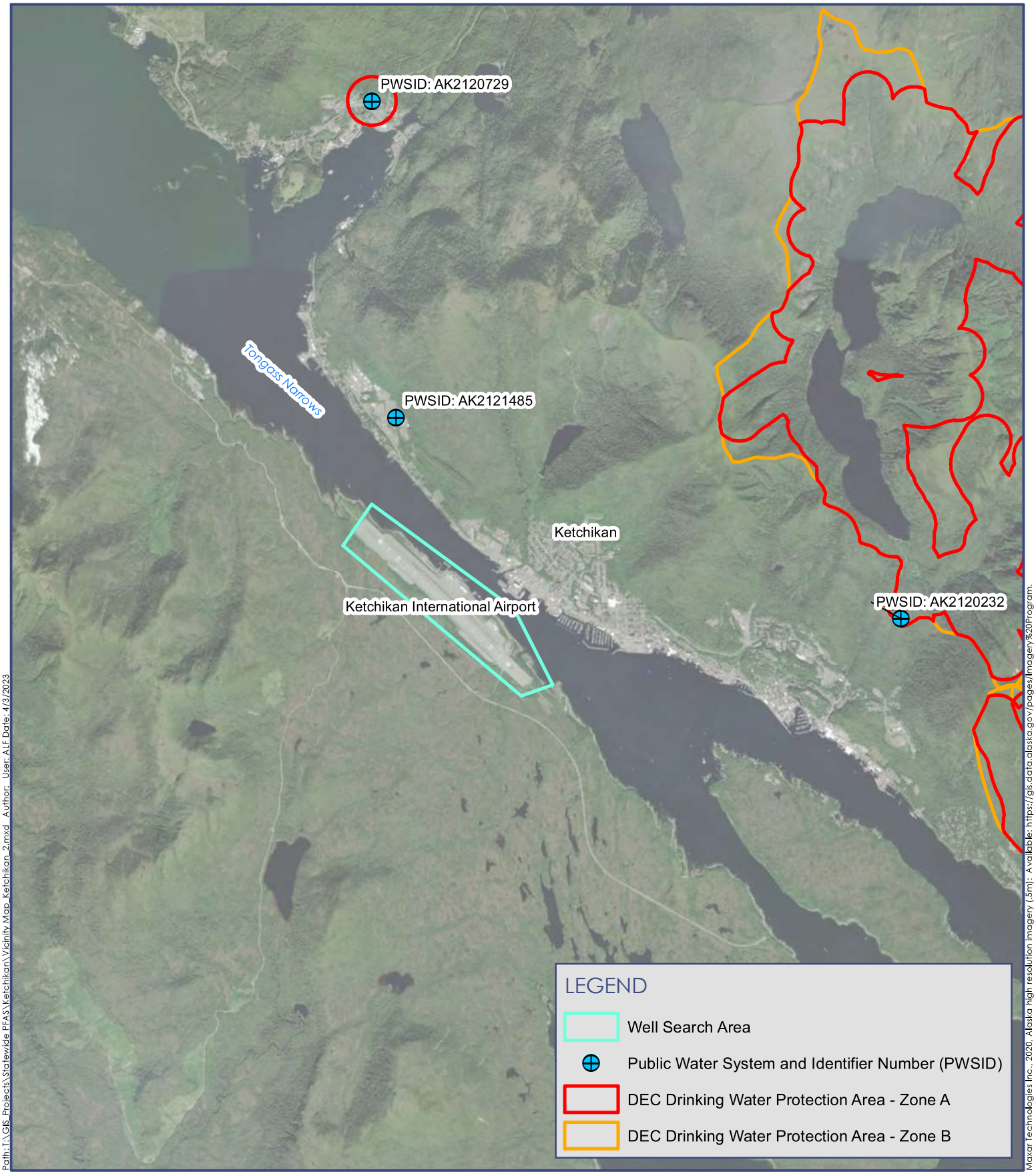
Revised, 10/01/2010

APPENDIX B: KETCHIKAN AIRPORT SUPPORTING DOCUMENTS

Appendix B

Ketchikan Airport Supporting Documents

CONTENTS



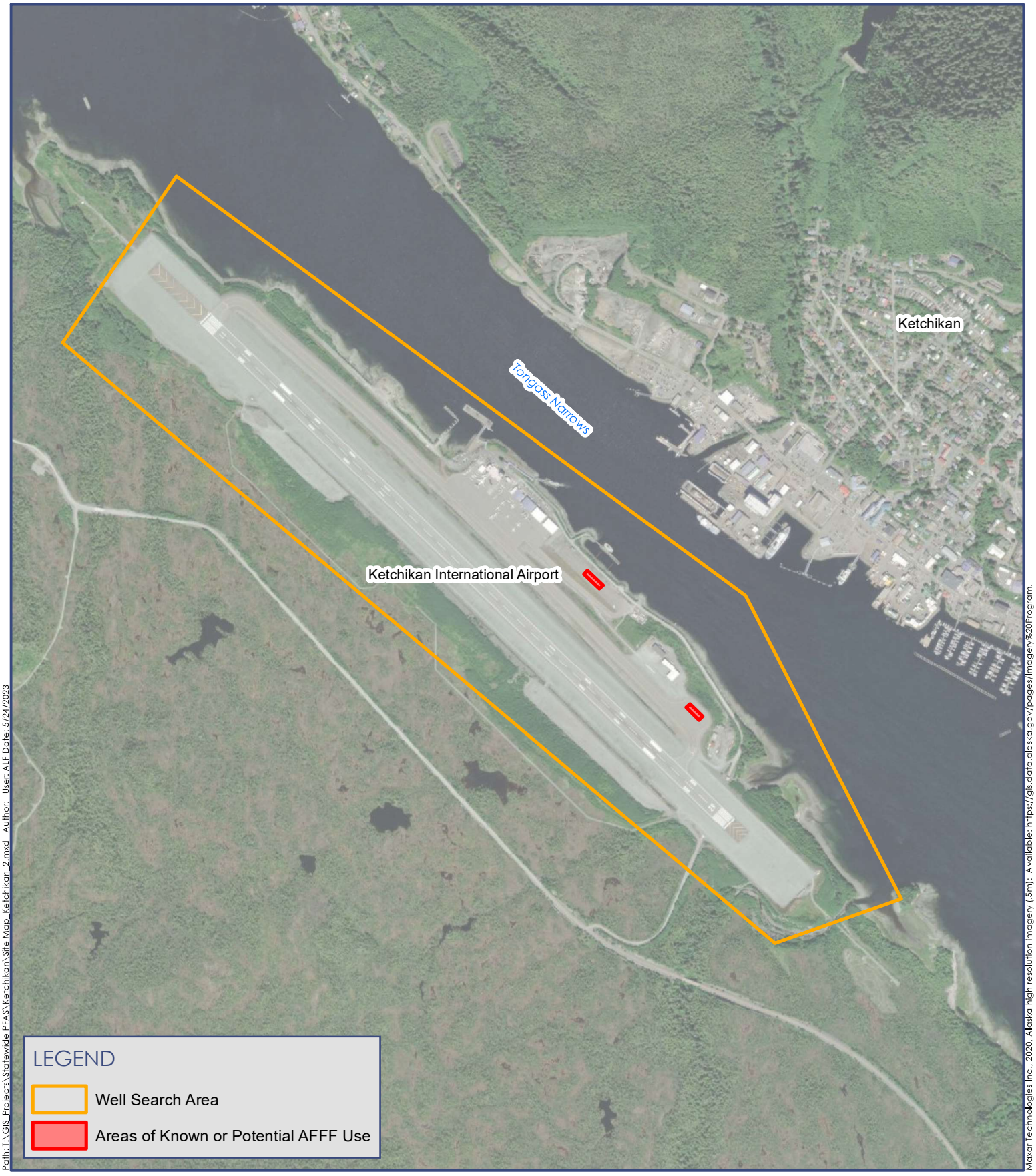
Path: T:\GIS_Projects\Statewide PFAS\Ketchikan\Vicinity Map_Ketchikan_2.mxd Author: User: ALF Date: 4/3/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/Imagery%20Program.

January 2024

VICINITY MAP

Figure B1



January 2024

SITE MAP

Figure B2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet –Ketchikan International Airport

October 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging and firefighting foams.

A potential source of PFAS in groundwater near the airport is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's (EPA's) former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Dept. of Health & Social Services
Sarah Yoder, Public Health Specialist
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise well users with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

October 2022 - ARM Field Notes from KTN site visit with [redacted] and drive-around with [redacted] (airport employee >20yrs)

KTN gets water (and sewer) from the city since establishment. City source waters are not on the airport island.

There are residential lots to the south of the airport that are accessed by boat. (Outside Search Area, noted as using rain catchment, or dry)

[redacted] indicated most people who are not connected to the city system use rain-catchment cisterns. He considered the expense and challenges of a well to not be an option for most people, considering the excess of rainfall available.

Also one resident to the north[redacted] indicated could be accessed via a road around the airport. ARM drove this road and it appeared to be a staging and/or storage area. ARM did not see any structures that looked like housing. There was a port-a-potty, but no tanks or cisterns. Did not see anyone around, though there were recent tire tracks.

The past crash and the training areas are the only known AFFF use. Crash site was filled in when airport runway was extended. Current "crash site" would be fill on top of crash area. Airplane crashed into the end of the runway, which ended at a steep cliff down to a creek (with flow to the narrows). Government Creek was re-routed, but still lies between the airport and the residential areas.

Currently, AFFF in trucks, but none stored onsite.

Training was done in front of "ARFF" building in the early 2000s.

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Ketchikan Airport Sitewide PFAS

File Number: 1516.38.055

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

No surface soil samples have been collected at the KTN. However, AFFF releases to the ground surface could cause soil contamination.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

No surface soil samples have been collected at the KTN. However, AFFF releases to the ground surface could cause soil contamination. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

No water supply or monitoring well samples have been collected for PFAS at or downgradient of the KTN. However, PFAS contaminated groundwater is possible. Groundwater is not a source of drinking water near the airport in Ketchikan.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

It is unlikely that surface water near the KTN would be used for drinking water purposes. If our investigation discovers this scenario, we will update this CSM.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D. If volatile organic compounds are reported during site characterization activities, this section will be updated with the new information.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

See comments for 3.c.1.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No surface soil samples have been collected at the KTN. However, AFFF was likely released to the ground surface.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No sediment samples have been collected at the KTN. However, AFFF was likely release to the ground surface in areas open to DOT&PF employees. If these area are used for subsistence practices (e.g., berry picking and fishing) that may expose them to sediment.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Ketchikan Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F			
	☐ Volatilization — check air	☑ groundwater	☐ Ingestion of Groundwater							
	☑ Runoff or erosion — check surface water		☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☑ Uptake by plants or animals — check biota		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Other (list):	☐ air	☐ Inhalation of Outdoor Air							
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil		☐ Inhalation of Indoor Air							
	☑ Migration to groundwater — check groundwater		☐ Inhalation of Fugitive Dust							
	☐ Volatilization — check air	☑ surface water	☐ Ingestion of Surface Water							
	☑ Uptake by plants or animals — check biota		☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☐ Other (list):		☐ Inhalation of Volatile Compounds in Tap Water							
☑ Ground-water	☑ Direct release to groundwater — check groundwater	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Volatilization — check air	☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Flow to surface water body — check surface water									
	☐ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water — check surface water									
	☐ Volatilization — check air									
	☑ Sedimentation — check sediment									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment — check sediment									
	☑ Resuspension, runoff, or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									

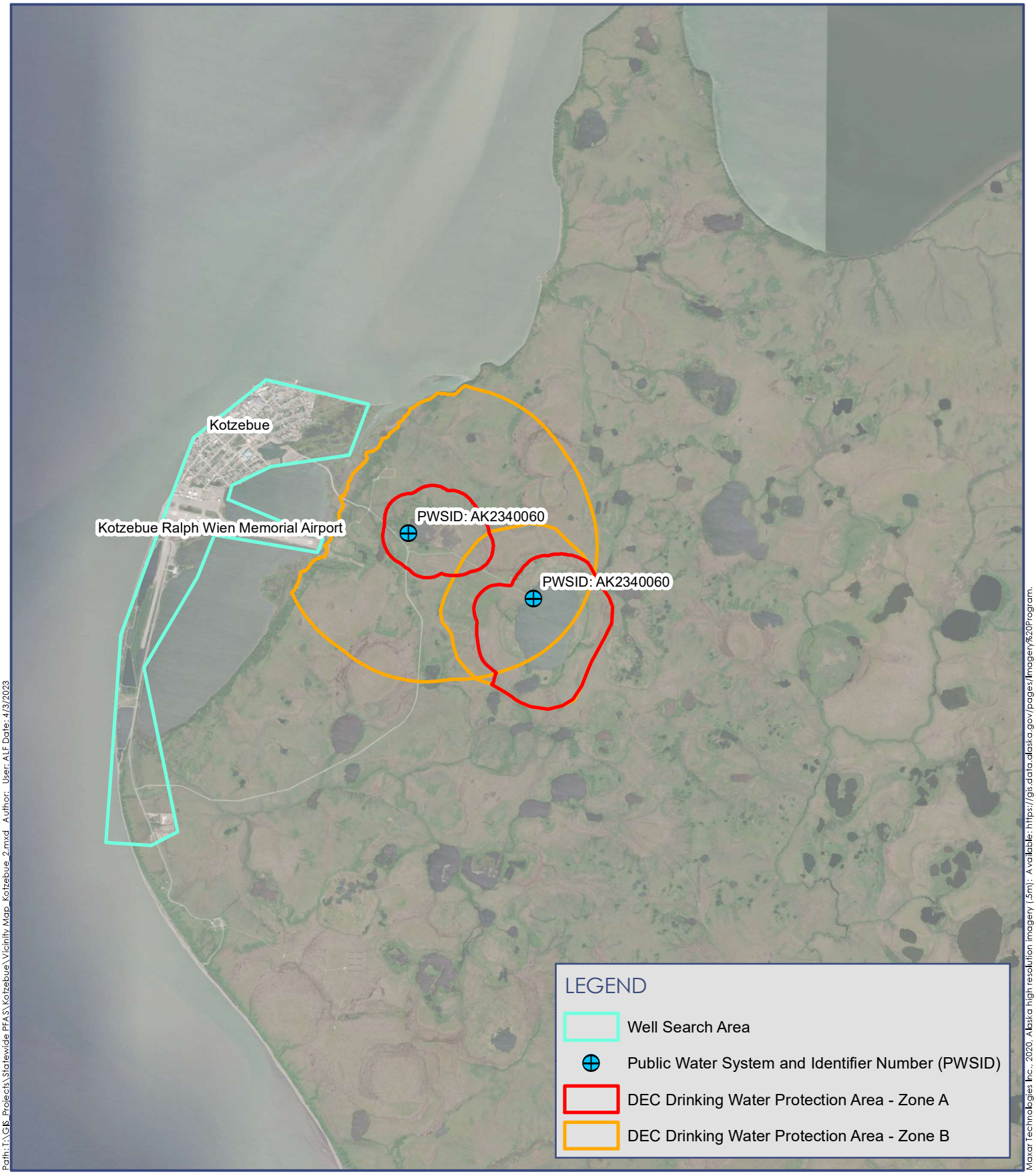
Revised, 10/01/2010

APPENDIX C: KOTZEBUE AIRPORT SUPPORTING DOCUMENTS

Appendix C

Kotzebue Airport Supporting Documents

CONTENTS



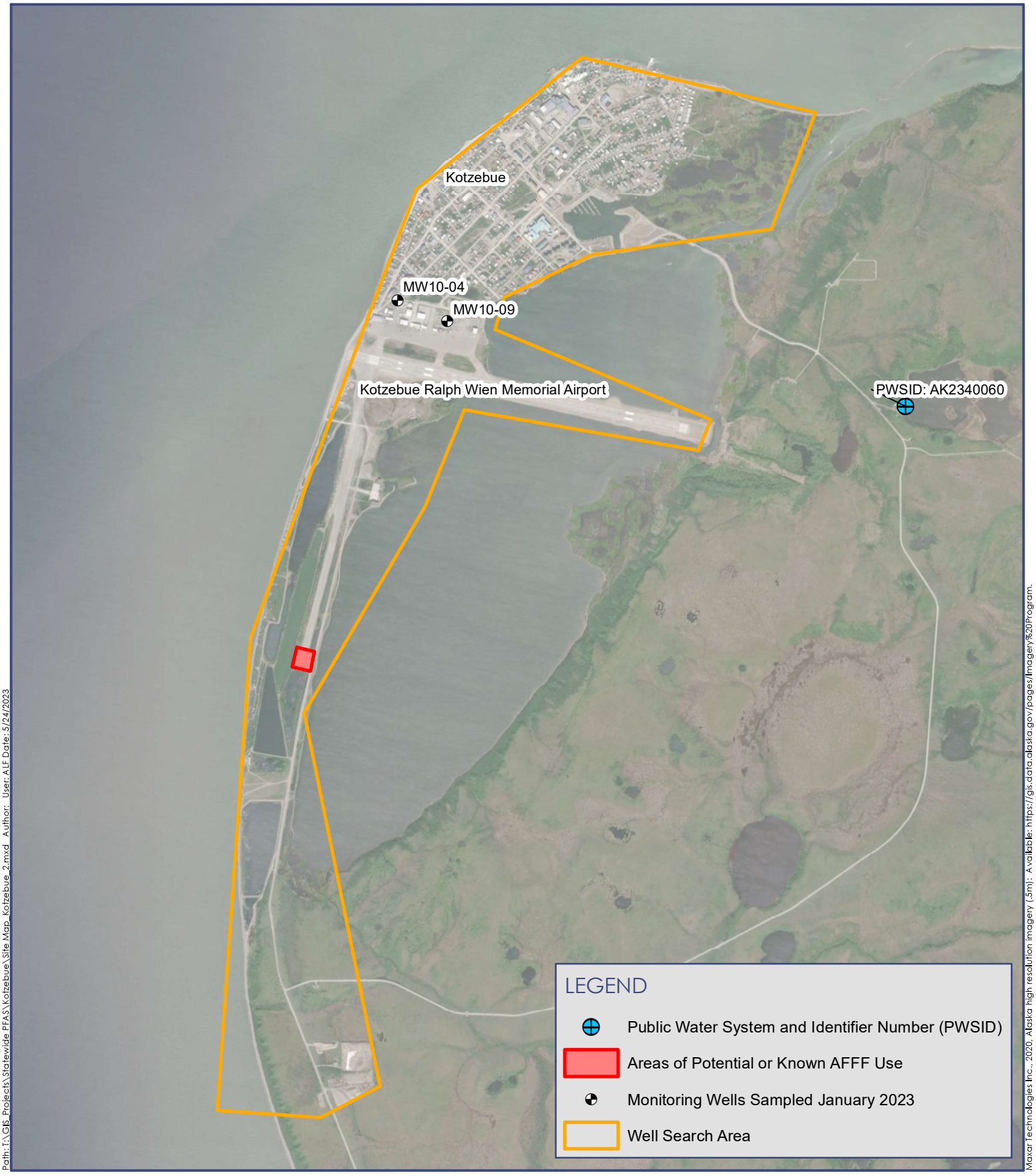
Path: I:\GIS_Projects\Statewide PFAS\Kotzebue\Vicinity Map_Kotzebue_2.mxd Author: User: ALF Date: 4/3/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/imagery%20Program.

January 2023

VICINITY MAP

Figure C1



January 2024

SITE MAP

Figure C2

Path: I:\GIS_Projects\Statewide PFAS\Kotzebue\Kotz_AnalyticalResults_2023 Report.mxd Author: User: ALF Date: 4/11/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/imagery%20Program.

Notes:
1. AFFF: Aqueous Film Foaming Foam
2. Locations are approximate
3. Samples collected in November 2022

ng/L = nanograms per liter, equivalent to parts per trillion (ppt)

January 2024

ANALYTICAL RESULTS SUMMARY

Figure C3

Table C1 - Kotzebue Monitoring Well Analytical Results - December 2022

Analytical Method	Analyte	Regulatory Limit	Units	MW10-04 12/3/2022	MW10-04 Duplicate	MW10-09 12/3/2022
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	160	150	5.2
	Perfluorooctanoic acid (PFOA)	400	ng/L	9.7	10	41
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	N/A	ng/L	<4.2	<3.9	<4.4
	Perfluorobutanesulfonic acid (PFBS)	N/A	ng/L	0.84 J	0.78 J	7.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	2.6	2.3	<2.2
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<2.1	<2.0	<2.2 J*
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	7.8	7.5	160
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	9.6	9.5	43
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	14	15	280
	Perfluorononanoic acid (PFNA)	N/A	ng/L	24	24	1.2J
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<2.1	<2.0	<2.2 J*
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<2.1	<2.0	<2.2 J*
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<2.1	<2.0	<2.2
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<2.1	<2.0	<2.2
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<2.1	<2.0	<2.2
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<2.1	<2.0	<2.2
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<5.3	<4.9	<5.5 J*
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<5.3	<4.9	<5.5 J*

Notes:
Results reported from Eurofins Environmental Testing work order 320-94968-1.
Alaska Department of Environmental Conservation (DEC) Groundwater Cleanup Levels from 18 AAC 75.345 Table C.

DEC Alaska Department of Environmental Conservation
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

November 2022

Dear Property Owner or Occupant:

The Department of Transportation and Public Facilities (DOT&PF) is conducting a comprehensive evaluation of per- and polyfluoroalkyl substances (PFAS) contamination at and near state-owned or state-operated airports. Due to requirements by the Federal Aviation Administration (FAA), firefighters at the Kotzebue Ralph Wien Memorial Airport (OTZ) have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, to extinguish hydrocarbon fires during training exercises and emergency events.

This is an Issue Notice that only applies to Search Areas 1, 2 and 3 on the attached map. If you received this notice and do NOT reside in those areas, disregard this notice.

Out of an abundance of caution, the DOT&PF has contracted with environmental consulting firm, Shannon & Wilson, Inc., to sample water supply wells near airports across the state. We understand Kotzebue is primarily served by the City of Kotzebue Water Utility and that the surface water lakes used as the source for the municipal water supply are not impacted by AFFF use at the Kotzebue Airport. However, you are receiving this letter as part of our efforts to identify water supply wells that may be in use near the OTZ. For the City of Kotzebue, we have broken the areas around the airport into three search areas to assist with tracking responses. These areas are outlined on the enclosed map.

If water supply wells are identified, Shannon & Wilson will evaluate the need to conduct a water sampling effort in Kotzebue. If you have an active well in the three search areas, please call Shannon & Wilson at (907) 479-0600 or complete the enclosed Water Supply Well Survey and return to:

Shannon & Wilson
c/o Kristen Freiburger
2355 Hill Road
Fairbanks, AK 99712
Or email: kristen.freiburger@shanwil.com

Water supply well sample results will be compared to the Alaska Department of Conservation action level of 70 parts per trillion for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two compounds within the PFAS family. PFAS are emerging contaminants, and the research into the health effects of exposure to PFAS is ongoing. Results of water samples will be shared with property owners and residents. If your drinking-water well

is found to have PFAS above the action level, DOT&PF will assist with access to alternative drinking water.

If you have any questions, please contact me, or see the enclosed contact list to identify the most appropriate person or agency for your inquiry. We appreciate your patience as we work through this process. As of the date of this mailing, DOT&PF and their representatives have informed the community leadership of our efforts.

Sincerely,

Sammy Cummings
PFAS Program Manager, DOT&PF Statewide Aviation

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Water Supply Well Inventory Survey Form

Date: _____

Parcel: _____

Name (Owner): _____

Name (Occupant): _____

Physical Address: _____

Mailing Address: _____

Email Address (optional): _____

Contact Phone Number: (owner) _____ (occupant) _____

Number of persons residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: _____ Full-Time ☐ Seasonal ☐

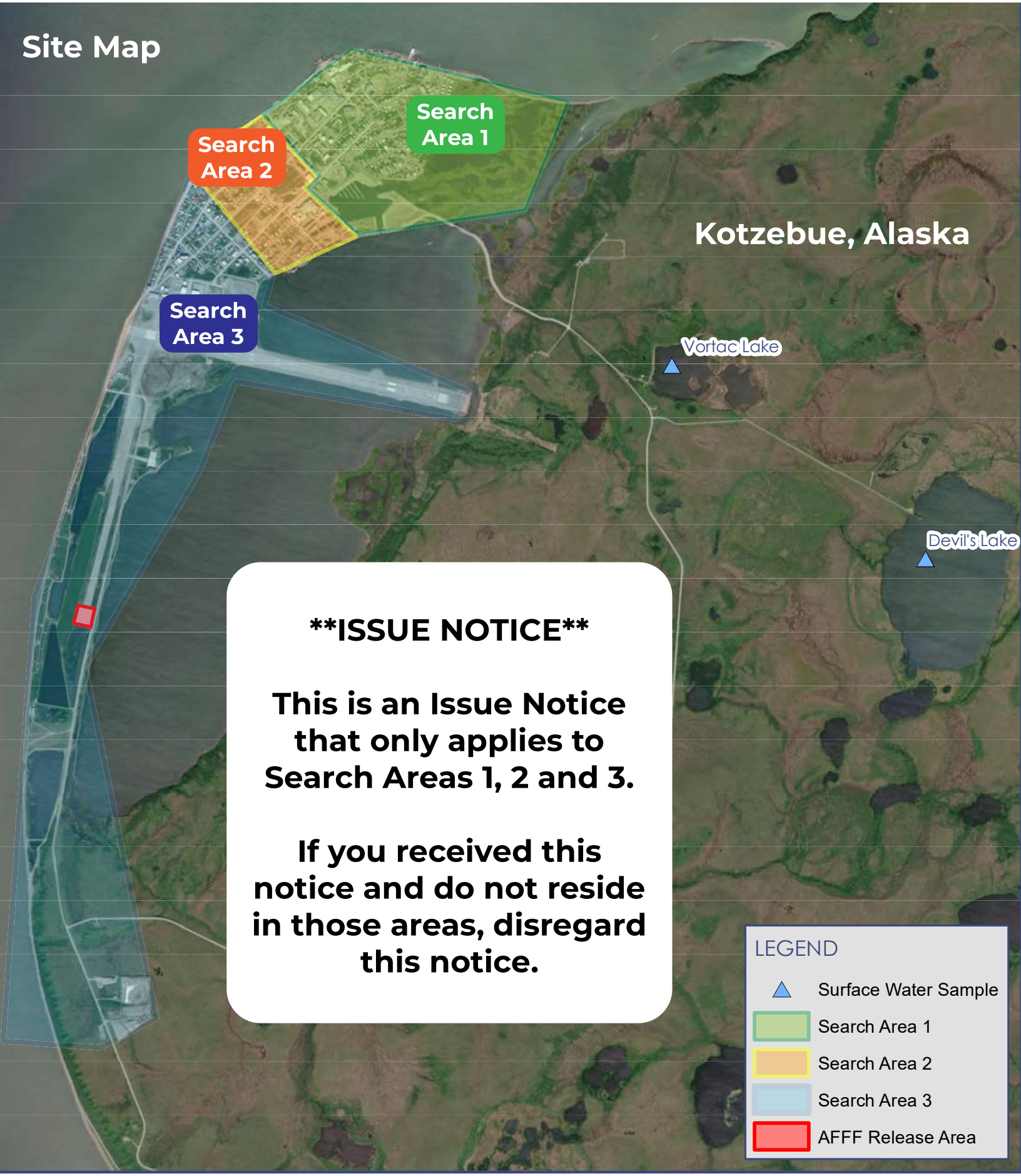
---

1) From where do you obtain your drinking water?
   a) Water Supply Utility ☐ b) Well Water ☐
   c) Water Delivery ☐ d) Other ☐

2) If you have a water well, please answer the following questions:
   a) Where is the well located on the property? _____
   b) Is the well in use? Yes ☐ No ☐
   c) If yes, please check all that apply regarding the usage of your well water:
      Drinking ☐ Cooking ☐ Gardening ☐ Pets ☐ Other _____
   d) If no, is the well usable, unusable, or properly abandoned?
      Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   e) When was the well installed? _____
   f) What is the well depth? _____ Do you have the well log? ☐ Yes ☐ No
   g) What is the well diameter? _____
   h) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   i) Do you have any treatment on your well (e.g. water softener)? Please describe. _____
      _____

3) Sample Permission
   Does the Alaska Department of Transportation & Public Facilities (DOT&PF) have permission to sample your private water well? ☐ Yes ☐ No

_____ _____
Signature Date


Site Map
Search Area 1
Search Area 2
Search Area 3
Kotzebue, Alaska
Vortac Lake
Devil's Lake
ISSUE NOTICE
This is an Issue Notice that only applies to Search Areas 1, 2 and 3.
If you received this notice and do not reside in those areas, disregard this notice.
LEGEND
Surface Water Sample
Search Area 1
Search Area 2
Search Area 3
AFFF Release Area

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet – Kotzebue Airport

October 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS groundwater contamination in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation Bill O'Connell, Contaminated Sites Program Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Dept. of Health
Sarah Yoder, Env. Public Health Program Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NAME Kotzebue DOT&PF JOB NO. 109531
SUBJECT MW10-09 DATE 12/03/2022
BY APW CHK'D SHEET 1 of 1

Total Well Depth: 7.35' Size of Casing: 2" PVC

Depth to water: 6.75' Gallons of water in Well: 0.102

Top of Casing to Top of Monument: 0.02

Top of Monument to Ground surface: deep snow cover

Sample ID: MW10-09 @ 1740

Time	Temperature	DO	Conductivity	pH	ORP	Clarity
16:40	purge start	well	purged dry	almost	immediately	
	No parameters. Well recharges up to 100 mL every 10 min.					

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NAME _____ JOB NO. _____
SUBJECT MW10-04 DATE 12/03/22
BY APW CHK'D _____ SHEET 1 of 1

Total Well Depth: 11.75'

Size of Casing: 2" PVC

Depth to water: 8.37'

Gallons of water in Well: 0.57

Top of Casing to Top of Monument: 0.5'

Top of Monument to Ground surface: 3.0'

Sample ID: MW10-04 @ 1840 DUP: MW110-04 @ 1830

Purge start @ 1808. well purged dry @ 1813 and allowed to recharge.

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 12/19/2022 4:52:29 PM

JOB DESCRIPTION

ADQT&PP Statewide

JOB NUMBER

320-94968-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

Generated
12/19/2022 4:52:29 PM

Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-94968-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-94968-1

Receipt
The samples were received on 12/6/2022 1:36 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4º C.

LCMS
Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: MW10-09 (320-94968-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

Method EPA 537(Mod): The matrix spike duplicate (MSD) recoveries for Perfluorobutanesulfonic acid (PFBS) of preparation batch 320-639072 and analytical batch 320-640016 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

Organic Prep
Method 3535: The following samples in preparation batch 320-639072 were light brown in color prior to extraction. MW110-04 (320-94968-1) and MW10-04 (320-94968-2)

Method 3535: The following samples in preparation batch 320-639072 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. MW110-04 (320-94968-1) and MW10-04 (320-94968-2)

Method 3535: Due to the thin layer of sediment present in the bottom of the bottle, the following samples were centrifuged and decanted into new 250 mL container: MW110-04 (320-94968-1) and MW10-04 (320-94968-2). After centrifuging and decanting, the samples were fortified with IDA and then extracted. 320-639072

Method 3535: The following sample in preparation batch 320-639072 was light brown in color and observed to have floating particulates present in the sample bottle. MW10-09 (320-94968-3)

Method 3535: During the solid phase extraction process, the following samples contained floating particulates which clogged the solid phase extraction column: MW10-09 (320-94968-3). 320-639072

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Client Sample ID: MW110-04 — Lab Sample ID: 320-94968-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	15		2.0	0.57	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.5		2.0	0.25	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	10		2.0	0.84	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	24		2.0	0.27	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	2.3		2.0	0.31	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.78		2.0	0.20	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.5		2.0	0.56	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	150		2.0	0.53	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MW10-04 — Lab Sample ID: 320-94968-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	14		2.1	0.61	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.8		2.1	0.26	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	9.7		2.1	0.90	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	24		2.1	0.28	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	2.6		2.1	0.33	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.84		2.1	0.21	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.6		2.1	0.60	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	160		2.1	0.57	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MW10-09 — Lab Sample ID: 320-94968-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	280		2.2	0.64	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	160		2.2	0.28	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	41		2.2	0.94	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.2		2.2	0.30	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	7.9		2.2	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	43		2.2	0.63	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.2		2.2	0.60	ng/L	1	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Client Sample ID: MW110-04

Date Collected: 12/03/22 18:30
Date Received: 12/06/22 13:36

Lab Sample ID: 320-94968-1

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**15**		2.0	0.57	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluoroheptanoic acid (PFHpA)	**7.5**		2.0	0.25	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorooctanoic acid (PFOA)	**10**		2.0	0.84	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorononanoic acid (PFNA)	**24**		2.0	0.27	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorodecanoic acid (PFDA)	**2.3**		2.0	0.31	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorobutanesulfonic acid (PFBS)	**0.78**	**J**	2.0	0.20	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorohexanesulfonic acid (PFHxS)	**9.5**		2.0	0.56	ng/L		12/12/22 06:38	12/14/22 12:55	1
Perfluorooctanesulfonic acid (PFOS)	**150**		2.0	0.53	ng/L		12/12/22 06:38	12/14/22 12:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		12/12/22 06:38	12/14/22 12:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		12/12/22 06:38	12/14/22 12:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/12/22 06:38	12/14/22 12:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		12/12/22 06:38	12/14/22 12:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		12/12/22 06:38	12/14/22 12:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		12/12/22 06:38	12/14/22 12:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C4 PFHpA	*97*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C4 PFOA	*94*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C5 PFNA	*99*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C2 PFDA	*91*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C2 PFUnA	*97*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C2 PFDoA	*85*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C2 PFTeDA	*96*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C3 PFBS	*101*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
18O2 PFHxS	*98*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C4 PFOS	*94*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
d3-NMeFOSAA	*79*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
d5-NEtFOSAA	*75*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	
13C3 HFPO-DA	*91*		*50 - 150*	*12/12/22 06:38*	*12/14/22 12:55*	

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Client Sample ID: MW10-04

Date Collected: 12/03/22 18:40
Date Received: 12/06/22 13:36

Lab Sample ID: 320-94968-2

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**14**		2.1	0.61	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluoroheptanoic acid (PFHpA)	**7.8**		2.1	0.26	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorooctanoic acid (PFOA)	**9.7**		2.1	0.90	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorononanoic acid (PFNA)	**24**		2.1	0.28	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorodecanoic acid (PFDA)	**2.6**		2.1	0.33	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.2	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.58	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.4	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.77	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorobutanesulfonic acid (PFBS)	**0.84**	**J**	2.1	0.21	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorohexanesulfonic acid (PFHxS)	**9.6**		2.1	0.60	ng/L		12/12/22 06:38	12/14/22 13:06	1
Perfluorooctanesulfonic acid (PFOS)	**160**		2.1	0.57	ng/L		12/12/22 06:38	12/14/22 13:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.3	1.3	ng/L		12/12/22 06:38	12/14/22 13:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.3	1.4	ng/L		12/12/22 06:38	12/14/22 13:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		12/12/22 06:38	12/14/22 13:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.2	1.6	ng/L		12/12/22 06:38	12/14/22 13:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.34	ng/L		12/12/22 06:38	12/14/22 13:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		12/12/22 06:38	12/14/22 13:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C4 PFHpA	*90*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C4 PFOA	*93*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C5 PFNA	*96*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C2 PFDA	*96*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C2 PFUnA	*100*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C2 PFDoA	*88*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C2 PFTeDA	*94*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C3 PFBS	*92*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
18O2 PFHxS	*94*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C4 PFOS	*89*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
d3-NMeFOSAA	*79*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
d5-NEtFOSAA	*79*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	
13C3 HFPO-DA	*86*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:06*	

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Client Sample ID: MW10-09

Date Collected: 12/03/22 17:40
Date Received: 12/06/22 13:36

Lab Sample ID: 320-94968-3

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**280**		2.2	0.64	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluoroheptanoic acid (PFHpA)	**160**		2.2	0.28	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorooctanoic acid (PFOA)	**41**		2.2	0.94	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorononanoic acid (PFNA)	**1.2**	**J**	2.2	0.30	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorodecanoic acid (PFDA)	ND		2.2	0.34	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluoroundecanoic acid (PFUnA)	ND		2.2	1.2	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorododecanoic acid (PFDoA)	ND		2.2	0.61	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorotridecanoic acid (PFTriA)	ND		2.2	1.4	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.2	0.81	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorobutanesulfonic acid (PFBS)	**7.9**		2.2	0.22	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorohexanesulfonic acid (PFHxS)	**43**		2.2	0.63	ng/L		12/12/22 06:38	12/14/22 13:36	1
Perfluorooctanesulfonic acid (PFOS)	**5.2**		2.2	0.60	ng/L		12/12/22 06:38	12/14/22 13:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.5	1.3	ng/L		12/12/22 06:38	12/14/22 13:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.5	1.4	ng/L		12/12/22 06:38	12/14/22 13:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.2	0.27	ng/L		12/12/22 06:38	12/14/22 13:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.4	1.7	ng/L		12/12/22 06:38	12/14/22 13:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.2	0.35	ng/L		12/12/22 06:38	12/14/22 13:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.2	0.44	ng/L		12/12/22 06:38	12/14/22 13:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*58*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C4 PFHpA	*59*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C4 PFOA	*63*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C5 PFNA	*66*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C2 PFDA	*62*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C2 PFUnA	*59*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C2 PFDoA	*48*	**5-*	*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C2 PFTeDA	*39*	**5-*	*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C3 PFBS	*56*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
18O2 PFHxS	*64*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C4 PFOS	*62*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
d3-NMeFOSAA	*43*	**5-*	*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
d5-NEtFOSAA	*43*	**5-*	*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	
13C3 HFPO-DA	*54*		*50 - 150*	*12/12/22 06:38*	*12/14/22 13:36*	

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTDA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-94968-1	MW110-04	97	97	94	99	91	97	85	96
320-94968-2	MW10-04	96	90	93	96	96	100	88	94
320-94968-3	MW10-09	58	59	63	66	62	59	48 *5-	39 *5-
320-94998-A-1-B MS	Matrix Spike		93	95	90	86	93	81	92
320-94998-A-1-C MSD	Matrix Spike Duplicate		101	96	101	98	106	91	102
LCS 320-639072/2-A	Lab Control Sample	88	80	82	87	87	86	81	89
LCSD 320-639072/3-A	Lab Control Sample Dup	98	102	98	100	94	99	94	96
MB 320-639072/1-A	Method Blank	101	110	94	102	98	98	89	100

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		C3PFBS	PFHxS	PFOS	d3NMFOS	d5NEFOS	HFPODA		
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)		
320-94968-1	MW110-04	101	98	94	79	75	91		
320-94968-2	MW10-04	92	94	89	79	79	86		
320-94968-3	MW10-09	56	64	62	43 *5-	43 *5-	54		
320-94998-A-1-B MS	Matrix Spike	100	102	92	68	69	90		
320-94998-A-1-C MSD	Matrix Spike Duplicate	109	109	101	82	77	98		
LCS 320-639072/2-A	Lab Control Sample	94	98	91	69	73	80		
LCSD 320-639072/3-A	Lab Control Sample Dup	99	105	98	76	77	96		
MB 320-639072/1-A	Method Blank	102	97	99	80	78	91		

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-639072/1-A
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 639072

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		12/12/22 06:38	12/14/22 11:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		12/12/22 06:38	12/14/22 11:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		12/12/22 06:38	12/14/22 11:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		12/12/22 06:38	12/14/22 11:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/12/22 06:38	12/14/22 11:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		12/12/22 06:38	12/14/22 11:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		12/12/22 06:38	12/14/22 11:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		12/12/22 06:38	12/14/22 11:34	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C4 PFHpA	*110*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C4 PFOA	*94*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C5 PFNA	*102*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C2 PFDA	*98*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C2 PFUnA	*98*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C2 PFDoA	*89*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C2 PFTeDA	*100*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C3 PFBS	*102*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
18O2 PFHxS	*97*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C4 PFOS	*99*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
d5-NEtFOSAA	*78*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*
13C3 HFPO-DA	*91*		*50 - 150*	*12/12/22 06:38*	*12/14/22 11:34*	*1*

Lab Sample ID: LCS 320-639072/2-A
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 639072

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	39.3		ng/L		98	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.1		ng/L		105	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.7		ng/L		109	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-639072/2-A
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 639072

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	40.7		ng/L		102	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.8		ng/L		107	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	43.8		ng/L		110	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	42.8		ng/L		107	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.7		ng/L		101	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.6		ng/L		98	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.6		ng/L		101	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.6		ng/L		102	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.8		ng/L		97	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	36.8		ng/L		98	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.9		ng/L		100	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	37.0		ng/L		98	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	37.8		ng/L		100	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*88*		*50 - 150*
13C4 PFHpA	*80*		*50 - 150*
13C4 PFOA	*82*		*50 - 150*
13C5 PFNA	*87*		*50 - 150*
13C2 PFDA	*87*		*50 - 150*
13C2 PFUnA	*86*		*50 - 150*
13C2 PFDoA	*81*		*50 - 150*
13C2 PFTeDA	*89*		*50 - 150*
13C3 PFBS	*94*		*50 - 150*
18O2 PFHxS	*98*		*50 - 150*
13C4 PFOS	*91*		*50 - 150*
d3-NMeFOSAA	*69*		*50 - 150*
d5-NEtFOSAA	*73*		*50 - 150*
13C3 HFPO-DA	*80*		*50 - 150*

Lab Sample ID: LCSD 320-639072/3-A
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 639072

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.4		ng/L		101	72 - 129	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.9		ng/L		100	72 - 130	10	30
Perfluorooctanoic acid (PFOA)	40.0	42.9		ng/L		107	71 - 133	2	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-639072/3-A
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 639072

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	42.1		ng/L		105	69 - 130	4	30
Perfluorodecanoic acid (PFDA)			40.0	41.7		ng/L		104	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)			40.0	43.1		ng/L		108	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)			40.0	43.4		ng/L		109	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)			40.0	43.3		ng/L		108	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)			40.0	42.6		ng/L		107	71 - 132	6	30
Perfluorobutanesulfonic acid (PFBS)			35.5	39.3		ng/L		111	72 - 130	10	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	36.0		ng/L		99	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)			37.2	38.1		ng/L		102	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.0		ng/L		105	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	38.3		ng/L		96	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	35.1		ng/L		94	77 - 137	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	40.2		ng/L		100	72 - 132	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	37.7		ng/L		100	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	43.4		ng/L		115	81 - 141	14	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*98*		*50 - 150*
13C4 PFHpA	*102*		*50 - 150*
13C4 PFOA	*98*		*50 - 150*
13C5 PFNA	*100*		*50 - 150*
13C2 PFDA	*94*		*50 - 150*
13C2 PFUnA	*99*		*50 - 150*
13C2 PFDoA	*94*		*50 - 150*
13C2 PFTeDA	*96*		*50 - 150*
13C3 PFBS	*99*		*50 - 150*
18O2 PFHxS	*105*		*50 - 150*
13C4 PFOS	*98*		*50 - 150*
d3-NMeFOSAA	*76*		*50 - 150*
d5-NEtFOSAA	*77*		*50 - 150*
13C3 HFPO-DA	*96*		*50 - 150*

Lab Sample ID: 320-94998-A-1-B MS
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 639072

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanoic acid (PFHpA)	34		36.1	77.4		ng/L		120	72 - 130
Perfluorooctanoic acid (PFOA)	70		36.1	112		ng/L		117	71 - 133

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: 320-94998-A-1-B MS
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 639072

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanoic acid (PFNA)	6.0		36.1	45.3		ng/L		109	69 - 130
Perfluorodecanoic acid (PFDA)	2.7		36.1	43.0		ng/L		111	71 - 129
Perfluoroundecanoic acid (PFUnA)	ND		36.1	36.4		ng/L		101	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		36.1	41.5		ng/L		115	72 - 134
Perfluorotridecanoic acid (PFTriA)	ND		36.1	41.8		ng/L		116	65 - 144
Perfluorotetradecanoic acid (PFTeA)	ND		36.1	35.7		ng/L		99	71 - 132
Perfluorobutanesulfonic acid (PFBS)	71	F1	32.1	110		ng/L		121	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	28		33.0	60.5		ng/L		100	68 - 131
Perfluorooctanesulfonic acid (PFOS)	120		33.6	161		ng/L		110	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		36.1	37.7		ng/L		104	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		36.1	34.9		ng/L		97	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		33.8	33.7		ng/L		100	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		36.1	38.5		ng/L		106	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		34.1	34.0		ng/L		100	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		34.1	39.9		ng/L		117	81 - 141

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFHpA	*93*		*50 - 150*
13C4 PFOA	*95*		*50 - 150*
13C5 PFNA	*90*		*50 - 150*
13C2 PFDA	*86*		*50 - 150*
13C2 PFUnA	*93*		*50 - 150*
13C2 PFDoA	*81*		*50 - 150*
13C2 PFTeDA	*92*		*50 - 150*
13C3 PFBS	*100*		*50 - 150*
18O2 PFHxS	*102*		*50 - 150*
13C4 PFOS	*92*		*50 - 150*
d3-NMeFOSAA	*68*		*50 - 150*
d5-NEtFOSAA	*69*		*50 - 150*
13C3 HFPO-DA	*90*		*50 - 150*

Lab Sample ID: 320-94998-A-1-C MSD
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 639072

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	34		37.8	79.8		ng/L		121	72 - 130	3	30
Perfluorooctanoic acid (PFOA)	70		37.8	112		ng/L		112	71 - 133	0	30
Perfluorononanoic acid (PFNA)	6.0		37.8	45.3		ng/L		104	69 - 130	0	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: 320-94998-A-1-C MSD
Matrix: Water
Analysis Batch: 640016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 639072

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorodecanoic acid (PFDA)	2.7		37.8	42.0		ng/L		104	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	ND		37.8	38.1		ng/L		101	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	ND		37.8	42.8		ng/L		113	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)	ND		37.8	42.3		ng/L		112	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)	ND		37.8	38.2		ng/L		101	71 - 132	7	30
Perfluorobutanesulfonic acid (PFBS)	71	F1	33.6	117	F1	ng/L		135	72 - 130	6	30
Perfluorohexanesulfonic acid (PFHxS)	28		34.5	62.0		ng/L		100	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	120		35.2	163		ng/L		110	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		37.8	37.7		ng/L		100	65 - 136	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		37.8	39.2		ng/L		103	61 - 135	11	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		35.3	34.6		ng/L		98	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		37.8	38.5		ng/L		102	72 - 132	0	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		35.7	34.2		ng/L		96	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		35.7	39.9		ng/L		112	81 - 141	0	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFHpA	*101*		*50 - 150*
13C4 PFOA	*96*		*50 - 150*
13C5 PFNA	*101*		*50 - 150*
13C2 PFDA	*98*		*50 - 150*
13C2 PFUnA	*106*		*50 - 150*
13C2 PFDoA	*91*		*50 - 150*
13C2 PFTeDA	*102*		*50 - 150*
13C3 PFBS	*109*		*50 - 150*
18O2 PFHxS	*109*		*50 - 150*
13C4 PFOS	*101*		*50 - 150*
d3-NMeFOSAA	*82*		*50 - 150*
d5-NEtFOSAA	*77*		*50 - 150*
13C3 HFPO-DA	*98*		*50 - 150*

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

LCMS

Prep Batch: 639072

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94968-1	MW110-04	Total/NA	Water	3535	
320-94968-2	MW10-04	Total/NA	Water	3535	
320-94968-3	MW10-09	Total/NA	Water	3535	
MB 320-639072/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-639072/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-639072/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-94998-A-1-B MS	Matrix Spike	Total/NA	Water	3535	
320-94998-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

Analysis Batch: 640016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94968-1	MW110-04	Total/NA	Water	EPA 537(Mod)	639072
320-94968-2	MW10-04	Total/NA	Water	EPA 537(Mod)	639072
320-94968-3	MW10-09	Total/NA	Water	EPA 537(Mod)	639072
MB 320-639072/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	639072
LCS 320-639072/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	639072
LCSD 320-639072/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	639072
320-94998-A-1-B MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	639072
320-94998-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	639072

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Client Sample ID: MW110-04
Date Collected: 12/03/22 18:30
Date Received: 12/06/22 13:36

Lab Sample ID: 320-94968-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.3 mL	10.0 mL	639072	12/12/22 06:38	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640016	12/14/22 12:55	RS1	EET SAC

Client Sample ID: MW10-04
Date Collected: 12/03/22 18:40
Date Received: 12/06/22 13:36

Lab Sample ID: 320-94968-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			237 mL	10.0 mL	639072	12/12/22 06:38	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640016	12/14/22 13:06	RS1	EET SAC

Client Sample ID: MW10-09
Date Collected: 12/03/22 17:40
Date Received: 12/06/22 13:36

Lab Sample ID: 320-94968-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			225.7 mL	10.0 mL	639072	12/12/22 06:38	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640016	12/14/22 13:36	RS1	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: ADQT&PP Statewide

Job ID: 320-94968-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-94968-1	MW110-04	Water	12/03/22 18:30	12/06/22 13:36
320-94968-2	MW10-04	Water	12/03/22 18:40	12/06/22 13:36
320-94968-3	MW10-09	Water	12/03/22 17:40	12/06/22 13:36

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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Laboratory Eurofins
Attn: David Alltucker

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18	QSM B-15						Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW110-04		1830	12/3/22	X							2	Groundwater Grab Sample
MW10-04		1840		X							2	
MW10-09		1740		X							2	

320-94968 Chain of Custody

Project Information	
Number:	102219
Name:	ADOT&PF Statewide
Contact:	Kristen Freiburger
Ongoing Project?	Yes [X] No [ ]
Sampler:	APW / JKR

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	AK Air Cargo

Notes:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Adam Wyborny Time: 1200	Signature: Time:	Signature: Time:
Printed Name: Adam Wyborny Date: 12/5	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson, Inc.	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 13:36	Signature: Time:	Signature: Time:
Printed Name: N. Cahill Date: 12/5	Printed Name Date:	Printed Name: Date:
Company: EETSAC	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

3,4

No.

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-94968-1

Login Number: 94968
List Number: 1
Creator: Cahill, Nicholas P

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1722671
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Mason Craker	**CS Site Name:**	N/A	**Lab Name:**	Eurofins Environment Testing
Title:	Geology Staff	**ADEC File No.:**	N/A	**Lab Report No.:**	320-94968-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	N/A	**Lab Report Date:**	December 19, 2022

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: The ADEC certified Eurofins Environment Testing, West Sacramento for the analysis of PFAS. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Sample analyses were not subcontracted or transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories version 5.3 Table B-15.
   Comments:

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): Cooler temperature was not reported by the laboratory.
Sample temperature(s): A temperature blank was included with the samples in the cooler and is used to assess sample temperature. The temperature blank was reported at 3.4°C upon arrival at the laboratory.
Comments:

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: PFAS does not require any additional preservation beyond temperature control.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory notes that the samples arrived in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory does not note any discrepancies.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
The isotope dilution analyte (IDA) recovery associated with the sample *MW10-09* is below the method recommended limit. Generally, data quality is not affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

The matrix spike duplicate (MSD) recoveries for perfluorobutanesulfonic acid (PFBS) in preparation batch 320-639072 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

The samples *MW110-04* and *MW10-04* in preparation batch 320-639072 were light brown in color and were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction.

The sample *MW10-09* in preparation batch 320-639072 was light brown in color and observed to have floating particulates present in the sample bottle.

During the solid phase extraction process, the sample *MW10-09* contained floating particulates which clogged the solid phase extraction column.

Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments: Due to the thin layer of sediment present in the bottom of the bottle, the samples *MW110-04* and *MW10-04* were centrifuged and decanted into new 250mL containers. After centrifuging and decanting, the samples were fortified with IDA and then extracted

c. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not note an effect on data quality or usability.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LOQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments:

iii. If above LOQ or RL, what samples are affected?
Comments: There were no detections in the method blank associated with the project samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: LCS/LCSD were reported for method EPA 537(Mod).

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK

Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: None. %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: MS/MSD samples were reported for EPA 537(Mod).

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☒ N/A ☐
Comments: The MSD associated with preparation batch 639072 exhibited elevated recovery for PFBS.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if

applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: The field sample from which the MS/MSD were spiked is not included with this work order. Additionally, the PFBS spike added to the matrix was insufficient for accurate quantitation against the background PFBS concentration. The reported sample results are not affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Project samples were not affected.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☒ N/A ☐
Comments: IDA recovery was below the acceptable range for 13C2-PFDoA, 13C2-PFTeDA, d3-NMeFOSAA, and d5-NEtFOSAA in sample *MW10-09*.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: The analytes PFDoA, PFTriA, PFTeA, NMeFOSAA, and NEtFOSAA in sample *MW10-09* are considered estimated and have been assigned the data flag ‘UJ’ for reporting purposes.

iv. Is the data quality or usability affected?
Yes ☒ No ☐ N/A ☐

Comments: The data quality is affected. The affected results are considered usable with the qualifiers detailed above.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: PFAS are not volatile compounds; therefore, a trip blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LOQ or RL, what samples are affected?
Comments: None; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Field duplicate samples *MW10-04* and *MW110-04* was submitted with this work order.

ii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐
Comments: RPD are within project DQOs, where calculable.

iii. Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐
Comments: See above.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Reusable equipment was not used; therefore, an equipment blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LOQ or RL, specify what samples are affected.
Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☐ No ☐ N/A ☒
Comments: There are no other data flags/qualifiers.

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Kotzebue Airport Sitewide PFAS

File Number: 410.38.032

Completed by: Shannon & Wilson

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

PFAS has been detected in groundwater at the site, likely as a result of AFFF releases to the ground surface.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Groundwater is not used for drinking water in Kotzebue.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

We don't anticipate potentially affected surface bodies in the airport vicinity are being used as a drinking water source. However, the potential exists and we consider this pathway potentially complete.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Sediment has not been assessed at the site.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF Kotzebue Airport Sitewide PFAS

Completed By: Shannon & Wilson

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

Media	Transport Mechanisms
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil
	☑ Migration to subsurface — check soil
	☑ Migration to groundwater — check groundwater
	☐ Volatilization — check air
	☑ Runoff or erosion — check surface water
	☑ Uptake by plants or animals — check biota
	☐ Other (list):
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil
	☑ Migration to groundwater — check groundwater
	☐ Volatilization — check air
	☑ Uptake by plants or animals — check biota
	☐ Other (list):
☑ Ground-water	☑ Direct release to groundwater — check groundwater
	☐ Volatilization — check air
	☑ Flow to surface water body — check surface water
	☑ Flow to sediment — check sediment
	☑ Uptake by plants or animals — check biota
	☐ Other (list):
☑ Surface Water	☑ Direct release to surface water — check surface water
	☐ Volatilization — check air
	☐ Sedimentation — check sediment
	☐ Uptake by plants or animals — check biota
	☐ Other (list):
☑ Sediment	☑ Direct release to sediment — check sediment
	☑ Resuspension, runoff, or erosion — check surface water
	☑ Uptake by plants or animals — check biota
	☐ Other (list):

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F	C/F	C/F	
☑ groundwater	☐ Ingestion of Groundwater							
	☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☐ Inhalation of Volatile Compounds in Tap Water							
☐ air	☐ Inhalation of Outdoor Air							
	☐ Inhalation of Indoor Air							
	☐ Inhalation of Fugitive Dust							
☑ surface water	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☐ Inhalation of Volatile Compounds in Tap Water							
☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	

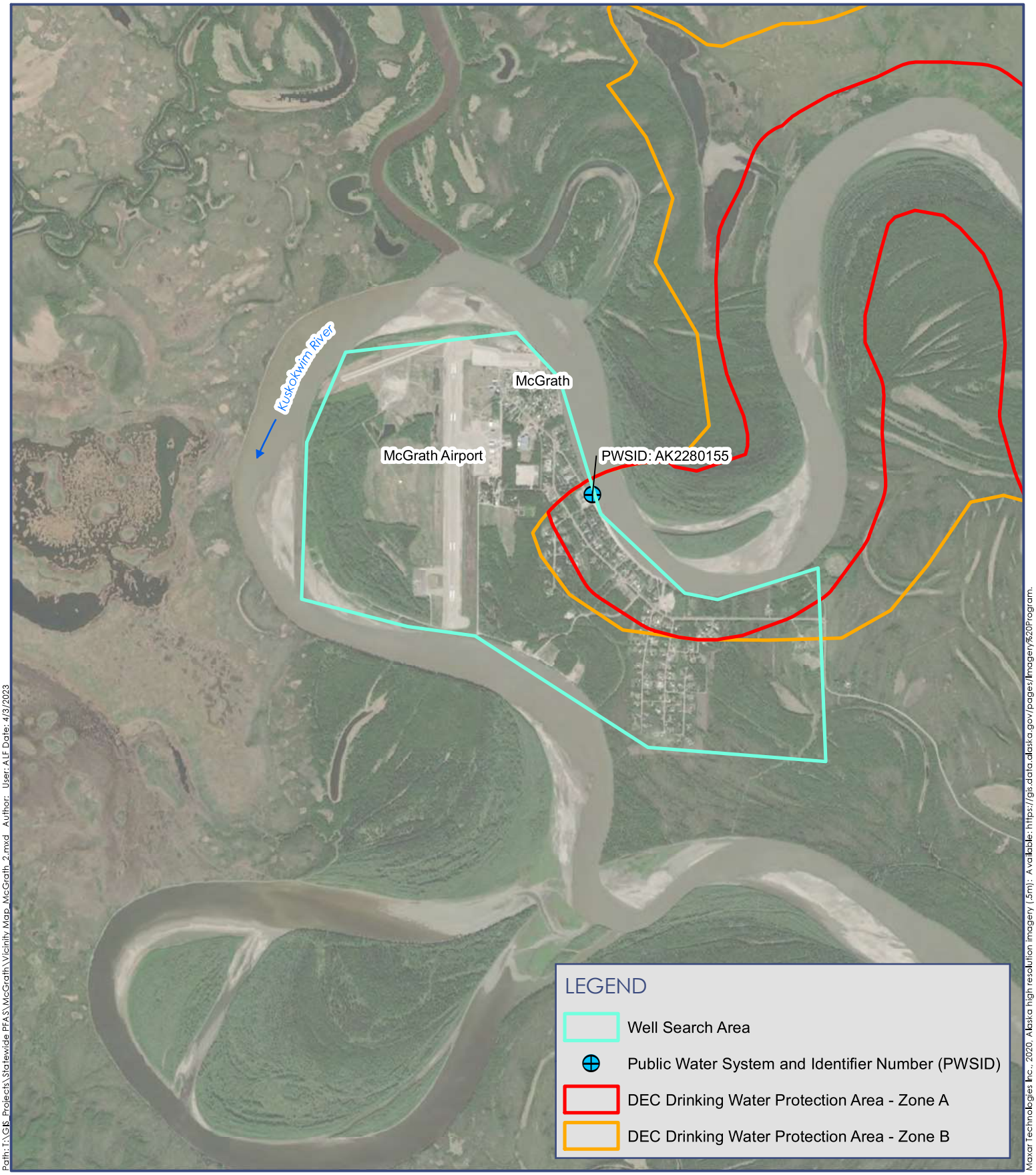
Revised, 10/01/2010

APPENDIX D: MCGRATH AIRPORT SUPPORTING DOCUMENTS

Appendix D

McGrath Airport Supporting Documents

CONTENTS



January 2024

VICINITY MAP

Figure D1

N

0 0.5

Miles

Notes:

1. Search area is approximate

January 2024

SITE MAP

Figure D2

Notes:
1. Locations are approximate
2. Samples collected in January and August 2023
ng/L = nanograms per liter, equivalent to parts per trillion (ppt)

January 2024

HIGHEST PFOS + PFOA RESULTS

Figure D3

Table D1 - McGrath Water Supply Well Analytical Results - January 2023

Analytical Method	Analyte	Regulatory Limit	Units	MCG-001 1/10/2023	MCG-003 1/10/2023	MCG-007 1/10/2023	MCG-021 1/10/2023	MCG-024¥ 1/11/2023	MCG-024¥ Duplicate
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.6	<1.7	<1.7	6.7	<1.7	<1.7
	Perfluorooctanoic acid (PFOA)		ng/L	<1.6	5.5	<1.7	3.9	<1.7	<1.7
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.3	<3.4	<3.3	<3.5	<3.4	<3.4
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	2.7	<1.7	0.71J	1.1J	<1.7	<1.7
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	0.26J	1.8	<1.7	1.3J	<1.7	<1.7
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	4.6	1.6J	<1.7	9.0	<1.7	<1.7
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	2.2	3.8	3.4	3.1	<1.7	<1.7
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.6	<1.7	<1.7	<1.8	<1.7	<1.7
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.1	<4.2	<4.1	<4.4	<4.3	<4.3
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.1	<4.2	<4.1	<4.4	<4.3	<4.3

Notes:
Results reported from Eurofins Environment Testing work order 320-96053-1.
¥ Sample MCG-024 was collected at the McGrath Municipal Water Treatment Plant upstream of the treatment system.
† Final EPA PFAS LHAs (HFPO-DA/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of quantitation (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.

Table D2 — McGrath Water Supply Well Analytical Results- August 2023

Analytical Method	Analyte	Regulatory Limit	Units	MCG-018 8/10/2023	MCG-021 8/10/2023	MCG-054 8/10/2023	MCG-080 8/13/2023	MCG-201 8/8/2023	MCG-219 8/10/2023	MCG-259 8/11/2023	MCG-275 8/10/2023	MCG-275 8/10/2023
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	5.2	5.9	<1.8	<1.8	<1.8	1.4J	<1.8	<1.8	<1.8
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	6.8	4.9	2.2	<1.8	<1.8	2.1	<1.8	1.9	2.1
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.5	<3.4	<3.6	<3.5	<3.7	<3.5	<3.5	<3.6	<3.6
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	1.2J	1.0J	1.3J	0.62J	0.57J	1.4J	<1.8	1.8	1.7J
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.7	<1.8J*	<1.8J*	<1.8J*	<1.8	<1.8J*	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	2.7	1.8	0.69J	<1.8	0.27J	2.1	<1.8	0.96J	0.90J
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	2.2	8.0	1.2J	<1.8	1.2J	2.6	<1.8	1.3J	1.3J
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	5.1	4.7	2.8	<1.8	<1.8	9.1	0.91J	9.7	9.7
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.7	<1.8J*	<1.8J*	<1.8J*	<1.8	<1.8J*	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.7	<1.8J*	<1.8J*	<1.8J*	<1.8	<1.8J*	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8J*	<1.8J*	<1.8	<1.8J*	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.4	<4.2	<4.6	<4.4J*	<4.6J*	<4.4	<4.4J*	<4.5	<4.5
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.4	<4.2	<4.6	<4.4J*	<4.6J*	<4.4	<4.4J*	<4.5	<4.5

Notes: Results reported from Eurofins Environment Testing work order 320-103891-1.
† Final EPA PFAS LHAs (HFPO-DA/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the reporting limit unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit and less than the reporting limit. Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

Table D3 - McGrath Monitoring Well Analytical Results - January 2023

Analytical Method	Analyte	Regulatory Limit	Units	MCG-MW-01 1/11/2023	MCG-MW-01 Duplicate	MCG-MW-02 1/11/2023	MCG-MW-03 1/11/2023	MCG-MW-04 1/11/2023
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	Perfluorooctanoic acid (PFOA)		ng/L	<1.9	<1.8	55	<1.8	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.8	<3.5	<3.5	<3.5	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	6.0	5.4	18	1.8	0.39J
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	2.3	2.3	32	0.27J	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	14	13	450	0.82 JH*	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	25	24	65	2.6	0.64J
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.8	<4.4	<4.4	<4.4	<4.7
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.8	<4.4	<4.4	<4.4	<4.7

Notes:
Results reported from Eurofins Environment Testing work order 320-96053-1.
† Final EPA PFAS LHAs (HFPO-DA/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of quantitation (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
JH* Estimated concentration, biased high, due to quality control failure. Flag applied by Shannon & Wilson, Inc.

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

November 2022

Dear Property Owner or Occupant:

The Department of Transportation and Public Facilities (DOT&PF) is conducting a comprehensive evaluation of per- and polyfluoroalkyl substances (PFAS) contamination at state owned airports across the state. Firefighters at the McGrath Airport may have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, to extinguish hydrocarbon fires during training exercises and emergency events.

The DOT&PF has contracted with environmental consulting firm, Shannon & Wilson, Inc., to collect groundwater samples from water supply wells near the airport in McGrath. Prior to the sampling event, DOT&PF and their representatives will also reach out to the community leadership to discuss the project and address questions related to the upcoming event.

If you have an active well within the search areas (see attached map), please call (907) 458-3146 to schedule a sampling appointment during the dates listed below or discuss your availability with Shannon & Wilson.

December 13 to December 15

Water supply well sample results will be compared to the Alaska Department of Conservation (DEC) action level of 70 parts per trillion for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two compounds within the PFAS family. PFAS are emerging contaminants, and the research into the health effects of exposure to PFAS is ongoing. Results for the water samples will be shared with property owners and residents. If your drinking-water well is found to have PFAS above the action level, DOT&PF will assist with access to alternative drinking water.

If you have any questions, please contact me, or see the enclosed contact list to identify the most appropriate person or agency for your inquiry. We appreciate your patience as we work through this process.

Sincerely,

Sammy Cummings
PFAS Program Manager, DOT&PF Statewide Aviation

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Water Supply Well Inventory Survey Form

Date: _____

Parcel: _____

Name (Owner): _____

Name (Occupant): _____

Physical Address: _____

Mailing Address: _____

Email Address (optional): _____

Contact Phone Number: (owner) _____ (occupant) _____

Number of persons residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: _____ Full-Time ☐ Seasonal ☐

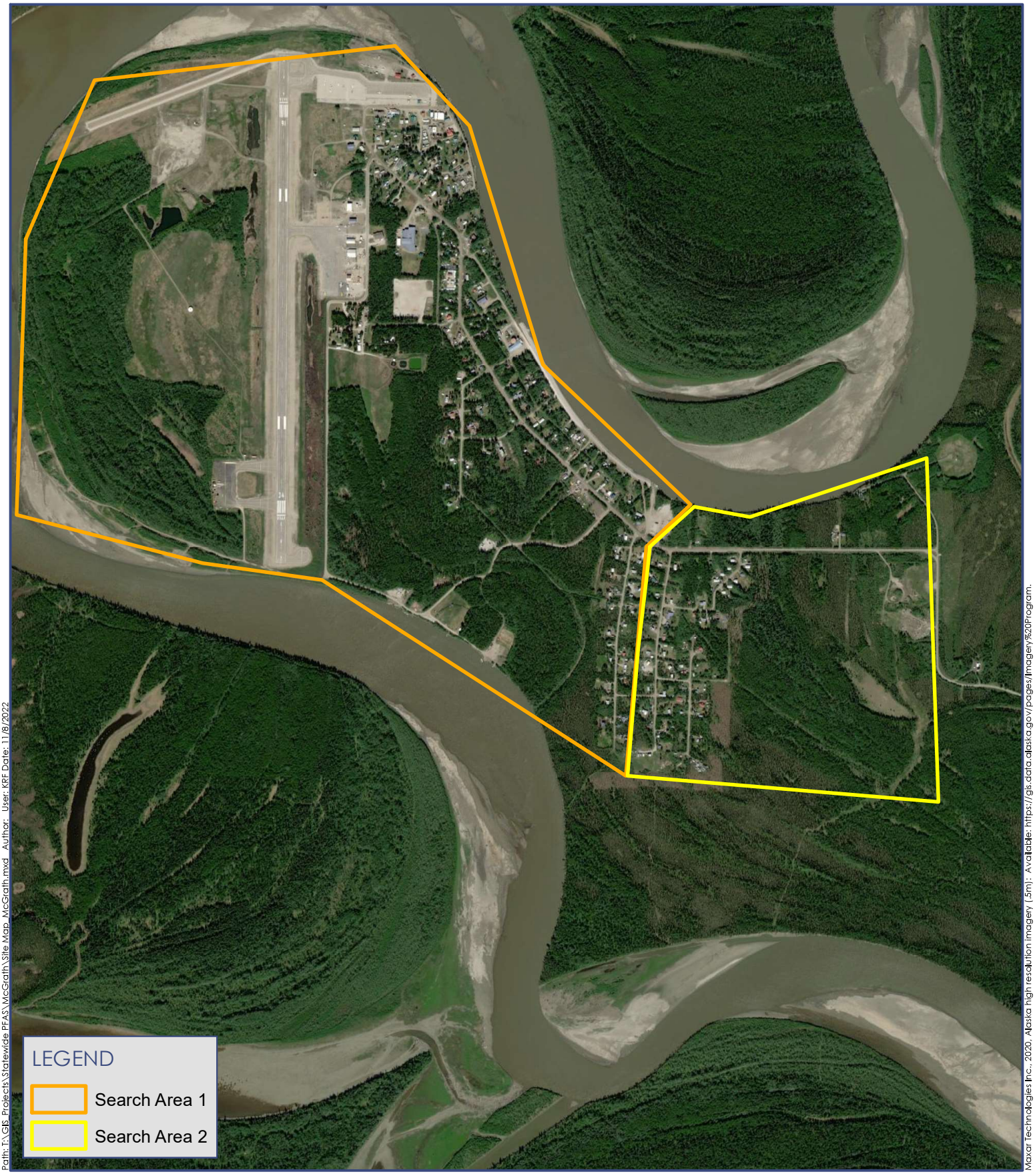
---

1) From where do you obtain your drinking water?
   a) Water Supply Utility ☐ b) Well Water ☐
   c) Water Delivery ☐ d) Other ☐

2) If you have a water well, please answer the following questions:
   a) Where is the well located on the property? _____
   b) Is the well in use? Yes ☐ No ☐
   c) If yes, please check all that apply regarding the usage of your well water:
      Drinking ☐ Cooking ☐ Gardening ☐ Pets ☐ Other _____
   d) If no, is the well usable, unusable, or properly abandoned?
      Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   e) When was the well installed? _____
   f) What is the well depth? _____ Do you have the well log? ☐ Yes ☐ No
   g) What is the well diameter? _____
   h) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   i) Do you have any treatment on your well (e.g. water softener)? Please describe. _____
      _____

3) Sample Permission
   Does the Alaska Department of Transportation & Public Facilities (DOT&PF) have permission to sample your private water well? ☐ Yes ☐ No

_____ _____
Signature Date



Path: T:\GIS_Projects\Statewide PFAS\McGrath\Site Map_McGrath.mxd Author: User: KRF Date: 11/8/2022

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/Imagery%20Program.

Notes:

1. Search area is approximate

November 2022

SITE MAP

Figure 1

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet –McGrath Airport

November 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters may have used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

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JOB DESCRIPTION

McGrath PFAS

JOB NUMBER

320-96053-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

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2/13/2023 2:08:07 PM

Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Qualifiers

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-96053-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-96053-1

Comments
No additional comments.

Receipt
The samples were received on 1/17/2023 6:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.6º C.

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

MCG-MW-03 (320-96053-4)

Method EPA 537(Mod): Results for sample MCG-MW-02 (320-96053-3) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-648221.

320-648221
Method: PFC_IDA_B15
Matrix: Water

Method 3535: The following sample in preparation batch 320-648221 was observed to be yellow and contain a thin layer of sediment present in the bottom of the bottle prior to extraction. MCG-003 (320-96053-7)

320-648221
Method: PFC_IDA_B15
Matrix: Water

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-MW-01 — Lab Sample ID: 320-96053-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	25		1.9	0.55	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3		1.9	0.24	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	6.0		1.9	0.19	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14		1.9	0.54	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-MW-101 — Lab Sample ID: 320-96053-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	24		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.4		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13		1.8	0.50	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-MW-02 — Lab Sample ID: 320-96053-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	65		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	32		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	55		1.8	0.75	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	18		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	450		8.8	2.5	ng/L	5	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-MW-03 — Lab Sample ID: 320-96053-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.6		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.27		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.8		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.82	J I	1.8	0.50	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-MW-04 — Lab Sample ID: 320-96053-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.64		1.9	0.54	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.39		1.9	0.19	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-001 — Lab Sample ID: 320-96053-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.2		1.6	0.48	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.26		1.6	0.21	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.7		1.6	0.16	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.6		1.6	0.47	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-003 — Lab Sample ID: 320-96053-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.8		1.7	0.49	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8		1.7	0.21	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	5.5		1.7	0.72	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6		1.7	0.48	ng/L	1	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-007 — Lab Sample ID: 320-96053-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.4		1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.71	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MCG-021 — Lab Sample ID: 320-96053-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.1		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.9		1.8	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.0		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.7		1.8	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: MCG-024 — Lab Sample ID: 320-96053-10

No Detections.

Client Sample ID: MCG-124 — Lab Sample ID: 320-96053-11

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-MW-01

Date Collected: 01/11/23 13:12
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-1

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**25**		1.9	0.55	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluoroheptanoic acid (PFHpA)	**2.3**		1.9	0.24	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorobutanesulfonic acid (PFBS)	**6.0**		1.9	0.19	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorohexanesulfonic acid (PFHxS)	**14**		1.9	0.54	ng/L		01/19/23 20:22	02/03/23 19:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		01/19/23 20:22	02/03/23 19:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		01/19/23 20:22	02/03/23 19:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		01/19/23 20:22	02/03/23 19:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		01/19/23 20:22	02/03/23 19:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		01/19/23 20:22	02/03/23 19:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		01/19/23 20:22	02/03/23 19:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		01/19/23 20:22	02/03/23 19:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C4 PFHpA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C4 PFOA	*87*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C5 PFNA	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C2 PFDA	*87*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C2 PFUnA	*87*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C2 PFDoA	*77*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C2 PFTeDA	*76*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C3 PFBS	*62*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
18O2 PFHxS	*84*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C4 PFOS	*79*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
d3-NMeFOSAA	*77*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
d5-NEtFOSAA	*83*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	
13C3 HFPO-DA	*108*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:12*	

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-MW-101

Date Collected: 01/11/23 13:02
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-2

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**24**		1.8	0.51	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluoroheptanoic acid (PFHpA)	**2.3**		1.8	0.22	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorobutanesulfonic acid (PFBS)	**5.4**		1.8	0.18	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorohexanesulfonic acid (PFHxS)	**13**		1.8	0.50	ng/L		01/19/23 20:22	02/03/23 19:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		01/19/23 20:22	02/03/23 19:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 19:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 19:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/19/23 20:22	02/03/23 19:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/19/23 20:22	02/03/23 19:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		01/19/23 20:22	02/03/23 19:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/19/23 20:22	02/03/23 19:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C4 PFHpA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C4 PFOA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C5 PFNA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C2 PFDA	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C2 PFUnA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C2 PFDoA	*81*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C2 PFTeDA	*82*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C3 PFBS	*61*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
18O2 PFHxS	*87*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C4 PFOS	*80*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
d3-NMeFOSAA	*84*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
d5-NEtFOSAA	*87*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	
13C3 HFPO-DA	*102*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:22*	

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-MW-02

Date Collected: 01/11/23 14:07
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-3

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**65**		1.8	0.51	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluoroheptanoic acid (PFHpA)	**32**		1.8	0.22	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorooctanoic acid (PFOA)	**55**		1.8	0.75	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorobutanesulfonic acid (PFBS)	**18**		1.8	0.18	ng/L		01/19/23 20:22	02/03/23 19:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		01/19/23 20:22	02/03/23 19:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 19:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 19:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/19/23 20:22	02/03/23 19:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/19/23 20:22	02/03/23 19:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		01/19/23 20:22	02/03/23 19:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/19/23 20:22	02/03/23 19:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C4 PFHpA	*93*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C4 PFOA	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C5 PFNA	*91*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C2 PFDA	*89*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C2 PFUnA	*94*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C2 PFDoA	*86*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C2 PFTeDA	*79*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C3 PFBS	*61*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
18O2 PFHxS	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C4 PFOS	*82*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
d3-NMeFOSAA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
d5-NEtFOSAA	*93*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	
13C3 HFPO-DA	*107*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:33*	

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	**450**		8.8	2.5	ng/L		01/19/23 20:22	02/08/23 20:16	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*19*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:16*	*5*

Client Sample ID: MCG-MW-03
Date Collected: 01/11/23 16:04
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-4
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**2.6**		1.8	0.51	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluoroheptanoic acid (PFHpA)	**0.27**	**J**	1.8	0.22	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorobutanesulfonic acid (PFBS)	**1.8**		1.8	0.18	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorohexanesulfonic acid (PFHxS)	**0.82**	**J I**	1.8	0.50	ng/L		01/19/23 20:22	02/03/23 19:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		01/19/23 20:22	02/03/23 19:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 19:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 19:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/19/23 20:22	02/03/23 19:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/19/23 20:22	02/03/23 19:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		01/19/23 20:22	02/03/23 19:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/19/23 20:22	02/03/23 19:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C4 PFHpA	*97*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C4 PFOA	*94*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C5 PFNA	*96*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C2 PFDA	*89*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C2 PFUnA	*92*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C2 PFDoA	*82*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C3 PFBS	*63*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
18O2 PFHxS	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C4 PFOS	*82*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*
13C3 HFPO-DA	*112*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:43*	*1*

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-MW-04

Date Collected: 01/11/23 17:15
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-5

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.64**	**J**	1.9	0.54	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorobutanesulfonic acid (PFBS)	**0.39**	**J**	1.9	0.19	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/19/23 20:22	02/03/23 19:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		01/19/23 20:22	02/03/23 19:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/19/23 20:22	02/03/23 19:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/19/23 20:22	02/03/23 19:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/19/23 20:22	02/03/23 19:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/19/23 20:22	02/03/23 19:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/19/23 20:22	02/03/23 19:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/19/23 20:22	02/03/23 19:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C4 PFHpA	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C4 PFOA	*85*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C5 PFNA	*82*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C2 PFDA	*80*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C2 PFUnA	*79*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C2 PFDoA	*68*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C2 PFTeDA	*68*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C3 PFBS	*58*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
18O2 PFHxS	*77*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C4 PFOS	*70*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
d3-NMeFOSAA	*71*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
d5-NEtFOSAA	*74*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	
13C3 HFPO-DA	*99*		*50 - 150*	*01/19/23 20:22*	*02/03/23 19:53*	

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-001

Date Collected: 01/10/23 10:27
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-6

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**2.2**		1.6	0.48	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluoroheptanoic acid (PFHpA)	**0.26**	**J**	1.6	0.21	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorooctanoic acid (PFOA)	ND		1.6	0.70	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.26	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.91	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	1.1	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.60	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorobutanesulfonic acid (PFBS)	**2.7**		1.6	0.16	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorohexanesulfonic acid (PFHxS)	**4.6**		1.6	0.47	ng/L		01/19/23 20:22	02/03/23 20:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.44	ng/L		01/19/23 20:22	02/03/23 20:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.99	ng/L		01/19/23 20:22	02/03/23 20:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		01/19/23 20:22	02/03/23 20:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.6	0.20	ng/L		01/19/23 20:22	02/03/23 20:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		01/19/23 20:22	02/03/23 20:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.6	0.26	ng/L		01/19/23 20:22	02/03/23 20:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.6	0.33	ng/L		01/19/23 20:22	02/03/23 20:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C4 PFHpA	*99*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C4 PFOA	*92*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C5 PFNA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C2 PFDA	*92*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C2 PFUnA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C2 PFDoA	*91*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C2 PFTeDA	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C3 PFBS	*61*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
18O2 PFHxS	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C4 PFOS	*80*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
d3-NMeFOSAA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
d5-NEtFOSAA	*91*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	
13C3 HFPO-DA	*16*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:03*	

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-003

Date Collected: 01/10/23 11:38
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-7

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**3.8**		1.7	0.49	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluoroheptanoic acid (PFHpA)	**1.8**		1.7	0.21	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorooctanoic acid (PFOA)	**5.5**		1.7	0.72	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J**	1.7	0.48	ng/L		01/19/23 20:22	02/03/23 20:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		01/19/23 20:22	02/03/23 20:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		01/19/23 20:22	02/03/23 20:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		01/19/23 20:22	02/03/23 20:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		01/19/23 20:22	02/03/23 20:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		01/19/23 20:22	02/03/23 20:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		01/19/23 20:22	02/03/23 20:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		01/19/23 20:22	02/03/23 20:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C4 PFHpA	*92*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C4 PFOA	*89*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C5 PFNA	*89*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C2 PFDA	*87*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C2 PFUnA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C2 PFDoA	*83*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C2 PFTeDA	*76*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C3 PFBS	*60*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
18O2 PFHxS	*84*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C4 PFOS	*73*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
d3-NMeFOSAA	*81*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
d5-NEtFOSAA	*84*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	
13C3 HFPO-DA	*104*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:24*	

Client Sample ID: MCG-007
Date Collected: 01/10/23 15:01
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-8
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**3.4**		1.7	0.48	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.70	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.91	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.60	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorobutanesulfonic acid (PFBS)	**0.71**	**J**	1.7	0.17	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.47	ng/L		01/19/23 20:22	02/08/23 20:46	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.45	ng/L		01/19/23 20:22	02/08/23 20:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.99	ng/L		01/19/23 20:22	02/08/23 20:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		01/19/23 20:22	02/08/23 20:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		01/19/23 20:22	02/08/23 20:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		01/19/23 20:22	02/08/23 20:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		01/19/23 20:22	02/08/23 20:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.33	ng/L		01/19/23 20:22	02/08/23 20:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*124*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C4 PFHpA	*17*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C4 PFOA	*10*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C5 PFNA	*13*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C2 PFDA	*106*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C2 PFUnA	*14*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C2 PFDoA	*101*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C2 PFTeDA	*106*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C3 PFBS	*10*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
18O2 PFHxS	*13*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C4 PFOS	*105*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
d3-NMeFOSAA	*108*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
d5-NEtFOSAA	*105*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	
13C3 HFPO-DA			*50 - 150*	*01/19/23 20:22*	*02/08/23 20:46*	

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-021

Date Collected: 01/10/23 14:28
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-9

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**3.1**		1.8	0.51	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.8	0.22	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorooctanoic acid (PFOA)	**3.9**		1.8	0.74	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.8	0.18	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorohexanesulfonic acid (PFHxS)	**9.0**		1.8	0.50	ng/L		01/19/23 20:22	02/03/23 20:45	1
Perfluorooctanesulfonic acid (PFOS)	**6.7**		1.8	0.47	ng/L		01/19/23 20:22	02/03/23 20:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 20:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/19/23 20:22	02/03/23 20:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/19/23 20:22	02/03/23 20:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/19/23 20:22	02/03/23 20:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		01/19/23 20:22	02/03/23 20:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/19/23 20:22	02/03/23 20:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C4 PFHpA	*96*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C4 PFOA	*94*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C5 PFNA	*100*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C2 PFDA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C2 PFUnA	*106*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C2 PFDoA	*90*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C2 PFTeDA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C3 PFBS	*66*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
18O2 PFHxS	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C4 PFOS	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
d3-NMeFOSAA	*94*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
d5-NEtFOSAA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	
13C3 HFPO-DA	*108*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:45*	

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-024
Date Collected: 01/11/23 10:32
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-10
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		01/19/23 20:22	02/03/23 20:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		01/19/23 20:22	02/03/23 20:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		01/19/23 20:22	02/03/23 20:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		01/19/23 20:22	02/03/23 20:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		01/19/23 20:22	02/03/23 20:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		01/19/23 20:22	02/03/23 20:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		01/19/23 20:22	02/03/23 20:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		01/19/23 20:22	02/03/23 20:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C4 PFHpA	*98*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C4 PFOA	*93*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C5 PFNA	*96*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C2 PFDA	*95*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C2 PFUnA	*96*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C2 PFDoA	*80*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C2 PFTeDA	*75*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C3 PFBS	*71*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
18O2 PFHxS	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C4 PFOS	*84*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
d3-NMeFOSAA	*86*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
d5-NEtFOSAA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	
13C3 HFPO-DA	*108*		*50 - 150*	*01/19/23 20:22*	*02/03/23 20:55*	

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-124
Date Collected: 01/11/23 10:22
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-11
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		01/19/23 20:22	02/08/23 20:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		01/19/23 20:22	02/08/23 20:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		01/19/23 20:22	02/08/23 20:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		01/19/23 20:22	02/08/23 20:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		01/19/23 20:22	02/08/23 20:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		01/19/23 20:22	02/08/23 20:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		01/19/23 20:22	02/08/23 20:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		01/19/23 20:22	02/08/23 20:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*125*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C4 PFHpA	*120*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C4 PFOA	*15*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C5 PFNA	*15*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C2 PFDA	*14*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C2 PFUnA	*14*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C2 PFDoA	*97*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C2 PFTeDA	*100*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C3 PFBS	*12*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
18O2 PFHxS	*19*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C4 PFOS			*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
d3-NMeFOSAA	*104*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
d5-NEtFOSAA	*102*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	
13C3 HFPO-DA	*16*		*50 - 150*	*01/19/23 20:22*	*02/08/23 20:57*	

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTDA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-96053-1	MCG-MW-01	86	95	87	90	87	87	77	76
320-96053-2	MCG-MW-101	84	95	88	88	90	88	81	82
320-96053-3	MCG-MW-02	90	93	90	91	89	94	86	79
320-96053-3 - DL	MCG-MW-02								
320-96053-4	MCG-MW-03	93	97	94	96	89	92	82	85
320-96053-5	MCG-MW-04	86	90	85	82	80	79	68	68
320-96053-6	MCG-001	94	99	92	95	92	95	91	90
320-96053-7	MCG-003	83	92	89	89	87	88	83	76
320-96053-8	MCG-007	124	117	110	113	106	114	101	106
320-96053-9	MCG-021	95	96	94	100	95	106	90	88
320-96053-10	MCG-024	92	98	93	96	95	96	80	75
320-96053-11	MCG-124	125	120	115	115	114	114	97	100
LCS 320-648221/2-A	Lab Control Sample	98	96	95	101	99	103	92	93
LCSD 320-648221/3-A	Lab Control Sample Dup	94	95	92	99	98	104	95	83
MB 320-648221/1-A	Method Blank	94	96	93	97	97	107	88	87

		Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS	PFHxS	PFOS	d3NMFOS	d5NEFOS	HFPODA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-96053-1	MCG-MW-01	62	84	79	77	83	108
320-96053-2	MCG-MW-101	61	87	80	84	87	102
320-96053-3	MCG-MW-02	61	88	82	88	93	107
320-96053-3 - DL	MCG-MW-02		119				
320-96053-4	MCG-MW-03	63	90	82	82	85	112
320-96053-5	MCG-MW-04	58	77	70	71	74	99
320-96053-6	MCG-001	61	90	80	88	91	116
320-96053-7	MCG-003	60	84	73	81	84	104
320-96053-8	MCG-007	110	113	105	108	105	111
320-96053-9	MCG-021	66	88	88	94	95	108
320-96053-10	MCG-024	71	88	84	86	88	108
320-96053-11	MCG-124	112	119	111	104	102	116
LCS 320-648221/2-A	Lab Control Sample	87	91	89	96	99	112
LCSD 320-648221/3-A	Lab Control Sample Dup	80	88	87	92	96	108
MB 320-648221/1-A	Method Blank	81	88	88	96	97	108

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-648221/1-A
Matrix: Water
Analysis Batch: 651742

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 648221

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/19/23 20:22	02/03/23 18:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/19/23 20:22	02/03/23 18:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/19/23 20:22	02/03/23 18:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/19/23 20:22	02/03/23 18:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/19/23 20:22	02/03/23 18:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/19/23 20:22	02/03/23 18:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/19/23 20:22	02/03/23 18:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/19/23 20:22	02/03/23 18:31	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C4 PFHpA	*96*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C4 PFOA	*93*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C5 PFNA	*97*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C2 PFDA	*97*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C2 PFUnA	*107*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C2 PFDoA	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C2 PFTeDA	*87*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C3 PFBS	*81*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
18O2 PFHxS	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C4 PFOS	*88*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
d3-NMeFOSAA	*96*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
d5-NEtFOSAA	*97*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	
13C3 HFPO-DA	*108*		*50 - 150*	*01/19/23 20:22*	*02/03/23 18:31*	

Lab Sample ID: LCS 320-648221/2-A
Matrix: Water
Analysis Batch: 651742

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 648221

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	40.8		ng/L		102	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.9		ng/L		112	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	45.0		ng/L		112	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.7		ng/L		107	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-648221/2-A
Matrix: Water
Analysis Batch: 651742

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 648221

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	43.3		ng/L		108	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.0		ng/L		103	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	43.6		ng/L		109	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	44.0		ng/L		110	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.1		ng/L		107	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.7		ng/L		106	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	42.1		ng/L		113	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.3		ng/L		103	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.6		ng/L		101	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	43.6		ng/L		117	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	40.8		ng/L		108	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.8		ng/L		121	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*98*		*50 - 150*
13C4 PFHpA	*96*		*50 - 150*
13C4 PFOA	*95*		*50 - 150*
13C5 PFNA	*101*		*50 - 150*
13C2 PFDA	*99*		*50 - 150*
13C2 PFUnA	*103*		*50 - 150*
13C2 PFDoA	*92*		*50 - 150*
13C2 PFTeDA	*93*		*50 - 150*
13C3 PFBS	*87*		*50 - 150*
18O2 PFHxS	*91*		*50 - 150*
13C4 PFOS	*89*		*50 - 150*
d3-NMeFOSAA	*96*		*50 - 150*
d5-NEtFOSAA	*99*		*50 - 150*
13C3 HFPO-DA	*12*		*50 - 150*

Lab Sample ID: LCSD 320-648221/3-A
Matrix: Water
Analysis Batch: 651742

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 648221

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	43.0		ng/L		107	72 - 129	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.6		ng/L		109	72 - 130	3	30
Perfluorooctanoic acid (PFOA)	40.0	43.7		ng/L		109	71 - 133	3	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-648221/3-A
Matrix: Water
Analysis Batch: 651742

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 648221

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	44.5		ng/L		111	69 - 130	4	30
Perfluorodecanoic acid (PFDA)			40.0	44.7		ng/L		112	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	42.9		ng/L		107	69 - 133	4	30
Perfluorododecanoic acid (PFDoA)			40.0	44.6		ng/L		111	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)			40.0	41.0		ng/L		103	65 - 144	7	30
Perfluorotetradecanoic acid (PFTeA)			40.0	43.3		ng/L		108	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)			35.5	40.0		ng/L		113	72 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	38.0		ng/L		104	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)			37.2	41.8		ng/L		112	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.7		ng/L		107	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.2		ng/L		105	61 - 135	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	43.9		ng/L		118	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	40.4		ng/L		101	72 - 132	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	38.9		ng/L		103	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	44.6		ng/L		118	81 - 141	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*94*		*50 - 150*
13C4 PFHpA	*95*		*50 - 150*
13C4 PFOA	*92*		*50 - 150*
13C5 PFNA	*99*		*50 - 150*
13C2 PFDA	*98*		*50 - 150*
13C2 PFUnA	*104*		*50 - 150*
13C2 PFDoA	*95*		*50 - 150*
13C2 PFTeDA	*83*		*50 - 150*
13C3 PFBS	*80*		*50 - 150*
18O2 PFHxS	*88*		*50 - 150*
13C4 PFOS	*87*		*50 - 150*
d3-NMeFOSAA	*92*		*50 - 150*
d5-NEtFOSAA	*96*		*50 - 150*
13C3 HFPO-DA	*108*		*50 - 150*

LCMS

Prep Batch: 648221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96053-1	MCG-MW-01	Total/NA	Water	3535	
320-96053-2	MCG-MW-101	Total/NA	Water	3535	
320-96053-3 - DL	MCG-MW-02	Total/NA	Water	3535	
320-96053-3	MCG-MW-02	Total/NA	Water	3535	
320-96053-4	MCG-MW-03	Total/NA	Water	3535	
320-96053-5	MCG-MW-04	Total/NA	Water	3535	
320-96053-6	MCG-001	Total/NA	Water	3535	
320-96053-7	MCG-003	Total/NA	Water	3535	
320-96053-8	MCG-007	Total/NA	Water	3535	
320-96053-9	MCG-021	Total/NA	Water	3535	
320-96053-10	MCG-024	Total/NA	Water	3535	
320-96053-11	MCG-124	Total/NA	Water	3535	
MB 320-648221/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-648221/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-648221/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 651742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96053-1	MCG-MW-01	Total/NA	Water	EPA 537(Mod)	648221
320-96053-2	MCG-MW-101	Total/NA	Water	EPA 537(Mod)	648221
320-96053-3	MCG-MW-02	Total/NA	Water	EPA 537(Mod)	648221
320-96053-4	MCG-MW-03	Total/NA	Water	EPA 537(Mod)	648221
320-96053-5	MCG-MW-04	Total/NA	Water	EPA 537(Mod)	648221
320-96053-6	MCG-001	Total/NA	Water	EPA 537(Mod)	648221
320-96053-7	MCG-003	Total/NA	Water	EPA 537(Mod)	648221
320-96053-9	MCG-021	Total/NA	Water	EPA 537(Mod)	648221
320-96053-10	MCG-024	Total/NA	Water	EPA 537(Mod)	648221
MB 320-648221/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	648221
LCS 320-648221/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	648221
LCSD 320-648221/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	648221

Analysis Batch: 652807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96053-3 - DL	MCG-MW-02	Total/NA	Water	EPA 537(Mod)	648221
320-96053-8	MCG-007	Total/NA	Water	EPA 537(Mod)	648221
320-96053-11	MCG-124	Total/NA	Water	EPA 537(Mod)	648221

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-MW-01
Date Collected: 01/11/23 13:12
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.2 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 19:12	K1S	EET SAC

Client Sample ID: MCG-MW-101
Date Collected: 01/11/23 13:02
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			283.8 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 19:22	K1S	EET SAC

Client Sample ID: MCG-MW-02
Date Collected: 01/11/23 14:07
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		284.7 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5	1 mL	1 mL	652807	02/08/23 20:16	K1S	EET SAC
Total/NA	Prep	3535			284.7 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 19:33	K1S	EET SAC

Client Sample ID: MCG-MW-03
Date Collected: 01/11/23 16:04
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.1 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 19:43	K1S	EET SAC

Client Sample ID: MCG-MW-04
Date Collected: 01/11/23 17:15
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.2 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 19:53	K1S	EET SAC

Client Sample ID: MCG-001
Date Collected: 01/10/23 10:27
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			303.6 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 20:03	K1S	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Client Sample ID: MCG-003
Date Collected: 01/10/23 11:38
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			294.3 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 20:24	K1S	EET SAC

Client Sample ID: MCG-007
Date Collected: 01/10/23 15:01
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			301.8 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	652807	02/08/23 20:46	K1S	EET SAC

Client Sample ID: MCG-021
Date Collected: 01/10/23 14:28
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.4 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 20:45	K1S	EET SAC

Client Sample ID: MCG-024
Date Collected: 01/11/23 10:32
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			292.9 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651742	02/03/23 20:55	K1S	EET SAC

Client Sample ID: MCG-124
Date Collected: 01/11/23 10:22
Date Received: 01/17/23 18:30

Lab Sample ID: 320-96053-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293 mL	10.0 mL	648221	01/19/23 20:22	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	652807	02/08/23 20:57	K1S	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: McGrath PFAS

Job ID: 320-96053-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-96053-1	MCG-MW-01	Water	01/11/23 13:12	01/17/23 18:30
320-96053-2	MCG-MW-101	Water	01/11/23 13:02	01/17/23 18:30
320-96053-3	MCG-MW-02	Water	01/11/23 14:07	01/17/23 18:30
320-96053-4	MCG-MW-03	Water	01/11/23 16:04	01/17/23 18:30
320-96053-5	MCG-MW-04	Water	01/11/23 17:15	01/17/23 18:30
320-96053-6	MCG-001	Water	01/10/23 10:27	01/17/23 18:30
320-96053-7	MCG-003	Water	01/10/23 11:38	01/17/23 18:30
320-96053-8	MCG-007	Water	01/10/23 15:01	01/17/23 18:30
320-96053-9	MCG-021	Water	01/10/23 14:28	01/17/23 18:30
320-96053-10	MCG-024	Water	01/11/23 10:32	01/17/23 18:30
320-96053-11	MCG-124	Water	01/11/23 10:22	01/17/23 18:30

#204013

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Laboratory Eurofins
Attn: David Alltucker

Turn Around Time:	Quote No:
☒ Normal ☐ Rush	J-Flags: ☒ Yes ☐ No
Please Specify	

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18 QSM B-15	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MCG-MW-01		1312	01/11/23	X	2	Groundwater
MCG-MW-101		1302	01/11/23			
MCG-MW-02		1407	01/11/23			
MCG-MW-03		1604	01/11/23			
MCG-MW-04		1715	01/11/23			
MCG-001		1027	01/10/23			
MCG-003		1138	01/10/23			
MCG-007		1501	01/10/23			
MCG-021		1428	01/10/23			
MCG-024		1032	01/11/23			

320-96053 Chain of Custody

Project Information	
Number:	102219-015
Name:	McGrath PFAS
Contact:	Kristen.freibarger@shanwil.com
Ongoing Project?	Yes ☒ No ☐
Sampler:	CZH, RLW

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1215	Signature: Time: 18:30	Signature: Time:
Printed Name: Christopher Hall Date: 01/16/23	Printed Name: A. Fish Date: 1/17/23	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company: S&W	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 11:20	Signature: Time: 18:32	Signature: Time:
Printed Name: Jesse Acevedo Date: 1/17/23	Printed Name: N. Cahill Date: 1/17/23	Printed Name: Date:
Company: S&W	Company: EETSAC 0.4°	Company:

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

4.5C°

No.

204012

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins
Attn: David Althaker

Turn Around Time: ☒ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☒ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS + 18 QSM B-15	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MCG-124		1022	01/11/23	X	2	Groundwater

Project Information

Number:	102219-015
Name:	McGrath PFAS
Contact:	Kristen Freiburger
Ongoing Project?	Yes ☒ No ☐
Sampler:	CZH, RLW

Sample Receipt

Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1215	Signature: Time: 1830	Signature: Time:
Printed Name: Christopher Hall Date: 01/16/23	Printed Name: A. Fisher Date: 1/17/23	Printed Name: Date:
Company: Shannon & Wilson, Inc.	Company: ST	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 11:00	Signature: Time: 18:30	Signature: Time:
Printed Name: Jesse Acem Date: 1/17/23	Printed Name: Date: 1/17/23	Printed Name: Date:
Company: ST	Company: EETSAC 0.6°C	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

4.5°C

No.

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-96053-1

Login Number: 96053
List Number: 1
Creator: Cahill, Nicholas P

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Mason Craker	**CS Site Name:**	N/A	**Lab Name:**	Eurofins Environment Testing
Title:	Geology Staff	**ADEC File No.:**	N/A	**Lab Report No.:**	320-96053-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	N/A	**Lab Report Date:**	February 13, 2022

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: The ADEC certified Eurofins Environment Testing, West Sacramento for the analysis of PFAS. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Sample analyses were not subcontracted or transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories version 5.3 Table B-15.
   Comments:

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): Cooler temperature was not reported by the laboratory.
Sample temperature(s): A temperature blank was included with the samples in the cooler and is used to assess sample temperature. The temperature blank was reported at 0.6°C upon arrival at the laboratory.
Comments:

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: PFAS does not require any additional preservation beyond temperature control.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory notes that the samples arrived in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory does not note any discrepancies.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
The “I” qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. This is associated with PFHxS for sample *MCG-MW-03*.

Results for sample *MCG-MW-02* were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts are within acceptance limits.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-648221.

Sample *MCG-003* was observed to be yellow and contain a thin layer of sediment present in the bottom of the bottle prior to extraction.

Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments: The dilution factor was applied to *MCG-MW-02* and area counts were in acceptable limits.

c. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not note an effect on data quality or usability.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LOQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments:

iii. If above LOQ or RL, what samples are affected?
Comments: There were no detections in the method blank associated with the project samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: LCS/LCSD were reported for the method.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: None. %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐
Comments: MS/MSD samples were not reported; however, precision can be assessed with the LCS/LCSD.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐
Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments:

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: PFAS are not volatile compounds; therefore, a trip blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LOQ or RL, what samples are affected?
Comments: None; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Field duplicate sample pairs *MCG-MW-01/MCG-MW-101* and *MCG-024/MCG-124* were submitted with this work order.

ii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐
Comments: RPD are within project DQOs, where calculable.

iii. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: See above.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Reusable equipment was not used; therefore, an equipment blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LOQ or RL, specify what samples are affected.
Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☐ No ☐ N/A ☒
Comments: The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. This is associated with PFHxS for sample *MCG-MW-03*. We consider this result to be estimated, biased high, and have flagged the datum with a "JH" in the analytical database.

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

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JOB DESCRIPTION

McFrath DOT+PF

JOB NUMBER

320-103891-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

myEOL

Job Notes

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Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-103891-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-103891-1

Receipt
The samples were received on 8/17/2023 12:54 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.9º C.

LCMS
Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit: MCG-080 (320-103891-2), MCG-259 (320-103891-5), MCG-054 (320-103891-8) and MCG-201 (320-103891-9). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-700724.

Method 3535: The following samples in preparation batch 320-700724 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. MCG-219 (320-103891-1), MCG-080 (320-103891-2), MCG-259 (320-103891-5) and MCG-201 (320-103891-9)

Method 3535: The following samples in preparation batch 320-700724 were yellow in color prior to extraction. MCG-080 (320-103891-2) and MCG-259 (320-103891-5)

Method 3535: During the solid phase extraction process, the following samples contain non-settable particulates which clogged the solid phase extraction column: MCG-080 (320-103891-2), MCG-259 (320-103891-5), MCG-054 (320-103891-8) and MCG-201 (320-103891-9). preparation batch 320-700724

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-219 — Lab Sample ID: 320-103891-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	9.1		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.1		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.75	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.6		1.8	0.50	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4		1.8	0.48	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-080 — Lab Sample ID: 320-103891-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.62		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-975 — Lab Sample ID: 320-103891-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	9.7		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.90		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.76	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-021 — Lab Sample ID: 320-103891-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.7		1.7	0.49	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8		1.7	0.21	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	4.9		1.7	0.72	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.0		1.7	0.17	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.0		1.7	0.48	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.9		1.7	0.46	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-259 — Lab Sample ID: 320-103891-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.91		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-275 — Lab Sample ID: 320-103891-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	9.7		1.8	0.53	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.96		1.8	0.23	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.8	0.77	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.8		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-018 — Lab Sample ID: 320-103891-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.1		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	6.8		1.8	0.75	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.2		1.8	0.50	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.2		1.8	0.48	ng/L	1	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-054 — Lab Sample ID: 320-103891-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.8		1.8	0.53	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.69		1.8	0.23	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		1.8	0.77	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MCG-201 — Lab Sample ID: 320-103891-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.27		1.8	0.23	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.57		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2		1.8	0.53	ng/L	1	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-219

Date Collected: 08/10/23 18:38
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-1

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**9.1**		1.8	0.51	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluoroheptanoic acid (PFHpA)	**2.1**		1.8	0.22	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.8	0.75	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorobutanesulfonic acid (PFBS)	**1.4**	**J**	1.8	0.18	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorohexanesulfonic acid (PFHxS)	**2.6**		1.8	0.50	ng/L		08/21/23 19:08	08/22/23 23:20	1
Perfluorooctanesulfonic acid (PFOS)	**1.4**	**J**	1.8	0.48	ng/L		08/21/23 19:08	08/22/23 23:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		08/21/23 19:08	08/22/23 23:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		08/21/23 19:08	08/22/23 23:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		08/21/23 19:08	08/22/23 23:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		08/21/23 19:08	08/22/23 23:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		08/21/23 19:08	08/22/23 23:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		08/21/23 19:08	08/22/23 23:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C4 PFHpA	*80*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C4 PFOA	*81*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C5 PFNA	*84*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C2 PFDA	*78*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C2 PFUnA	*68*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C2 PFDoA	*67*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C2 PFTeDA	*69*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C3 PFBS	*75*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
18O2 PFHxS	*80*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C4 PFOS	*78*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
d3-NMeFOSAA	*70*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
d5-NEtFOSAA	*72*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	
13C3 HFPO-DA	*69*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:20*	

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-080
Date Collected: 08/13/23 15:40
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-2
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorobutanesulfonic acid (PFBS)	**0.62**	**J**	1.8	0.18	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		08/21/23 19:08	08/23/23 00:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		08/21/23 19:08	08/23/23 00:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		08/21/23 19:08	08/23/23 00:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		08/21/23 19:08	08/23/23 00:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		08/21/23 19:08	08/23/23 00:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		08/21/23 19:08	08/23/23 00:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		08/21/23 19:08	08/23/23 00:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		08/21/23 19:08	08/23/23 00:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*61*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C4 PFHpA	*60*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C4 PFOA	*65*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C5 PFNA	*66*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C2 PFDA	*54*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C2 PFUnA	*46*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C2 PFDoA	*39*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C2 PFTeDA	*39*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C3 PFBS	*59*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
18O2 PFHxS	*63*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C4 PFOS	*57*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
d3-NMeFOSAA	*43*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
d5-NEtFOSAA	*43*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	
13C3 HFPO-DA	*55*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:39*	

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-975

Date Collected: 08/10/23 12:19
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-3

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**9.7**		1.8	0.52	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluoroheptanoic acid (PFHpA)	**0.90**	**J**	1.8	0.22	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.8	0.76	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**	**J**	1.8	0.18	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.8	0.51	ng/L		08/21/23 19:08	08/22/23 23:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		08/21/23 19:08	08/22/23 23:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		08/21/23 19:08	08/22/23 23:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		08/21/23 19:08	08/22/23 23:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		08/21/23 19:08	08/22/23 23:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		08/21/23 19:08	08/22/23 23:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		08/21/23 19:08	08/22/23 23:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		08/21/23 19:08	08/22/23 23:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C4 PFHpA	*94*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C4 PFOA	*94*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C5 PFNA	*99*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C2 PFDA	*93*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C2 PFUnA	*89*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C2 PFDoA	*83*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C2 PFTeDA	*83*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C3 PFBS	*87*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
18O2 PFHxS	*92*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C4 PFOS	*88*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
d3-NMeFOSAA	*87*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
d5-NEtFOSAA	*92*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:31*	*1*

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-021

Date Collected: 08/10/23 11:45
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-4

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.7**		1.7	0.49	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluoroheptanoic acid (PFHpA)	**1.8**		1.7	0.21	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorooctanoic acid (PFOA)	**4.9**		1.7	0.72	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorobutanesulfonic acid (PFBS)	**1.0**	**J**	1.7	0.17	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorohexanesulfonic acid (PFHxS)	**8.0**		1.7	0.48	ng/L		08/21/23 19:08	08/22/23 23:42	1
Perfluorooctanesulfonic acid (PFOS)	**5.9**		1.7	0.46	ng/L		08/21/23 19:08	08/22/23 23:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		08/21/23 19:08	08/22/23 23:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		08/21/23 19:08	08/22/23 23:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		08/21/23 19:08	08/22/23 23:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		08/21/23 19:08	08/22/23 23:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		08/21/23 19:08	08/22/23 23:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		08/21/23 19:08	08/22/23 23:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C4 PFHpA	*77*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C4 PFOA	*82*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C5 PFNA	*83*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C2 PFDA	*83*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C2 PFUnA	*77*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C2 PFDoA	*78*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C2 PFTeDA	*73*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C3 PFBS	*73*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
18O2 PFHxS	*80*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C4 PFOS	*80*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
d3-NMeFOSAA	*73*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
d5-NEtFOSAA	*81*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	
13C3 HFPO-DA	*68*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:42*	

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-259

Date Collected: 08/11/23 17:21
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-5

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.91**	**J**	1.8	0.51	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		08/21/23 19:08	08/23/23 00:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		08/21/23 19:08	08/23/23 00:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		08/21/23 19:08	08/23/23 00:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		08/21/23 19:08	08/23/23 00:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		08/21/23 19:08	08/23/23 00:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		08/21/23 19:08	08/23/23 00:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		08/21/23 19:08	08/23/23 00:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		08/21/23 19:08	08/23/23 00:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*59*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C4 PFHpA	*62*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C4 PFOA	*63*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C5 PFNA	*65*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C2 PFDA	*57*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C2 PFUnA	*46*	*5-	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C2 PFDoA	*40*	*5-	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C2 PFTeDA	*39*	*5-	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C3 PFBS	*57*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
18O2 PFHxS	*62*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C4 PFOS	*57*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
d3-NMeFOSAA	*43*	*5-	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
d5-NEtFOSAA	*47*	*5-	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	
13C3 HFPO-DA	*53*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:28*	

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-275

Date Collected: 08/10/23 12:29
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-6

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**9.7**		1.8	0.53	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluoroheptanoic acid (PFHpA)	**0.96**	**J**	1.8	0.23	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorooctanoic acid (PFOA)	**1.9**		1.8	0.77	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorobutanesulfonic acid (PFBS)	**1.8**		1.8	0.18	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.8	0.52	ng/L		08/21/23 19:08	08/22/23 23:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		08/21/23 19:08	08/22/23 23:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		08/21/23 19:08	08/22/23 23:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		08/21/23 19:08	08/22/23 23:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		08/21/23 19:08	08/22/23 23:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		08/21/23 19:08	08/22/23 23:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		08/21/23 19:08	08/22/23 23:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		08/21/23 19:08	08/22/23 23:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C4 PFHpA	*89*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C4 PFOA	*88*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C5 PFNA	*97*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C2 PFDA	*90*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C2 PFUnA	*85*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C2 PFDoA	*83*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C2 PFTeDA	*81*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C3 PFBS	*81*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
18O2 PFHxS	*90*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C4 PFOS	*85*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
d3-NMeFOSAA	*82*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
d5-NEtFOSAA	*89*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	
13C3 HFPO-DA	*75*		*50 - 150*	*08/21/23 19:08*	*08/22/23 23:54*	

Client Sample ID: MCG-018

Date Collected: 08/10/23 13:14
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-7

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**5.1**		1.8	0.51	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluoroheptanoic acid (PFHpA)	**2.7**		1.8	0.22	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorooctanoic acid (PFOA)	**6.8**		1.8	0.75	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorohexanesulfonic acid (PFHxS)	**2.2**		1.8	0.50	ng/L		08/21/23 19:08	08/23/23 00:05	1
Perfluorooctanesulfonic acid (PFOS)	**5.2**		1.8	0.48	ng/L		08/21/23 19:08	08/23/23 00:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		08/21/23 19:08	08/23/23 00:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		08/21/23 19:08	08/23/23 00:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		08/21/23 19:08	08/23/23 00:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		08/21/23 19:08	08/23/23 00:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		08/21/23 19:08	08/23/23 00:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		08/21/23 19:08	08/23/23 00:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C4 PFHpA	*89*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C4 PFOA	*93*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C5 PFNA	*93*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C2 PFDA	*89*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C2 PFUnA	*81*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C2 PFDoA	*75*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C2 PFTeDA	*75*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C3 PFBS	*84*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
18O2 PFHxS	*89*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C4 PFOS	*82*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
d3-NMeFOSAA	*73*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
d5-NEtFOSAA	*80*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	
13C3 HFPO-DA	*79*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:05*	

Client Sample ID: MCG-054

Date Collected: 08/10/23 14:03
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-8

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**2.8**		1.8	0.53	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluoroheptanoic acid (PFHpA)	**0.69**	**J**	1.8	0.23	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorooctanoic acid (PFOA)	**2.2**		1.8	0.77	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	1.8	0.18	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J**	1.8	0.52	ng/L		08/21/23 19:08	08/23/23 00:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		08/21/23 19:08	08/23/23 00:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		08/21/23 19:08	08/23/23 00:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		08/21/23 19:08	08/23/23 00:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		08/21/23 19:08	08/23/23 00:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		08/21/23 19:08	08/23/23 00:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		08/21/23 19:08	08/23/23 00:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		08/21/23 19:08	08/23/23 00:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*63*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C4 PFHpA	*63*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C4 PFOA	*64*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C5 PFNA	*67*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C2 PFDA	*61*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C2 PFUnA	*51*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C2 PFDoA	*41*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C2 PFTeDA	*39*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C3 PFBS	*60*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
18O2 PFHxS	*64*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C4 PFOS	*59*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
d3-NMeFOSAA	*50*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
d5-NEtFOSAA	*51*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	
13C3 HFPO-DA	*55*		*50 - 150*	*08/21/23 19:08*	*08/23/23 00:16*	

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-201

Date Collected: 08/08/23 16:18
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-9

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluoroheptanoic acid (PFHpA)	**0.27**	**J**	1.8	0.23	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorobutanesulfonic acid (PFBS)	**0.57**	**J**	1.8	0.18	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J**	1.8	0.53	ng/L		08/21/23 19:08	08/22/23 21:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		08/21/23 19:08	08/22/23 21:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		08/21/23 19:08	08/22/23 21:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		08/21/23 19:08	08/22/23 21:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		08/21/23 19:08	08/22/23 21:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		08/21/23 19:08	08/22/23 21:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		08/21/23 19:08	08/22/23 21:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		08/21/23 19:08	08/22/23 21:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*62*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C4 PFHpA	*61*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C4 PFOA	*64*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C5 PFNA	*64*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C2 PFDA	*58*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C2 PFUnA	*47*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C2 PFDoA	*36*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C2 PFTeDA	*32*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C3 PFBS	*57*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
18O2 PFHxS	*62*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C4 PFOS	*58*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
d3-NMeFOSAA	*47*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
d5-NEtFOSAA	*47*	**5-*	*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	
13C3 HFPO-DA	*55*		*50 - 150*	*08/21/23 19:08*	*08/22/23 21:49*	

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-103891-1	MCG-219	78	80	81	84	78	68	67	69
320-103891-2	MCG-080	61	60	65	66	54	46 *5-	39 *5-	39 *5-
320-103891-3	MCG-975	91	94	94	99	93	89	83	83
320-103891-4	MCG-021	78	77	82	83	83	77	78	73
320-103891-5	MCG-259	59	62	63	65	57	46 *5-	40 *5-	39 *5-
320-103891-6	MCG-275	87	89	88	97	90	85	83	81
320-103891-7	MCG-018	90	89	93	93	89	81	75	75
320-103891-8	MCG-054	63	63	64	67	61	51	41 *5-	39 *5-
320-103891-9	MCG-201	62	61	64	64	58	47 *5-	36 *5-	32 *5-
LCS 320-700724/2-A	Lab Control Sample	94	87	97	103	90	85	79	85
LCSD 320-700724/3-A	Lab Control Sample Dup	88	84	91	96	92	85	88	83
MB 320-700724/1-A	Method Blank	78	79	81	87	80	76	75	76

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-103891-1	MCG-219	75	80	78	70	72	69		
320-103891-2	MCG-080	59	63	57	43 *5-	43 *5-	55		
320-103891-3	MCG-975	87	92	88	87	92	79		
320-103891-4	MCG-021	73	80	80	73	81	68		
320-103891-5	MCG-259	57	62	57	43 *5-	47 *5-	53		
320-103891-6	MCG-275	81	90	85	82	89	75		
320-103891-7	MCG-018	84	89	82	73	80	79		
320-103891-8	MCG-054	60	64	59	50	51	55		
320-103891-9	MCG-201	57	62	58	47 *5-	47 *5-	55		
LCS 320-700724/2-A	Lab Control Sample	89	94	90	81	84	79		
LCSD 320-700724/3-A	Lab Control Sample Dup	87	91	91	82	84	78		
MB 320-700724/1-A	Method Blank	76	80	79	72	76	69		

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-700724/1-A
Matrix: Water
Analysis Batch: 701006

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 700724

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		08/21/23 19:08	08/22/23 21:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		08/21/23 19:08	08/22/23 21:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		08/21/23 19:08	08/22/23 21:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		08/21/23 19:08	08/22/23 21:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/21/23 19:08	08/22/23 21:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		08/21/23 19:08	08/22/23 21:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		08/21/23 19:08	08/22/23 21:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		08/21/23 19:08	08/22/23 21:04	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C4 PFHpA	*79*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C4 PFOA	*81*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C5 PFNA	*87*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C2 PFDA	*80*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C2 PFUnA	*76*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C2 PFDoA	*75*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C2 PFTeDA	*76*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C3 PFBS	*76*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
18O2 PFHxS	*80*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C4 PFOS	*79*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
d3-NMeFOSAA	*72*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
d5-NEtFOSAA	*76*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	
13C3 HFPO-DA	*69*		*50 - 150*	*08/21/23 19: 08*	*08/22/23 21: 04*	

Lab Sample ID: LCS 320-700724/2-A
Matrix: Water
Analysis Batch: 701006

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 700724

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.7		ng/L		107	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.2		ng/L		105	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.9		ng/L		97	71 - 133
Perfluorononanoic acid (PFNA)	40.0	37.4		ng/L		94	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-700724/2-A
Matrix: Water
Analysis Batch: 701006

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 700724

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	41.6		ng/L		104	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.2		ng/L		100	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.3		ng/L		113	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	39.7		ng/L		99	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.5		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	36.1		ng/L		102	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.0		ng/L		93	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	36.2		ng/L		97	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.5		ng/L		89	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.3		ng/L		96	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.8		ng/L		109	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.7		ng/L		104	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	35.5		ng/L		94	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.1		ng/L		103	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*94*		*50 - 150*
13C4 PFHpA	*87*		*50 - 150*
13C4 PFOA	*97*		*50 - 150*
13C5 PFNA	*103*		*50 - 150*
13C2 PFDA	*90*		*50 - 150*
13C2 PFUnA	*85*		*50 - 150*
13C2 PFDoA	*79*		*50 - 150*
13C2 PFTeDA	*85*		*50 - 150*
13C3 PFBS	*89*		*50 - 150*
18O2 PFHxS	*94*		*50 - 150*
13C4 PFOS	*90*		*50 - 150*
d3-NMeFOSAA	*81*		*50 - 150*
d5-NEtFOSAA	*84*		*50 - 150*
13C3 HFPO-DA	*79*		*50 - 150*

Lab Sample ID: LCSD 320-700724/3-A
Matrix: Water
Analysis Batch: 701006

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 700724

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.5		ng/L		106	72 - 129	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.1		ng/L		108	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	71 - 133	0	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-700724/3-A
Matrix: Water
Analysis Batch: 701006

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 700724

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	37.5		ng/L		94	69 - 130	0	30
Perfluorodecanoic acid (PFDA)			40.0	39.9		ng/L		100	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	39.6		ng/L		99	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)			40.0	42.9		ng/L		107	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)			40.0	37.0		ng/L		92	65 - 144	7	30
Perfluorotetradecanoic acid (PFTeA)			40.0	40.7		ng/L		102	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)			35.5	37.0		ng/L		104	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	34.7		ng/L		95	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)			37.2	36.1		ng/L		97	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	37.2		ng/L		93	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	35.8		ng/L		90	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	39.4		ng/L		106	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.6		ng/L		104	72 - 132	0	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	35.1		ng/L		93	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	38.0		ng/L		100	81 - 141	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*88*		*50 - 150*
13C4 PFHpA	*84*		*50 - 150*
13C4 PFOA	*91*		*50 - 150*
13C5 PFNA	*96*		*50 - 150*
13C2 PFDA	*92*		*50 - 150*
13C2 PFUnA	*85*		*50 - 150*
13C2 PFDoA	*88*		*50 - 150*
13C2 PFTeDA	*83*		*50 - 150*
13C3 PFBS	*87*		*50 - 150*
18O2 PFHxS	*91*		*50 - 150*
13C4 PFOS	*91*		*50 - 150*
d3-NMeFOSAA	*82*		*50 - 150*
d5-NEtFOSAA	*84*		*50 - 150*
13C3 HFPO-DA	*78*		*50 - 150*

LCMS

Prep Batch: 700724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103891-1	MCG-219	Total/NA	Water	3535	
320-103891-2	MCG-080	Total/NA	Water	3535	
320-103891-3	MCG-975	Total/NA	Water	3535	
320-103891-4	MCG-021	Total/NA	Water	3535	
320-103891-5	MCG-259	Total/NA	Water	3535	
320-103891-6	MCG-275	Total/NA	Water	3535	
320-103891-7	MCG-018	Total/NA	Water	3535	
320-103891-8	MCG-054	Total/NA	Water	3535	
320-103891-9	MCG-201	Total/NA	Water	3535	
MB 320-700724/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-700724/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-700724/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 701006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103891-1	MCG-219	Total/NA	Water	EPA 537(Mod)	700724
320-103891-2	MCG-080	Total/NA	Water	EPA 537(Mod)	700724
320-103891-3	MCG-975	Total/NA	Water	EPA 537(Mod)	700724
320-103891-4	MCG-021	Total/NA	Water	EPA 537(Mod)	700724
320-103891-5	MCG-259	Total/NA	Water	EPA 537(Mod)	700724
320-103891-6	MCG-275	Total/NA	Water	EPA 537(Mod)	700724
320-103891-7	MCG-018	Total/NA	Water	EPA 537(Mod)	700724
320-103891-8	MCG-054	Total/NA	Water	EPA 537(Mod)	700724
320-103891-9	MCG-201	Total/NA	Water	EPA 537(Mod)	700724
MB 320-700724/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	700724
LCS 320-700724/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	700724
LCSD 320-700724/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	700724

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-219
Date Collected: 08/10/23 18:38
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.2 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/22/23 23:20	K1D	EET SAC

Client Sample ID: MCG-080
Date Collected: 08/13/23 15:40
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.1 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/23/23 00:39	K1D	EET SAC

Client Sample ID: MCG-975
Date Collected: 08/10/23 12:19
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.8 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/22/23 23:31	K1D	EET SAC

Client Sample ID: MCG-021
Date Collected: 08/10/23 11:45
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			296.2 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/22/23 23:42	K1D	EET SAC

Client Sample ID: MCG-259
Date Collected: 08/11/23 17:21
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.9 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/23/23 00:28	K1D	EET SAC

Client Sample ID: MCG-275
Date Collected: 08/10/23 12:29
Date Received: 08/17/23 12:54

Lab Sample ID: 320-103891-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.8 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/22/23 23:54	K1D	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Client Sample ID: MCG-018

Lab Sample ID: 320-103891-7

Date Collected: 08/10/23 13:14

Matrix: Water

Date Received: 08/17/23 12:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.7 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/23/23 00:05	K1D	EET SAC

Client Sample ID: MCG-054

Lab Sample ID: 320-103891-8

Date Collected: 08/10/23 14:03

Matrix: Water

Date Received: 08/17/23 12:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.2 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/23/23 00:16	K1D	EET SAC

Client Sample ID: MCG-201

Lab Sample ID: 320-103891-9

Date Collected: 08/08/23 16:18

Matrix: Water

Date Received: 08/17/23 12:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271 mL	10.0 mL	700724	08/21/23 19:08	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	701006	08/22/23 21:49	K1D	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: McFrath DOT+PF

Job ID: 320-103891-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-103891-1	MCG-219	Water	08/10/23 18:38	08/17/23 12:54
320-103891-2	MCG-080	Water	08/13/23 15:40	08/17/23 12:54
320-103891-3	MCG-975	Water	08/10/23 12:19	08/17/23 12:54
320-103891-4	MCG-021	Water	08/10/23 11:45	08/17/23 12:54
320-103891-5	MCG-259	Water	08/11/23 17:21	08/17/23 12:54
320-103891-6	MCG-275	Water	08/10/23 12:29	08/17/23 12:54
320-103891-7	MCG-018	Water	08/10/23 13:14	08/17/23 12:54
320-103891-8	MCG-054	Water	08/10/23 14:03	08/17/23 12:54
320-103891-9	MCG-201	Water	08/08/23 16:18	08/17/23 12:54

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory EUROFINS
Attn: DAVID ALLTUCKER

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS 1&0 EPA 537.1	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MCG-219		1838	8/10/23	X	2	Groundwater
MCG-080		1540	8/13/23			
MCG-975		1219	8/10/23			
MCG-021		1145	8/10/23			
MCG-259		1721	8/11/23			
MCG-275		1229	8/10/23			
MCG-018		1314	8/10/23			
MCG-054		1403	8/10/23			
MCG-201		1618	8/8/23			

320-103891 Chain of Custody

Project Information

Number: McGrath DOT PFAS
Name: 102219-015
Contact: krf@shanwil.com
Ongoing Project? Yes [X] No [ ]
Sampler: RLW, KND

Sample Receipt

Total No. of Containers: 18
COC Seals/Intact? Y/N/NA:
Received Good Cond./Cold:
Temp:
Delivery Method:

Notes:

PFAS Method compliant w/ DoD QSM v.5.3 Table B-15

Relinquished By: 1.
Signature: [signature] Time: 1530
Printed Name: Kaitlyn Davis Date: 8/16/23
Company: Shannon & Wilson Inc

Relinquished By: 2.
Signature: Time:
Printed Name: Date:
Company:

Relinquished By: 3.
Signature: Time:
Printed Name: Date:
Company:

Received By: 1.
Signature: [signature] Time: 1254
Printed Name: Sandy P Date: 8-17-23
Company: EETCA 0.9c

Received By: 2.
Signature: Time:
Printed Name: Date:
Company:

Received By: 3.
Signature: Time:
Printed Name: Date:
Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No.

eurofins | Environment Testing America

Sacramento
Sample Receiving Notes

Place Field Sheet Label Here

Tracking # 027FA1 6457 3826 0

Job _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSL / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal Cooler Custody Seal Temperature & corrected Temperature & other observations.
File in the job folder with the COC

Therm ID L07 Corr Factor (+ /) 0 °C

Ice _____ Wet _____ Gel X Other _____

Cooler Custody Seal SEAL

Cooler ID _____

Temp Observed 0.9 °C Corrected 0.9 °C

From Temp Blank ☒ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☒	☐
Cooler Temperature is acceptable?	☐	☐	☐
Frozen samples show signs of thaw?	☐	☐	☒

Initials SO Date 8-17-23

Unpacking/Labeling The Samples	Yes	No	NA
Containers are not broken or leaking?	☒	☐	☐
Samples compromised/tampered with?	☐	☒	☐
COC is complete w/o discrepancies	☒	☐	☐
Sample custody seal?	☐	☐	☒
Sample containers have legible labels?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Is the Field Sampler's name on COC?	☐	☐	☒
Samples w/o discrepancies?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Alkalinity has no headspace?	☐	☐	☒
Perchlorate has headspace? (Methods 314 331 6850)	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials SO Date 8.17.23

Notes _____

Trizma Lot #(s) _____

Ammonium Acetate Lot #(s) _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☒	☐	☐
NCM Filed?	☐	☐	☒
Log Release checked in TALS?	☐	☐	☒

Initials SO Date 8/17/23

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-103891-1

Login Number: 103891
List Number: 1
Creator: Pratali, Sandra A

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	refer to ssrn
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	N/A	
COC is filled out in ink and legible.	N/A	
COC is filled out with all pertinent information.	N/A	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	N/A	
Samples are received within Holding Time (excluding tests with immediate HTs)	N/A	
Sample containers have legible labels.	N/A	
Containers are not broken or leaking.	N/A	
Sample collection date/times are provided.	N/A	
Appropriate sample containers are used.	N/A	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Ashley Jaramillo	**CS Site Name:**	McGrath Airport Sitewide PFAS	**Lab Name:**	Eurofins Environment Testing
Title:	Senior Chemist	**ADEC File No.:**	2612.38.012	**Lab Report No.:**	320-103891-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	27831	**Lab Report Date:**	8/29/23

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: Project samples were sent to Eurofins Environment Testing (Eurofins) in Sacramento, California. Eurofins analyzed project samples for PFAS by EPA 537(Mod), compliant with the DoD QSM Version 5.3 Table B-15, under DEC approval 17-020 dated 4/13/23, expiring 2/20/2024.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Project samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: PFAS by EPA 537(Mod), compliant with the DoD QSM Version 5.3 Table B-15
   Comments: Analysis performed as requested.

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): The temperature of the cooler was 0.9 °C when received by the laboratory.
Sample temperature(s): Sample temperatures were not noted.
Comments: The cooler temperature was within the acceptable temperature range.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☐ No ☐ N/A ☒
Comments: PFAS analysis does not require preservation outside of temperature preservation.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory noted samples arrived in good condition, and where required, properly preserved and on ice.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: No sample discrepancies were identified by the laboratory at sample login.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
- Several PFAS IDA recoveries associated with the following samples were below the method recommended limit: *MCG-080, MCG-259, MCG-054* and *MCG-201*. Generally, data quality is not considered affected if the

IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. See Section 6.d. for details regarding impacts to data quality and/or usability, as applicable.

- Insufficient sample volume was available to perform a MS/MSD associated with preparation batch 320-700724. See Section 6.c. for details regarding impacts to data quality and/or usability, as applicable.
- The following samples in preparation batch 320-700724 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. *MCG-219, MCG-080, MCG-259* and *MCG-201*.
- The following samples in preparation batch 320-700724 were yellow in color prior to extraction. *MCG-080* and *MCG-259*.
- During the solid phase extraction process, the following samples contain non-settable particulates which clogged the solid phase extraction column: *MCG-080, MCG-259, MCG-054* and *MCG-201* in preparation batch 320-700724.

c. Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments: Where required.

d. What is the effect on data quality/usability according to the case narrative?
Comments: Effect on data quality and/or usability due to discrepancies, errors, or QC failures identified by the lab in the case narrative are either discussed above in Section 4.b. or elsewhere in this checklist.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soil samples were not included in this work order.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐ N/A ☐
Comments:

iii. If above LoQ or RL, what samples are affected?
Comments: Not applicable, see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments:

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metal/inorganic analyses were not requested with this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: No applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐
Comments: MS/MSD samples were not reported for preparation batch 320-700724. Batch accuracy and precision was evaluated using the LCS/LCSD samples, see Section 6.b. above.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metal/inorganic analyses were not requested with this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☒ N/A ☐
Comments:

- PFAS IDAs 13C2 PFUnA, 13C2 PFDoA, 13C2 PFTeDA, d3-NMeFOSAA, and d5-NEtFOSAA were recovered below laboratory limits in samples *MCG-080, MCG-259*, and *MCG-201*. Consequently, the results of the associated analytes in the noted samples are considered estimated, no direction of bias, and flagged 'J*' in the analytical database. Data is considered usable as flagged.
- PFAS IDAs 13C2 PFDoA and 13C2 PFTeDA were recovered below laboratory limits for sample *MCG-054*. Consequently, the results of the associated analytes in the noted sample are considered estimated, no direction of bias, and flagged 'J*' in the analytical database. Data is considered usable as flagged.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: See above.

iv. Is the data quality or usability affected?
Yes ☒ No ☐ N/A ☐
Comments: See above.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples?
Yes ☐ No ☐ N/A ☒
Comments: Volatile samples were not included with this work order.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LoQ or RL, what samples are affected?
Comments: Not applicable, see above.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Sample *MCG-975* is the field duplicate of project sample *MCG-275*.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes ☒ No ☐ N/A ☐
Comments: Where calculable.

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: See above.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☒ N/A ☐
Comments: Samples were not collected with reusable equipment.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LoQ or RL, specify what samples are affected.
Comments: Not applicable, see above.

iv. Are data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☐ No ☐ N/A ☒
Comments: Other data flags/qualifiers not required.

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

February 15, 2023

Name
General Delivery
McGrath, AK 99627

RE: RESULTS OF 2023 PFAS WATER SUPPLY WELL SAMPLING, MCGRATH AIRPORT

Thank you for participating in our water supply well sampling program to evaluate the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the McGrath Airport (MCG). Shannon & Wilson, Inc. collected a water sample from your water supply well at address on date. We have also sent a copy of this letter to your tenant.

The water sample was analyzed for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and several other PFAS compounds. We compare these concentrations to the Alaska Department of Environmental Conservation (DEC) drinking water action level of 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by Eurofins Environment Testing indicate that PFOS was not detected, and PFOA was not detected in the groundwater sample from your well. Based on the laboratory results from this sampling event the sum of PFOS and PFOA for your water sample is XX ppt, which is above/below the DEC drinking water action level. *(Insert other detected PFAS)* were also detected in the sample; however, DEC has not promulgated groundwater or drinking water standards for this/these compounds. The portions of the original laboratory report that apply to your well (sample number *PW-039*) are enclosed for your records.

Shannon & Wilson has conducted this sampling event on behalf of the Alaska Department of Transportation and Public Facilities (DOT&PF). Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website.

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

If you have any questions regarding your results, please feel free to contact us.

Sincerely,

SHANNON & WILSON, INC.

Staff
Title

Enc: Select Pages of Test America Laboratory Report No. 320-96053-1
PFAS Fact Sheet – McGrath Airport

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF McGrath Airport Sitewide PFAS

File Number: 2612.38.012

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

PFAS has been detected in groundwater at the site, likely as a result of AFFF releases to the ground surface. PFAS affected soil is likely present.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

PFAS were detected in groundwater monitoring wells at the site. Groundwater could potentially be used as a drinking water source in McGrath. We consider this pathway potentially complete.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

We don't anticipate potentially affected surface bodies in the airport vicinity are being used as a drinking water source. However, the potential exists and we consider this pathway potentially complete. The Kuskokwim River is used as a water source for McGrath's municipal water system. PFAS were not detected in samples collected from the municipal water system in January 2023.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

However, AFFF was likely released to the ground surface that may be dusty in the summertime. To our knowledge, no soil samples from the site have been analyzed for PFAS.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF McGrath Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F			
	☐ Volatilization — check air									
	☑ Runoff or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil	☑ groundwater	☑ Ingestion of Groundwater	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to groundwater — check groundwater		☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☐ Volatilization — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater — check groundwater	☐ air	☐ Inhalation of Outdoor Air							
	☐ Volatilization — check air		☐ Inhalation of Indoor Air							
	☑ Flow to surface water body — check surface water		☐ Inhalation of Fugitive Dust							
	☐ Flow to sediment — check sediment									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water — check surface water	☑ surface water	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Volatilization — check air		☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☑ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment — check sediment	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Resuspension, runoff, or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
		☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	

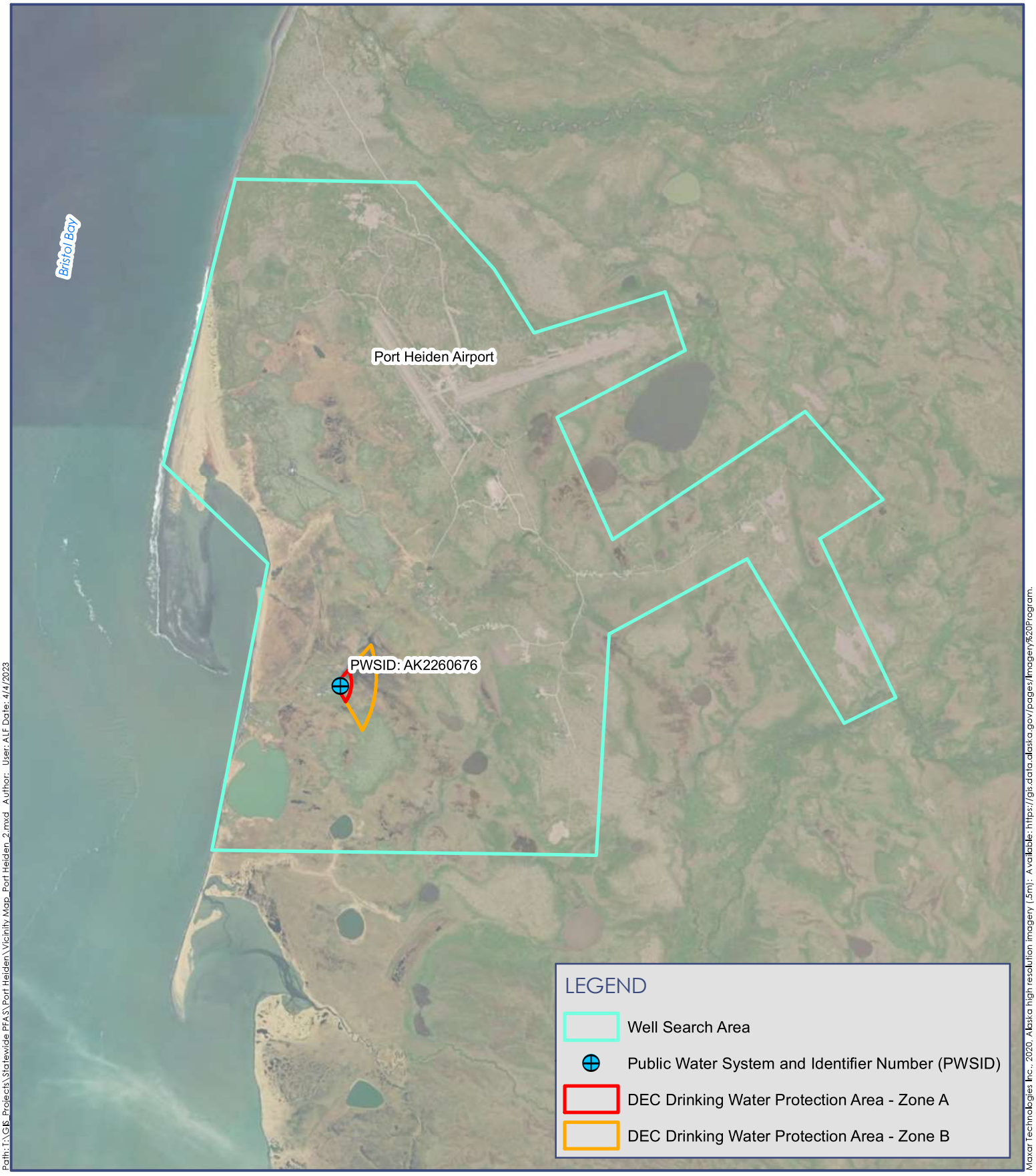
Revised, 10/01/2010

APPENDIX E: PORT HEIDEN AIRPORT SUPPORTING DOCUMENTS

Appendix E

Port Heiden Airport Supporting Documents

CONTENTS



Path: I:\GIS_Projects\Statewide PFAS\Port Heiden\Vicinity Map_Port Heiden_2.mxd Author: User: ALF Date: 4/4/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/imagery%20Program.

January 2024

VICINITY MAP

Figure E1

Path: I:\GIS_Projects\Statewide PFAS\Port Heiden\Site Map_Port Heiden_2.mxd Author: User: ALF Date: 4/4/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/imagery%20Program.

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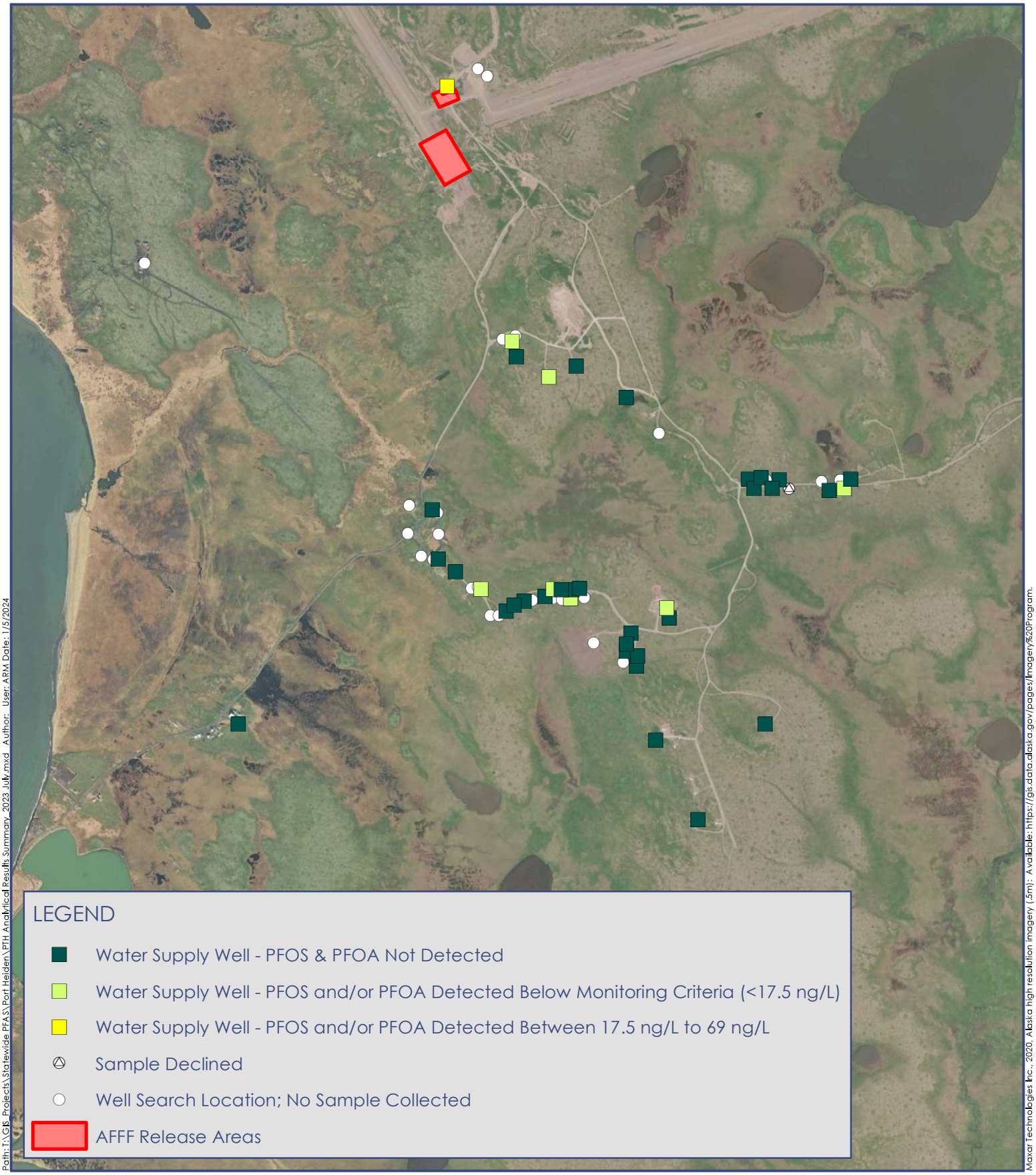
January 2024

SITE MAP

Figure E2



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Notes:

1. AFFF: Aqueous Film Foarming Foam
2. Search area is approximate
3. Samples collected in November 2022 and August 2023

ng/L = nanograms per liter, equivalent to parts per trillion (ppt)

January 2024

HIGHEST PFOS + PFOA RESULTS

Figure E3

Table E1 — Port Heiden Water Supply Well Analytical Results - November 2022

Analytical Method	Analyte	Regulatory Limit	Units	PTH-013	PTH-015	PTH-016		PTH-020	PTH-022	PTH-025	PTH-026	PTH-027	PTH-029
				11/11/2022	11/11/2022	11/10/2022	Duplicate	11/10/2022	11/10/2022	11/9/2022	11/9/2022	11/10/2022	11/10/2022
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.7	<2.0	0.50J	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	Perfluorooctanoic acid (PFOA)		ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.5	<3.9	<3.6	<4.2	<3.6J*	<3.7J*	<3.7	<3.9	<3.6	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	0.34J	<2.0	<1.8	<2.1	1.7J*	<1.8J*	9.9	<2.0	<1.8	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	0.47J*	<1.8J*	1.1J	<2.0	<1.8	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	0.70J	<2.0	<1.8	<2.1	5.8J*	<1.8J*	35	<2.0	<1.8	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	0.65J	<2.0	<1.8	<2.1	1.3J*	<1.8J*	4.8	<2.0	<1.8	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.7	<2.0	<1.8	<2.1	<1.8J*	<1.8J*	<1.8	<2.0	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.3	<4.9	<4.5	<5.2	<4.6J*	<4.6J*	<4.6	<4.9	<4.5	<4.6
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.3	<4.9	<4.5	<5.2	<4.6J*	<4.6J*	<4.6	<4.9	<4.5	<4.6

Table E1 — Port Heiden Water Supply Well Analytical Results - November 2022

Analytical Method	Analyte	Regulatory Limit	Units	PTH-030 11/9/2022	PTH-031 11/9/2022	PTH-032 11/9/2022	PTH-033 11/10/2022	PTH-037 11/11/2022	PTH-042 11/10/2022	PTH-043 11/9/2022	PTH-045 11/10/2022	PTH-045 Duplicate
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.8	1.3J	<1.8	<1.8	<1.7	0.64J	<1.9	<1.8	<1.9
	Perfluorooctanoic acid (PFOA)		ng/L	<1.8	2.0	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.6	<3.6	<3.6	<3.6	<3.4	<3.7	<3.8	<3.6	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.8	<1.8	1.2J	0.22J	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8	0.24J	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.8	<1.8	0.60J	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9	<1.9	<1.8	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.5	<4.5	<4.5	<4.5	<4.3	<4.6	<4.8	<4.5	<4.6
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.5	<4.5	<4.5	<4.5	<4.3	<4.6	<4.8	<4.5	<4.6

Table E1 — Port Heiden Water Supply Well Analytical Results - November 2022

Analytical Method	Analyte	Regulatory Limit	Units	PTH-046 11/10/2022	PTH-046 Duplicate	PTH-049 11/9/2022	PTH-201 11/11/2022	PTH-202 11/11/2022	PTH-205 11/11/2022	PTH-206 11/11/2022	PTH-207 11/11/2022	PTH-211 11/9/2022	PTH-212 11/10/2022
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	36	32	<1.8	<1.8J*	<2.1	2.9JH*	<1.8	<1.7	<1.8	<1.9J*
	Perfluorooctanoic acid (PFOA)		ng/L	22	17	<1.8	<1.8J*	3.1	15	<1.8	<1.7	<1.8	<1.9J*
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.6	<4.0	<3.6	<3.6J*	<4.2	<3.6	<3.5	<3.5	<3.6	<3.8J*
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	110	110	<1.8	0.33J*	2.3	9.9	0.74J	<1.7	<1.8	<1.9J*
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	21	20	<1.8	<1.8J*	1.0J	4.0	<1.8	<1.7	<1.8	<1.9J*
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	250	220	<1.8	<1.8J*	4.9	7.1	<1.8	<1.7	<1.8	<1.9J*
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	88	89	<1.8	<1.8J*	1.7J	9.1	<1.8	<1.7	<1.8	<1.9J*
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<2.0	<1.8	<1.8J*	<2.1	<1.8	<1.8	<1.7	<1.8	<1.9J*
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.5	<5.0	<4.5	<4.5J*	<5.2	<4.5	<4.4	<4.3	<4.5	<4.7J*
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.5	<5.0	<4.5	<4.5J*	<5.2	<4.5	<4.4	<4.3	<4.5	<4.7J*

Table E1 — Port Heiden Water Supply Well Analytical Results - November 2022

Analytical Method	Analyte	Regulatory Limit	Units	PTH-213 11/10/2022	PTH-214 11/10/2022
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.8	<1.8
	Perfluorooctanoic acid (PFOA)		ng/L	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.6	<3.6
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	0.41J	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.8	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.8	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.5	<4.5
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.5	<4.5

Notes:
Results reported from Eurofins Environment Testing work order 320-94388-1.
† Final EPA PFAS LHAs (HFPO/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of detection (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)
JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

Table E2 — Port Heiden Water Supply Well Analytical Results - August 2023

Analytical Method	Analyte	DEC Regulatory Limit	Units	PTH-004	PTH-005	PTH-008	PTH-011	PTH-012	PTH-018	PTH-021	PTH-034	PTH-036	PTH-040	PTH-046		PTH-205	PTH-206	
														PTH-046	*PTH-146*		*PTH-206*	*PTH-306*
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	1.3 J	<1.9	<1.9	<1.9	17	18	2.3 JH*	<1.9	<2.0
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<2.0	<2.0	1.0 J	<2.1	<2.0	<1.9	3.8	<1.9	<1.9	<1.9	8.0	8.3	13	<1.9	<2.0
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.9	<3.9	<3.9	<4.1	<4.0	<3.7	<4.2	<3.8	<3.8	<3.8	<3.8	<3.8	<3.9	<3.8	<3.9
	Perfluorobutanesulfonic acid (PFBS)	2000†	ng/L	<2.0	<2.0	<1.9	<2.1	1.0 J	<1.9	19	<1.9	<1.9	<1.9	54	57	8.3	1.1 J	1.1 J
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	4.7	<1.9	<1.9	<1.9	10	12	3.8	<1.9	<2.0
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	0.65 J	<1.9	75	<1.9	<1.9	<1.9	130	140	6.1	<1.9	<2.0
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	11	<1.9	<1.9	<1.9	41	43	7.8	<1.9	<2.0
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<2.0	<2.0	<1.9	<2.1	<2.0	<1.9	<2.1	<1.9	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<2.0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.9	<4.9	<4.9	<5.2	<5.1	<4.6	<5.3	<4.8	<4.8	<4.7	<4.8	<4.8	<4.9	<4.7	<4.9
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.9	<4.9	<4.9	<5.2	<5.1	<4.6	<5.3	<4.8	<4.8	<4.7	<4.8	<4.8	<4.9	<4.7	<4.9

Notes:
Results reported from Eurofins Environment Testing work order 320-103413-1.
Regulatory limits from 18 AAC 75.345 Table C - Groundwater Cleanup Levels.

† Final EPA PFAS LHAs (HFPO/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of detection (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (LOQ). Flag applied by the laboratory.
JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

October 2022

Dear Property Owner or Occupant:

The Department of Transportation and Public Facilities (DOT&PF) is conducting a comprehensive evaluation of per- and polyfluoroalkyl substances (PFAS) contamination at state owned airports across the state. Firefighters at the Port Heiden Airport have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, to extinguish hydrocarbon fires during training exercises and emergency events.

The DOT&PF has contracted with environmental consulting firm, Shannon & Wilson, Inc., to collect groundwater samples from water supply wells in Port Heiden. Prior to the sampling event, DOT&PF and their representatives will also reach out to the community leadership to discuss the project and address questions related to the upcoming event.

If you have an active well, please call (907) 458-3147 to schedule a sampling appointment during the dates listed below or discuss your availability with Shannon & Wilson.

November 7 through November 11

Water supply well sample results will be compared to the Alaska Department of Conservation (DEC) action level of 70 parts per trillion for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two compounds within the PFAS family. PFAS are emerging contaminants, and the research into the health effects of exposure to PFAS is ongoing. Results of water samples will be shared with property owners and residents. If your drinking-water well is found to have PFAS above the action level, DOT&PF will assist with access to alternative drinking water.

If you have any questions, please contact me, or see the enclosed contact list to identify the most appropriate person or agency for your inquiry. We appreciate your patience as we work through this process.

Sincerely,

Sammy Cummings

Sammy Cummings
PFAS Program Manager, DOT&PF Statewide Aviation

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Water Supply Well Inventory Survey Form

Date: _____

Parcel: _____

Name (Owner): _____

Name (Occupant): _____

Physical Address: _____

Mailing Address: _____

Email Address (optional): _____

Contact Phone Number: (owner) _____ (occupant) _____

Number of persons residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: _____ Full-Time ☐ Seasonal ☐

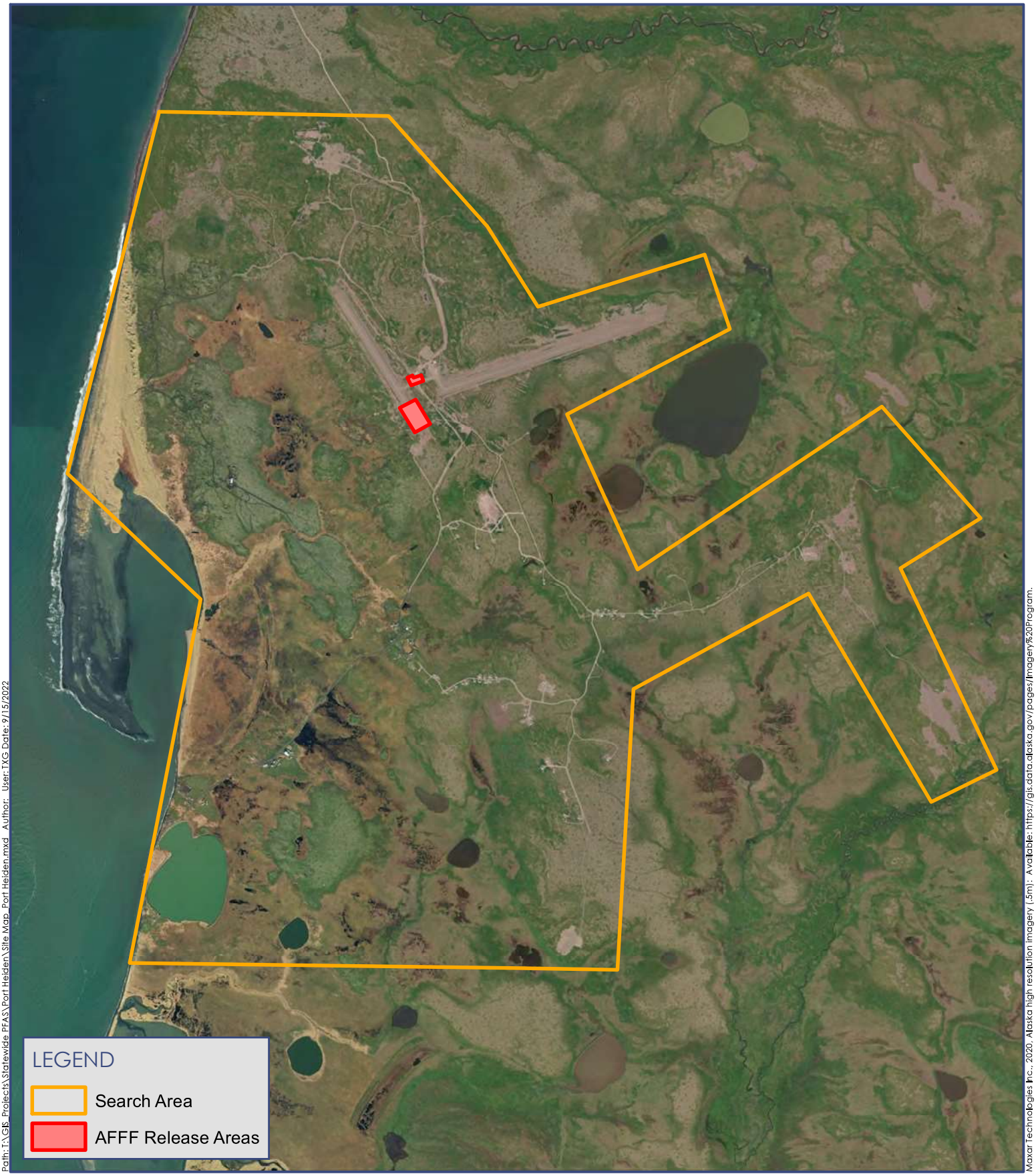
---

1) From where do you obtain your drinking water?
   a) Water Supply Utility ☐ b) Well Water ☐
   c) Water Delivery ☐ d) Other ☐

2) If you have a water well, please answer the following questions:
   a) Where is the well located on the property? _____
   b) Is the well in use? Yes ☐ No ☐
   c) If yes, please check all that apply regarding the usage of your well water:
      Drinking ☐ Cooking ☐ Gardening ☐ Pets ☐ Other _____
   d) If no, is the well usable, unusable, or properly abandoned?
      Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   e) When was the well installed? _____
   f) What is the well depth? _____ Do you have the well log? ☐ Yes ☐ No
   g) What is the well diameter? _____
   h) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   i) Do you have any treatment on your well (e.g. water softener)? Please describe. _____
      _____

3) Sample Permission
   Does the Alaska Department of Transportation & Public Facilities (DOT&PF) have permission to sample your private water well? ☐ Yes ☐ No

_____ _____
Signature Date



Notes:
1. AFFF: Aqueous Film Foarming Foam
2. Search area is approximate

October 2022

SITE MAP

Figure 2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
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Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet –Port Heiden Airport

October 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging and firefighting foams.

The presumed source of potential PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will make adjustments as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 12/22/2022 12:58:28 PM

JOB DESCRIPTION

Port Heiden (PTH) PFAS

JOB NUMBER

320-94388-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

myEOL

Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

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12/22/2022 12:58:28 PM

Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Qualifiers

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-94388-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-94388-1

Receipt
The samples were received on 11/15/2022 3:05 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.9º C and 4.3º C.

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PTH-205 (320-94388-27)

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-634641.

Method 3535: The following samples in preparation batch 320-634641 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PTH-027 (320-94388-13), PTH-033 (320-94388-14) and PTH-032 (320-94388-19)

Method 3535: The following sample in preparation batch 320-634641 was light orange in color prior to extraction. PTH-211 (320-94388-5)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-635091.

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-212 — Lab Sample ID: 320-94388-1

No Detections.

Client Sample ID: PTH-046 — Lab Sample ID: 320-94388-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	88		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	21		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	22		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	110		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	250		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	36		1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-042 — Lab Sample ID: 320-94388-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.64	J	1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-214 — Lab Sample ID: 320-94388-4

No Detections.

Client Sample ID: PTH-211 — Lab Sample ID: 320-94388-5

No Detections.

Client Sample ID: PTH-043 — Lab Sample ID: 320-94388-6

No Detections.

Client Sample ID: PTH-049 — Lab Sample ID: 320-94388-7

No Detections.

Client Sample ID: PTH-022 — Lab Sample ID: 320-94388-8

No Detections.

Client Sample ID: PTH-029 — Lab Sample ID: 320-94388-9

No Detections.

Client Sample ID: PTH-045 — Lab Sample ID: 320-94388-10

No Detections.

Client Sample ID: PTH-213 — Lab Sample ID: 320-94388-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.41	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-020 — Lab Sample ID: 320-94388-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.3	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.47	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.8		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-027 — Lab Sample ID: 320-94388-13

No Detections.

Client Sample ID: PTH-033 — Lab Sample ID: 320-94388-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.22	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-030 — Lab Sample ID: 320-94388-15

No Detections.

Client Sample ID: PTH-016 — Lab Sample ID: 320-94388-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.50	J	1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-026 — Lab Sample ID: 320-94388-17

No Detections.

Client Sample ID: PTH-025 — Lab Sample ID: 320-94388-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.8		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	9.9		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	35		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-032 — Lab Sample ID: 320-94388-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.60	J	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-031 — Lab Sample ID: 320-94388-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.24	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-037 — Lab Sample ID: 320-94388-21

No Detections.

Client Sample ID: PTH-015 — Lab Sample ID: 320-94388-22

No Detections.

Client Sample ID: PTH-207 — Lab Sample ID: 320-94388-23

No Detections.

Client Sample ID: PTH-206 — Lab Sample ID: 320-94388-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.74	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-013 — Lab Sample ID: 320-94388-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.65	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.34	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.70	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-201 — Lab Sample ID: 320-94388-26

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.33	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-205 — Lab Sample ID: 320-94388-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	9.1		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.0		1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	15		1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	9.9		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.1		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.9	I	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-202 — Lab Sample ID: 320-94388-28

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.7	J	2.1	0.61	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	J	2.1	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.1		2.1	0.89	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		2.1	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.9		2.1	0.60	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-145 — Lab Sample ID: 320-94388-29

No Detections.

Client Sample ID: PTH-116 — Lab Sample ID: 320-94388-30

No Detections.

Client Sample ID: PTH-146 — Lab Sample ID: 320-94388-31

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	89		2.0	0.58	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	20		2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	17		2.0	0.85	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	110		2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	220		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	32		2.0	0.54	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-212
Date Collected: 11/10/22 17:54
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-1
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		11/22/22 05:30	12/17/22 01:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		11/22/22 05:30	12/17/22 01:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/22/22 05:30	12/17/22 01:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/22/22 05:30	12/17/22 01:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/22/22 05:30	12/17/22 01:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/22/22 05:30	12/17/22 01:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/22/22 05:30	12/17/22 01:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/22/22 05:30	12/17/22 01:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C4 PFHpA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C4 PFOA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C5 PFNA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C2 PFDA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C2 PFUnA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C2 PFDoA	*83*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C2 PFTeDA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C3 PFBS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
18O2 PFHxS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C4 PFOS	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
d5-NEtFOSAA	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*
13C3 HFPO-DA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:14*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-046

Date Collected: 11/10/22 12:57
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-2

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**88**		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluoroheptanoic acid (PFHpA)	**21**		1.8	0.23	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorooctanoic acid (PFOA)	**22**		1.8	0.77	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorobutanesulfonic acid (PFBS)	**110**		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorohexanesulfonic acid (PFHxS)	**250**		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 01:24	1
Perfluorooctanesulfonic acid (PFOS)	**36**		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 01:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 01:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 01:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 01:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/22/22 05:30	12/17/22 01:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 01:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 01:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C4 PFHpA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C4 PFOA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C5 PFNA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C2 PFDA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C2 PFUnA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C2 PFDoA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C2 PFTeDA	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C3 PFBS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
18O2 PFHxS	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C4 PFOS	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
d3-NMeFOSAA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
d5-NEtFOSAA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*
13C3 HFPO-DA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:24*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-042
Date Collected: 11/10/22 14:30
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-3
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/22/22 05:30	12/17/22 01:35	1
Perfluorooctanesulfonic acid (PFOS)	**0.64**	**J**	1.9	0.50	ng/L		11/22/22 05:30	12/17/22 01:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/22/22 05:30	12/17/22 01:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/22/22 05:30	12/17/22 01:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/22/22 05:30	12/17/22 01:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/22/22 05:30	12/17/22 01:35	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/22/22 05:30	12/17/22 01:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/22/22 05:30	12/17/22 01:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C4 PFHpA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C4 PFOA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C5 PFNA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C2 PFDA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C2 PFUnA	*110*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C2 PFDoA	*102*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C2 PFTeDA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C3 PFBS	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
18O2 PFHxS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C4 PFOS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
d3-NMeFOSAA	*102*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
d5-NEtFOSAA	*114*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*
13C3 HFPO-DA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:35*	*1*

Client Sample ID: PTH-214

Date Collected: 11/10/22 19:11
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-4

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 01:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 01:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 01:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 01:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 01:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/22/22 05:30	12/17/22 01:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 01:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 01:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C4 PFHpA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C4 PFOA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C5 PFNA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C2 PFDA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C2 PFUnA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C2 PFDoA	*81*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C3 PFBS	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
18O2 PFHxS	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C4 PFOS	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
d3-NMeFOSAA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
d5-NEtFOSAA	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*
13C3 HFPO-DA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:45*	*1*

Client Sample ID: PTH-211

Date Collected: 11/09/22 17:03
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-5

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 01:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 01:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 01:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 01:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 01:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/22/22 05:30	12/17/22 01:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 01:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 01:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C4 PFHpA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C4 PFOA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C5 PFNA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C2 PFDA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C2 PFUnA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C2 PFDoA	*80*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C3 PFBS	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
18O2 PFHxS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C4 PFOS	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
d3-NMeFOSAA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
d5-NEtFOSAA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*11/22/22 05:30*	*12/17/22 01:55*	*1*

Client Sample ID: PTH-043

Date Collected: 11/09/22 17:53
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-6

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		11/22/22 05:30	12/17/22 02:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		11/22/22 05:30	12/17/22 02:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		11/22/22 05:30	12/17/22 02:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		11/22/22 05:30	12/17/22 02:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/22/22 05:30	12/17/22 02:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/22/22 05:30	12/17/22 02:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/22/22 05:30	12/17/22 02:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/22/22 05:30	12/17/22 02:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C4 PFHpA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C4 PFOA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C5 PFNA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C2 PFDA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C2 PFUnA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C2 PFDoA	*83*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C3 PFBS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
18O2 PFHxS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C4 PFOS	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
d3-NMeFOSAA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
d5-NEtFOSAA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*
13C3 HFPO-DA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:05*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-049
Date Collected: 11/09/22 11:13
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-7
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 02:15	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 02:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 02:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 02:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 02:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/22/22 05:30	12/17/22 02:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 02:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 02:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C4 PFHpA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C4 PFOA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C5 PFNA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C2 PFDA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C2 PFUnA	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C2 PFDoA	*82*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C2 PFTeDA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C3 PFBS	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
18O2 PFHxS	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C4 PFOS	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
d5-NEtFOSAA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*
13C3 HFPO-DA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:15*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-022
Date Collected: 11/10/22 12:34
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-8
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		11/22/22 05:30	12/17/22 23:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 23:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/22/22 05:30	12/17/22 23:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/22/22 05:30	12/17/22 23:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 23:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/22/22 05:30	12/17/22 23:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		11/22/22 05:30	12/17/22 23:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/22/22 05:30	12/17/22 23:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C4 PFHpA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C4 PFOA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C5 PFNA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C2 PFDA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C2 PFUnA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C2 PFDoA	*84*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C3 PFBS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
18O2 PFHxS	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C4 PFOS	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
d3-NMeFOSAA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*
13C3 HFPO-DA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 23:00*	*1*

Client Sample ID: PTH-029

Date Collected: 11/10/22 15:04
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-9

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 02:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 02:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/22/22 05:30	12/17/22 02:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/22/22 05:30	12/17/22 02:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 02:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/22/22 05:30	12/17/22 02:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 02:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/22/22 05:30	12/17/22 02:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C4 PFHpA	*104*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C4 PFOA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C5 PFNA	*100*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C2 PFDA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C2 PFUnA	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C2 PFDoA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C2 PFTeDA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C3 PFBS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
18O2 PFHxS	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C4 PFOS	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
d3-NMeFOSAA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
d5-NEtFOSAA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*
13C3 HFPO-DA	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 02:55*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-045
Date Collected: 11/10/22 18:50
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-10
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 03:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/22/22 05:30	12/17/22 03:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 03:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 03:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/22/22 05:30	12/17/22 03:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/22/22 05:30	12/17/22 03:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 03:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 03:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C4 PFHpA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C4 PFOA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C5 PFNA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C2 PFDA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C2 PFUnA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C2 PFDoA	*82*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C3 PFBS	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
18O2 PFHxS	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C4 PFOS	*83*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
d3-NMeFOSAA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
d5-NEtFOSAA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*
13C3 HFPO-DA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:05*	*1*

Client Sample ID: PTH-213
Date Collected: 11/10/22 18:35
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-11
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorobutanesulfonic acid (PFBS)	**0.41**	**J**	1.8	0.18	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 03:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 03:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 03:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 03:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 03:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/22/22 05:30	12/17/22 03:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 03:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 03:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C4 PFHpA	*100*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C4 PFOA	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C5 PFNA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C2 PFDA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C2 PFUnA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C2 PFDoA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C2 PFTeDA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C3 PFBS	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
18O2 PFHxS	*107*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C4 PFOS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
d3-NMeFOSAA	*84*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
d5-NEtFOSAA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*
13C3 HFPO-DA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:16*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-020
Date Collected: 11/10/22 18:07
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-12
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.3**	**J**	1.8	0.53	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluoroheptanoic acid (PFHpA)	**0.47**	**J**	1.8	0.23	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**	**J**	1.8	0.18	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorohexanesulfonic acid (PFHxS)	**5.8**		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 03:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 03:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/22/22 05:30	12/17/22 03:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/22/22 05:30	12/17/22 03:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 03:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/22/22 05:30	12/17/22 03:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 03:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 03:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C4 PFHpA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C4 PFOA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C5 PFNA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C2 PFDA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C2 PFUnA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C2 PFDoA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C2 PFTeDA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C3 PFBS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
18O2 PFHxS	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C4 PFOS	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
d3-NMeFOSAA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*
13C3 HFPO-DA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:26*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-027
Date Collected: 11/10/22 16:14
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-13
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 03:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/22/22 05:30	12/17/22 03:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 03:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 03:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 03:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/22/22 05:30	12/17/22 03:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 03:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 03:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C4 PFHpA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C4 PFOA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C5 PFNA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C2 PFDA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C2 PFUnA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C2 PFDoA	*81*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C2 PFTeDA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C3 PFBS	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
18O2 PFHxS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C4 PFOS	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
d3-NMeFOSAA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
d5-NEtFOSAA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*
13C3 HFPO-DA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:36*	*1*

Client Sample ID: PTH-033
Date Collected: 11/10/22 16:59
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-14
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorobutanesulfonic acid (PFBS)	**0.22**	**J**	1.8	0.18	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 03:46	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/22/22 05:30	12/17/22 03:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 03:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 03:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/22/22 05:30	12/17/22 03:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/22/22 05:30	12/17/22 03:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 03:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 03:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C4 PFHpA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C4 PFOA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C5 PFNA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C2 PFDA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C2 PFUnA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C2 PFDoA	*83*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C2 PFTeDA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C3 PFBS	*104*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
18O2 PFHxS	*104*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C4 PFOS	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
d3-NMeFOSAA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
d5-NEtFOSAA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*
13C3 HFPO-DA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:46*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-030

Date Collected: 11/09/22 16:54
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-15

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 03:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 03:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 03:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 03:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 03:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/22/22 05:30	12/17/22 03:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 03:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 03:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C4 PFHpA	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C4 PFOA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C5 PFNA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C2 PFDA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C2 PFUnA	*100*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C2 PFDoA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C2 PFTeDA	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C3 PFBS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
18O2 PFHxS	*103*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C4 PFOS	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
d3-NMeFOSAA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
d5-NEtFOSAA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*
13C3 HFPO-DA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 03:56*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-016
Date Collected: 11/10/22 13:11
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-16
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/22/22 05:30	12/17/22 04:06	1
Perfluorooctanesulfonic acid (PFOS)	**0.50**	**J**	1.8	0.48	ng/L		11/22/22 05:30	12/17/22 04:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 04:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 04:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/22/22 05:30	12/17/22 04:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/22/22 05:30	12/17/22 04:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 04:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 04:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C4 PFHpA	*99*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C4 PFOA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C5 PFNA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C2 PFDA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C2 PFUnA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C2 PFDoA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C2 PFTeDA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C3 PFBS	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
18O2 PFHxS	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C4 PFOS	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
d3-NMeFOSAA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*
13C3 HFPO-DA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:06*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-026

Date Collected: 11/09/22 14:04
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-17

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.71	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		11/22/22 05:30	12/17/22 04:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		11/22/22 05:30	12/17/22 04:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/22/22 05:30	12/17/22 04:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/22/22 05:30	12/17/22 04:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		11/22/22 05:30	12/17/22 04:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/22/22 05:30	12/17/22 04:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		11/22/22 05:30	12/17/22 04:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		11/22/22 05:30	12/17/22 04:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C4 PFHpA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C4 PFOA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C5 PFNA	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C2 PFDA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C2 PFUnA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C2 PFDoA	*81*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C2 PFTeDA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C3 PFBS	*101*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
18O2 PFHxS	*102*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C4 PFOS	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
d3-NMeFOSAA	*85*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
d5-NEtFOSAA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*
13C3 HFPO-DA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:16*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-025
Date Collected: 11/09/22 13:19
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-18
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.8**		1.8	0.53	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluoroheptanoic acid (PFHpA)	**1.1**	**J**	1.8	0.23	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorobutanesulfonic acid (PFBS)	**9.9**		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorohexanesulfonic acid (PFHxS)	**35**		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 04:46	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 04:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/22/22 05:30	12/17/22 04:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/22/22 05:30	12/17/22 04:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 04:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/22/22 05:30	12/17/22 04:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 04:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/22/22 05:30	12/17/22 04:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C4 PFHpA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C4 PFOA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C5 PFNA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C2 PFDA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C2 PFUnA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C2 PFDoA	*80*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C3 PFBS	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
18O2 PFHxS	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C4 PFOS	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
d3-NMeFOSAA	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
d5-NEtFOSAA	*90*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*
13C3 HFPO-DA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:46*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-032
Date Collected: 11/09/22 14:21
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-19
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorohexanesulfonic acid (PFHxS)	**0.60**	**J**	1.8	0.51	ng/L		11/22/22 05:30	12/17/22 04:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/22/22 05:30	12/17/22 04:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 04:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 04:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/22/22 05:30	12/17/22 04:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/22/22 05:30	12/17/22 04:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 04:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 04:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C4 PFHpA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C4 PFOA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C5 PFNA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C2 PFDA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C2 PFUnA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C2 PFDoA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C2 PFTeDA	*96*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C3 PFBS	*98*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
18O2 PFHxS	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C4 PFOS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
d3-NMeFOSAA	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
d5-NEtFOSAA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*
13C3 HFPO-DA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 04:57*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-031

Date Collected: 11/09/22 10:58
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-20

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluoroheptanoic acid (PFHpA)	**0.24**	**J**	1.8	0.23	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorooctanoic acid (PFOA)	**2.0**		1.8	0.77	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/22/22 05:30	12/17/22 05:07	1
Perfluorooctanesulfonic acid (PFOS)	**1.3**	**J**	1.8	0.49	ng/L		11/22/22 05:30	12/17/22 05:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/22/22 05:30	12/17/22 05:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/22/22 05:30	12/17/22 05:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/22/22 05:30	12/17/22 05:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/22/22 05:30	12/17/22 05:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/22/22 05:30	12/17/22 05:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/22/22 05:30	12/17/22 05:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C4 PFHpA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C4 PFOA	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C5 PFNA	*94*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C2 PFDA	*88*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C2 PFUnA	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C2 PFDoA	*83*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C2 PFTeDA	*87*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C3 PFBS	*93*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
18O2 PFHxS	*100*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C4 PFOS	*95*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
d5-NEtFOSAA	*91*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*
13C3 HFPO-DA	*89*		*50 - 150*	*11/22/22 05:30*	*12/17/22 05:07*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-037

Date Collected: 11/11/22 15:56
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-21

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		11/23/22 12:39	12/17/22 12:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		11/23/22 12:39	12/17/22 12:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/23/22 12:39	12/17/22 12:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/23/22 12:39	12/17/22 12:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/23/22 12:39	12/17/22 12:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		11/23/22 12:39	12/17/22 12:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/23/22 12:39	12/17/22 12:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		11/23/22 12:39	12/17/22 12:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C4 PFHpA	*79*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C4 PFOA	*83*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C5 PFNA	*79*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C2 PFDA	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C2 PFUnA	*83*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C2 PFDoA	*69*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C2 PFTeDA	*65*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C3 PFBS	*79*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
18O2 PFHxS	*87*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C4 PFOS	*78*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
d3-NMeFOSAA	*65*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
d5-NEtFOSAA	*66*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*
13C3 HFPO-DA	*74*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:42*	*1*

Client Sample ID: PTH-015

Date Collected: 11/11/22 19:10
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-22

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		11/23/22 12:39	12/17/22 12:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		11/23/22 12:39	12/17/22 12:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/23/22 12:39	12/17/22 12:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/23/22 12:39	12/17/22 12:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/23/22 12:39	12/17/22 12:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/23/22 12:39	12/17/22 12:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		11/23/22 12:39	12/17/22 12:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		11/23/22 12:39	12/17/22 12:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C4 PFHpA	*92*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C4 PFOA	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C5 PFNA	*95*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C2 PFDA	*88*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C2 PFUnA	*98*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C2 PFDoA	*87*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C3 PFBS	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
18O2 PFHxS	*98*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C4 PFOS	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
d3-NMeFOSAA	*75*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
d5-NEtFOSAA	*80*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*
13C3 HFPO-DA	*86*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:52*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-207

Date Collected: 11/11/22 13:44
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-23

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		11/23/22 12:39	12/17/22 13:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		11/23/22 12:39	12/17/22 13:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/23/22 12:39	12/17/22 13:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/23/22 12:39	12/17/22 13:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/23/22 12:39	12/17/22 13:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/23/22 12:39	12/17/22 13:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/23/22 12:39	12/17/22 13:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		11/23/22 12:39	12/17/22 13:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C4 PFHpA	*75*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C4 PFOA	*79*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C5 PFNA	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C2 PFDA	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C2 PFUnA	*74*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C2 PFDoA	*62*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C2 PFTeDA	*64*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C3 PFBS	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
18O2 PFHxS	*79*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C4 PFOS	*75*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
d3-NMeFOSAA	*60*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
d5-NEtFOSAA	*59*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*
13C3 HFPO-DA	*72*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:03*	*1*

Client Sample ID: PTH-206

Date Collected: 11/11/22 15:16
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-24

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorobutanesulfonic acid (PFBS)	**0.74**	**J**	1.8	0.18	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		11/23/22 12:39	12/17/22 13:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/23/22 12:39	12/17/22 13:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/23/22 12:39	12/17/22 13:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		11/23/22 12:39	12/17/22 13:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/23/22 12:39	12/17/22 13:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/23/22 12:39	12/17/22 13:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/23/22 12:39	12/17/22 13:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/23/22 12:39	12/17/22 13:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C4 PFHpA	*82*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C4 PFOA	*82*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C5 PFNA	*90*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C2 PFDA	*80*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C2 PFUnA	*79*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C2 PFDoA	*70*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C2 PFTeDA	*72*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C3 PFBS	*84*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
18O2 PFHxS	*87*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C4 PFOS	*79*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
d3-NMeFOSAA	*65*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
d5-NEtFOSAA	*59*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*
13C3 HFPO-DA	*78*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:13*	*1*

Client Sample ID: PTH-013

Date Collected: 11/11/22 18:21
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-25

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.65**	**J**	1.7	0.50	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorobutanesulfonic acid (PFBS)	**0.34**	**J**	1.7	0.17	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorohexanesulfonic acid (PFHxS)	**0.70**	**J**	1.7	0.49	ng/L		11/23/22 12:39	12/17/22 13:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		11/23/22 12:39	12/17/22 13:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/23/22 12:39	12/17/22 13:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/23/22 12:39	12/17/22 13:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/23/22 12:39	12/17/22 13:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/23/22 12:39	12/17/22 13:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/23/22 12:39	12/17/22 13:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		11/23/22 12:39	12/17/22 13:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C4 PFHpA	*90*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C4 PFOA	*90*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C5 PFNA	*95*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C2 PFDA	*90*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C2 PFUnA	*96*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C2 PFDoA	*83*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C2 PFTeDA	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C3 PFBS	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
18O2 PFHxS	*94*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C4 PFOS	*91*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
d3-NMeFOSAA	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
d5-NEtFOSAA	*71*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*
13C3 HFPO-DA	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:23*	*1*

Client Sample ID: PTH-201
Date Collected: 11/11/22 17:17
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-26
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorobutanesulfonic acid (PFBS)	**0.33**	**J**	1.8	0.18	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/23/22 12:39	12/17/22 13:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/23/22 12:39	12/17/22 13:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/23/22 12:39	12/17/22 13:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/23/22 12:39	12/17/22 13:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/23/22 12:39	12/17/22 13:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/23/22 12:39	12/17/22 13:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/23/22 12:39	12/17/22 13:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/23/22 12:39	12/17/22 13:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C4 PFHpA	*86*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C4 PFOA	*80*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C5 PFNA	*86*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C2 PFDA	*83*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C2 PFUnA	*83*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C2 PFDoA	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C2 PFTeDA	*80*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C3 PFBS	*86*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
18O2 PFHxS	*91*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C4 PFOS	*87*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
d3-NMeFOSAA	*65*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
d5-NEtFOSAA	*68*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*
13C3 HFPO-DA	*77*		*50 - 150*	*11/23/22 12:39*	*12/17/22 13:33*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-205
Date Collected: 11/11/22 13:40
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-27
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**9.1**		1.8	0.52	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluoroheptanoic acid (PFHpA)	**4.0**		1.8	0.23	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorooctanoic acid (PFOA)	**15**		1.8	0.77	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorobutanesulfonic acid (PFBS)	**9.9**		1.8	0.18	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorohexanesulfonic acid (PFHxS)	**7.1**		1.8	0.52	ng/L		11/23/22 12:40	12/17/22 13:43	1
Perfluorooctanesulfonic acid (PFOS)	**2.9**	I	1.8	0.49	ng/L		11/23/22 12:40	12/17/22 13:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/23/22 12:40	12/17/22 13:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/23/22 12:40	12/17/22 13:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/23/22 12:40	12/17/22 13:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/23/22 12:40	12/17/22 13:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/23/22 12:40	12/17/22 13:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/23/22 12:40	12/17/22 13:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C4 PFHpA	*85*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C4 PFOA	*87*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C5 PFNA	*90*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C2 PFDA	*84*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C2 PFUnA	*85*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C2 PFDoA	*78*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C2 PFTeDA	*81*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C3 PFBS	*91*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
18O2 PFHxS	*90*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C4 PFOS	*85*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
d3-NMeFOSAA	*66*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
d5-NEtFOSAA	*69*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*11/23/22 12:40*	*12/17/22 13:43*	*1*

Client Sample ID: PTH-202

Date Collected: 11/11/22 14:13
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-28

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.7**	**J**	2.1	0.61	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluoroheptanoic acid (PFHpA)	**1.0**	**J**	2.1	0.26	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorooctanoic acid (PFOA)	**3.1**		2.1	0.89	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.28	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.32	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.2	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.58	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.4	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.76	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorobutanesulfonic acid (PFBS)	**2.3**		2.1	0.21	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorohexanesulfonic acid (PFHxS)	**4.9**		2.1	0.60	ng/L		11/23/22 12:40	12/17/22 14:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.1	0.56	ng/L		11/23/22 12:40	12/17/22 14:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.2	1.3	ng/L		11/23/22 12:40	12/17/22 14:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.2	1.4	ng/L		11/23/22 12:40	12/17/22 14:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		11/23/22 12:40	12/17/22 14:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.2	1.6	ng/L		11/23/22 12:40	12/17/22 14:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.33	ng/L		11/23/22 12:40	12/17/22 14:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		11/23/22 12:40	12/17/22 14:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C4 PFHpA	*82*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C4 PFOA	*84*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C5 PFNA	*83*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C2 PFDA	*81*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C2 PFUnA	*83*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C2 PFDoA	*75*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C2 PFTeDA	*82*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C3 PFBS	*89*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
18O2 PFHxS	*83*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C4 PFOS	*81*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
d3-NMeFOSAA	*69*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
d5-NEtFOSAA	*71*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*
13C3 HFPO-DA	*79*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:13*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-145
Date Collected: 11/10/22 18:40
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-29
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/23/22 12:40	12/17/22 14:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/23/22 12:40	12/17/22 14:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/23/22 12:40	12/17/22 14:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/23/22 12:40	12/17/22 14:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/23/22 12:40	12/17/22 14:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/23/22 12:40	12/17/22 14:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/23/22 12:40	12/17/22 14:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/23/22 12:40	12/17/22 14:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C4 PFHpA	*83*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C4 PFOA	*80*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C5 PFNA	*84*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C2 PFDA	*82*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C2 PFUnA	*82*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C2 PFDoA	*69*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C2 PFTeDA	*66*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C3 PFBS	*80*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
18O2 PFHxS	*87*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C4 PFOS	*81*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
d3-NMeFOSAA	*66*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
d5-NEtFOSAA	*62*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*
13C3 HFPO-DA	*74*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:24*	*1*

Client Sample ID: PTH-116

Date Collected: 11/10/22 13:01
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-30

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.1	0.60	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.26	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorooctanoic acid (PFOA)	ND		2.1	0.88	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.28	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.32	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.1	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.57	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.3	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.76	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.21	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.1	0.59	ng/L		11/23/22 12:40	12/17/22 14:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.1	0.56	ng/L		11/23/22 12:40	12/17/22 14:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.2	1.2	ng/L		11/23/22 12:40	12/17/22 14:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.2	1.3	ng/L		11/23/22 12:40	12/17/22 14:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		11/23/22 12:40	12/17/22 14:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.2	1.6	ng/L		11/23/22 12:40	12/17/22 14:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.33	ng/L		11/23/22 12:40	12/17/22 14:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		11/23/22 12:40	12/17/22 14:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*73*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C4 PFHpA	*73*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C4 PFOA	*71*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C5 PFNA	*72*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C2 PFDA	*72*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C2 PFUnA	*72*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C2 PFDoA	*62*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C2 PFTeDA	*66*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C3 PFBS	*75*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
18O2 PFHxS	*82*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C4 PFOS	*76*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
d3-NMeFOSAA	*54*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
d5-NEtFOSAA	*56*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*
13C3 HFPO-DA	*68*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:34*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-146

Date Collected: 11/10/22 12:47
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-31

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**89**		2.0	0.58	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluoroheptanoic acid (PFHpA)	**20**		2.0	0.25	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorooctanoic acid (PFOA)	**17**		2.0	0.85	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorobutanesulfonic acid (PFBS)	**110**		2.0	0.20	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorohexanesulfonic acid (PFHxS)	**220**		2.0	0.57	ng/L		11/23/22 12:40	12/17/22 14:44	1
Perfluorooctanesulfonic acid (PFOS)	**32**		2.0	0.54	ng/L		11/23/22 12:40	12/17/22 14:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/23/22 12:40	12/17/22 14:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/23/22 12:40	12/17/22 14:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/23/22 12:40	12/17/22 14:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/23/22 12:40	12/17/22 14:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/23/22 12:40	12/17/22 14:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/23/22 12:40	12/17/22 14:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C4 PFHpA	*83*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C4 PFOA	*86*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C5 PFNA	*94*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C2 PFDA	*86*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C2 PFUnA	*87*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C2 PFDoA	*76*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C2 PFTeDA	*79*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C3 PFBS	*88*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
18O2 PFHxS	*87*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C4 PFOS	*87*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
d3-NMeFOSAA	*67*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
d5-NEtFOSAA	*69*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*
13C3 HFPO-DA	*82*		*50 - 150*	*11/23/22 12:40*	*12/17/22 14:44*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTDA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-94388-1	PTH-212	95	97	97	93	95	95	83	91
320-94388-2	PTH-046	100	94	97	96	95	94	91	101
320-94388-3	PTH-042	90	90	94	92	89	110	102	99
320-94388-4	PTH-214	100	99	96	96	97	94	81	90
320-94388-5	PTH-211	93	95	92	96	96	94	80	86
320-94388-6	PTH-043	97	96	95	92	92	90	83	86
320-94388-7	PTH-049	95	96	93	94	93	101	82	99
320-94388-8	PTH-022	97	94	94	95	93	92	84	90
320-94388-9	PTH-029	101	104	99	100	99	101	91	89
320-94388-10	PTH-045	89	88	93	90	85	92	82	85
320-94388-11	PTH-213	98	100	98	91	89	97	85	88
320-94388-12	PTH-020	98	96	95	92	94	97	88	88
320-94388-13	PTH-027	92	97	99	94	95	95	81	91
320-94388-14	PTH-033	99	95	93	93	91	93	83	96
320-94388-15	PTH-030	101	98	96	94	95	100	85	87
320-94388-16	PTH-016	95	99	94	95	92	93	85	94
320-94388-17	PTH-026	96	95	96	98	94	91	81	91
320-94388-18	PTH-025	90	95	92	93	91	95	80	86
320-94388-19	PTH-032	96	96	93	97	96	95	88	96
320-94388-20	PTH-031	97	94	95	94	88	93	83	87
320-94388-21	PTH-037	77	79	83	79	77	83	69	65
320-94388-22	PTH-015	91	92	89	95	88	98	87	90
320-94388-23	PTH-207	78	75	79	77	77	74	62	64
320-94388-24	PTH-206	82	82	82	90	80	79	70	72
320-94388-25	PTH-013	94	90	90	95	90	96	83	89
320-94388-26	PTH-201	85	86	80	86	83	83	77	80
320-94388-27	PTH-205	88	85	87	90	84	85	78	81
320-94388-28	PTH-202	82	82	84	83	81	83	75	82
320-94388-29	PTH-145	83	83	80	84	82	82	69	66
320-94388-30	PTH-116	73	73	71	72	72	72	62	66
320-94388-31	PTH-146	85	83	86	94	86	87	76	79
LCS 320-634641/2-A	Lab Control Sample	94	91	97	92	95	99	82	91
LCS 320-635091/2-A	Lab Control Sample	88	85	88	91	85	87	82	88
LCSD 320-634641/3-A	Lab Control Sample Dup	94	97	99	96	96	99	89	94
LCSD 320-635091/3-A	Lab Control Sample Dup	90	87	88	86	86	91	82	87
MB 320-634641/1-A	Method Blank	92	94	95	94	90	90	84	91
MB 320-635091/1-A	Method Blank	91	87	89	90	91	92	84	89

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		C3PFBS	PFHxS	PFOS	d3NMFOS	d5NEFOS	HFPODA		
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)		
320-94388-1	PTH-212	97	93	91	92	87	92		
320-94388-2	PTH-046	93	98	91	94	93	91		
320-94388-3	PTH-042	92	97	93	102	114	88		
320-94388-4	PTH-214	95	101	88	89	87	93		
320-94388-5	PTH-211	94	93	87	93	92	86		
320-94388-6	PTH-043	97	97	87	90	91	91		
320-94388-7	PTH-049	95	98	94	92	94	88		
320-94388-8	PTH-022	93	94	87	91	89	91		
320-94388-9	PTH-029	97	99	99	96	99	98		

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Job ID: 320-94388-1
Project/Site: Port Heiden (PTH) PFAS

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Matrix: Water
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-94388-10	PTH-045	91	89	83	85	90	85		
320-94388-11	PTH-213	99	107	93	84	90	97		
320-94388-12	PTH-020	97	99	92	95	89	94		
320-94388-13	PTH-027	91	93	89	95	94	88		
320-94388-14	PTH-033	104	104	94	90	95	91		
320-94388-15	PTH-030	97	103	94	91	93	96		
320-94388-16	PTH-016	96	101	89	89	89	89		
320-94388-17	PTH-026	101	102	92	85	94	93		
320-94388-18	PTH-025	96	96	94	87	90	89		
320-94388-19	PTH-032	98	97	93	87	91	91		
320-94388-20	PTH-031	93	100	95	92	91	89		
320-94388-21	PTH-037	79	87	78	65	66	74		
320-94388-22	PTH-015	89	98	89	75	80	86		
320-94388-23	PTH-207	77	79	75	60	59	72		
320-94388-24	PTH-206	84	87	79	65	59	78		
320-94388-25	PTH-013	89	94	91	77	71	89		
320-94388-26	PTH-201	86	91	87	65	68	77		
320-94388-27	PTH-205	91	90	85	66	69	79		
320-94388-28	PTH-202	89	83	81	69	71	79		
320-94388-29	PTH-145	80	87	81	66	62	74		
320-94388-30	PTH-116	75	82	76	54	56	68		
320-94388-31	PTH-146	88	87	87	67	69	82		
LCS 320-634641/2-A	Lab Control Sample	89	96	94	92	92	89		
LCS 320-635091/2-A	Lab Control Sample	88	93	84	72	68	80		
LCSD 320-634641/3-A	Lab Control Sample Dup	97	98	96	98	99	93		
LCSD 320-635091/3-A	Lab Control Sample Dup	94	96	84	70	73	84		
MB 320-634641/1-A	Method Blank	93	93	92	92	92	90		
MB 320-635091/1-A	Method Blank	95	93	89	73	73	87		

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-634641/1-A
Matrix: Water
Analysis Batch: 640674

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 634641

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/22/22 04:38	12/17/22 00:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/22/22 04:38	12/17/22 00:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/22/22 04:38	12/17/22 00:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/22/22 04:38	12/17/22 00:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/22/22 04:38	12/17/22 00:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/22/22 04:38	12/17/22 00:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/22/22 04:38	12/17/22 00:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/22/22 04:38	12/17/22 00:44	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C4 PFHpA	*94*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C4 PFOA	*95*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C5 PFNA	*94*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C2 PFDA	*90*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C2 PFUnA	*90*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C2 PFDoA	*84*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C2 PFTeDA	*91*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C3 PFBS	*93*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
18O2 PFHxS	*93*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C4 PFOS	*92*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
d5-NEtFOSAA	*92*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*
13C3 HFPO-DA	*90*		*50 - 150*	*11/22/22 04:38*	*12/17/22 00:44*	*1*

Lab Sample ID: LCS 320-634641/2-A
Matrix: Water
Analysis Batch: 640674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 634641

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.2		ng/L		103	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.0		ng/L		110	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	39.6		ng/L		99	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.5		ng/L		104	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-634641/2-A
Matrix: Water
Analysis Batch: 640674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 634641

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	39.4		ng/L		99	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.6		ng/L		102	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	48.6		ng/L		121	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	49.1		ng/L		123	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		103	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	37.8		ng/L		106	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.9		ng/L		96	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.1		ng/L		100	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.0		ng/L		100	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.2		ng/L		101	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	35.7		ng/L		95	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.1		ng/L		95	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	42.5		ng/L		112	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.2		ng/L		109	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*94*		*50 - 150*
13C4 PFHpA	*91*		*50 - 150*
13C4 PFOA	*97*		*50 - 150*
13C5 PFNA	*92*		*50 - 150*
13C2 PFDA	*95*		*50 - 150*
13C2 PFUnA	*99*		*50 - 150*
13C2 PFDoA	*82*		*50 - 150*
13C2 PFTeDA	*91*		*50 - 150*
13C3 PFBS	*89*		*50 - 150*
18O2 PFHxS	*96*		*50 - 150*
13C4 PFOS	*94*		*50 - 150*
d3-NMeFOSAA	*92*		*50 - 150*
d5-NEtFOSAA	*92*		*50 - 150*
13C3 HFPO-DA	*89*		*50 - 150*

Lab Sample ID: LCSD 320-634641/3-A
Matrix: Water
Analysis Batch: 640674

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 634641

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.9		ng/L		107	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.5		ng/L		104	72 - 130	6	30
Perfluorooctanoic acid (PFOA)	40.0	41.6		ng/L		104	71 - 133	5	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-634641/3-A
Matrix: Water
Analysis Batch: 640674

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 634641

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	39.8		ng/L		99	69 - 130	4	30
Perfluorodecanoic acid (PFDA)	40.0	42.1		ng/L		105	71 - 129	7	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.3		ng/L		103	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	45.5		ng/L		114	72 - 134	7	30
Perfluorotridecanoic acid (PFTriA)	40.0	45.8		ng/L		114	65 - 144	7	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.9		ng/L		100	71 - 132	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.8		ng/L		109	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.9		ng/L		101	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)	37.2	36.8		ng/L		99	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.0		ng/L		100	65 - 136	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.3		ng/L		98	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.6		ng/L		103	77 - 137	8	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	37.5		ng/L		94	72 - 132	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	39.3		ng/L		104	76 - 136	8	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.1		ng/L		114	81 - 141	5	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*94*		*50 - 150*
13C4 PFHpA	*97*		*50 - 150*
13C4 PFOA	*99*		*50 - 150*
13C5 PFNA	*96*		*50 - 150*
13C2 PFDA	*96*		*50 - 150*
13C2 PFUnA	*99*		*50 - 150*
13C2 PFDoA	*89*		*50 - 150*
13C2 PFTeDA	*94*		*50 - 150*
13C3 PFBS	*97*		*50 - 150*
18O2 PFHxS	*98*		*50 - 150*
13C4 PFOS	*96*		*50 - 150*
d3-NMeFOSAA	*98*		*50 - 150*
d5-NEtFOSAA	*99*		*50 - 150*
13C3 HFPO-DA	*93*		*50 - 150*

Lab Sample ID: MB 320-635091/1-A
Matrix: Water
Analysis Batch: 640982

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 635091

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/23/22 12:39	12/17/22 12:12	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: MB 320-635091/1-A
Matrix: Water
Analysis Batch: 640982

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 635091

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/23/22 12:39	12/17/22 12:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/23/22 12:39	12/17/22 12:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/23/22 12:39	12/17/22 12:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/23/22 12:39	12/17/22 12:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/23/22 12:39	12/17/22 12:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/23/22 12:39	12/17/22 12:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/23/22 12:39	12/17/22 12:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/23/22 12:39	12/17/22 12:12	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C4 PFHpA	*87*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C4 PFOA	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C5 PFNA	*90*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C2 PFDA	*91*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C2 PFUnA	*92*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C2 PFDoA	*84*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C2 PFTeDA	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C3 PFBS	*95*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
18O2 PFHxS	*93*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C4 PFOS	*89*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
d3-NMeFOSAA	*73*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
d5-NEtFOSAA	*73*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*
13C3 HFPO-DA	*87*		*50 - 150*	*11/23/22 12:39*	*12/17/22 12:12*	*1*

Lab Sample ID: LCS 320-635091/2-A
Matrix: Water
Analysis Batch: 640982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 635091

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.8		ng/L		107	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.4		ng/L		103	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.0		ng/L		103	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	40.9		ng/L		102	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.4		ng/L		106	69 - 133

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-635091/2-A
Matrix: Water
Analysis Batch: 640982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 635091

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluorododecanoic acid (PFDoA)			40.0	43.7		ng/L		109	72 - 134		
Perfluorotridecanoic acid (PFTriA)			40.0	42.1		ng/L		105	65 - 144		
Perfluorotetradecanoic acid (PFTeA)			40.0	41.9		ng/L		105	71 - 132		
Perfluorobutanesulfonic acid (PFBS)			35.5	39.3		ng/L		111	72 - 130		
Perfluorohexanesulfonic acid (PFHxS)			36.5	38.6		ng/L		106	68 - 131		
Perfluorooctanesulfonic acid (PFOS)			37.2	38.8		ng/L		104	65 - 140		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	38.8		ng/L		97	65 - 136		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	43.4		ng/L		108	61 - 135		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	38.7		ng/L		104	77 - 137		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	43.7		ng/L		109	72 - 132		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	42.6		ng/L		113	76 - 136		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	44.8		ng/L		119	81 - 141		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*88*		*50 - 150*
13C4 PFHpA	*85*		*50 - 150*
13C4 PFOA	*88*		*50 - 150*
13C5 PFNA	*91*		*50 - 150*
13C2 PFDA	*85*		*50 - 150*
13C2 PFUnA	*87*		*50 - 150*
13C2 PFDoA	*82*		*50 - 150*
13C2 PFTeDA	*88*		*50 - 150*
13C3 PFBS	*88*		*50 - 150*
18O2 PFHxS	*93*		*50 - 150*
13C4 PFOS	*84*		*50 - 150*
d3-NMeFOSAA	*72*		*50 - 150*
d5-NEtFOSAA	*68*		*50 - 150*
13C3 HFPO-DA	*80*		*50 - 150*

Lab Sample ID: LCSD 320-635091/3-A
Matrix: Water
Analysis Batch: 640982

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 635091

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			40.0	41.7		ng/L		104	72 - 129	3	30
Perfluoroheptanoic acid (PFHpA)			40.0	41.0		ng/L		103	72 - 130	3	30
Perfluorooctanoic acid (PFOA)			40.0	40.9		ng/L		102	71 - 133	1	30
Perfluorononanoic acid (PFNA)			40.0	43.4		ng/L		109	69 - 130	6	30
Perfluorodecanoic acid (PFDA)			40.0	39.9		ng/L		100	71 - 129	2	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-635091/3-A
Matrix: Water
Analysis Batch: 640982

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 635091

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)			40.0	40.6		ng/L		101	69 - 133	4	30
Perfluorododecanoic acid (PFDoA)			40.0	42.8		ng/L		107	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)			40.0	41.1		ng/L		103	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)			40.0	38.1		ng/L		95	71 - 132	9	30
Perfluorobutanesulfonic acid (PFBS)			35.5	34.6		ng/L		98	72 - 130	13	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	34.5		ng/L		95	68 - 131	11	30
Perfluorooctanesulfonic acid (PFOS)			37.2	38.8		ng/L		104	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	40.0		ng/L		100	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	40.3		ng/L		101	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	38.4		ng/L		103	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	39.1		ng/L		98	72 - 132	11	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	40.6		ng/L		108	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	42.5		ng/L		113	81 - 141	5	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*90*		*50 - 150*
13C4 PFHpA	*87*		*50 - 150*
13C4 PFOA	*88*		*50 - 150*
13C5 PFNA	*86*		*50 - 150*
13C2 PFDA	*86*		*50 - 150*
13C2 PFUnA	*91*		*50 - 150*
13C2 PFDoA	*82*		*50 - 150*
13C2 PFTeDA	*87*		*50 - 150*
13C3 PFBS	*94*		*50 - 150*
18O2 PFHxS	*96*		*50 - 150*
13C4 PFOS	*84*		*50 - 150*
d3-NMeFOSAA	*70*		*50 - 150*
d5-NEtFOSAA	*73*		*50 - 150*
13C3 HFPO-DA	*84*		*50 - 150*

LCMS

Prep Batch: 634641

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94388-1	PTH-212	Total/NA	Water	3535	
320-94388-2	PTH-046	Total/NA	Water	3535	
320-94388-3	PTH-042	Total/NA	Water	3535	
320-94388-4	PTH-214	Total/NA	Water	3535	
320-94388-5	PTH-211	Total/NA	Water	3535	
320-94388-6	PTH-043	Total/NA	Water	3535	
320-94388-7	PTH-049	Total/NA	Water	3535	
320-94388-8	PTH-022	Total/NA	Water	3535	
320-94388-9	PTH-029	Total/NA	Water	3535	
320-94388-10	PTH-045	Total/NA	Water	3535	
320-94388-11	PTH-213	Total/NA	Water	3535	
320-94388-12	PTH-020	Total/NA	Water	3535	
320-94388-13	PTH-027	Total/NA	Water	3535	
320-94388-14	PTH-033	Total/NA	Water	3535	
320-94388-15	PTH-030	Total/NA	Water	3535	
320-94388-16	PTH-016	Total/NA	Water	3535	
320-94388-17	PTH-026	Total/NA	Water	3535	
320-94388-18	PTH-025	Total/NA	Water	3535	
320-94388-19	PTH-032	Total/NA	Water	3535	
320-94388-20	PTH-031	Total/NA	Water	3535	
MB 320-634641/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-634641/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-634641/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 635091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94388-21	PTH-037	Total/NA	Water	3535	
320-94388-22	PTH-015	Total/NA	Water	3535	
320-94388-23	PTH-207	Total/NA	Water	3535	
320-94388-24	PTH-206	Total/NA	Water	3535	
320-94388-25	PTH-013	Total/NA	Water	3535	
320-94388-26	PTH-201	Total/NA	Water	3535	
320-94388-27	PTH-205	Total/NA	Water	3535	
320-94388-28	PTH-202	Total/NA	Water	3535	
320-94388-29	PTH-145	Total/NA	Water	3535	
320-94388-30	PTH-116	Total/NA	Water	3535	
320-94388-31	PTH-146	Total/NA	Water	3535	
MB 320-635091/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-635091/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-635091/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 640674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94388-1	PTH-212	Total/NA	Water	EPA 537(Mod)	634641
320-94388-2	PTH-046	Total/NA	Water	EPA 537(Mod)	634641
320-94388-3	PTH-042	Total/NA	Water	EPA 537(Mod)	634641
320-94388-4	PTH-214	Total/NA	Water	EPA 537(Mod)	634641
320-94388-5	PTH-211	Total/NA	Water	EPA 537(Mod)	634641
320-94388-6	PTH-043	Total/NA	Water	EPA 537(Mod)	634641
320-94388-7	PTH-049	Total/NA	Water	EPA 537(Mod)	634641
320-94388-9	PTH-029	Total/NA	Water	EPA 537(Mod)	634641

LCMS (Continued)

Analysis Batch: 640674 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94388-10	PTH-045	Total/NA	Water	EPA 537(Mod)	634641
320-94388-11	PTH-213	Total/NA	Water	EPA 537(Mod)	634641
320-94388-12	PTH-020	Total/NA	Water	EPA 537(Mod)	634641
320-94388-13	PTH-027	Total/NA	Water	EPA 537(Mod)	634641
320-94388-14	PTH-033	Total/NA	Water	EPA 537(Mod)	634641
320-94388-15	PTH-030	Total/NA	Water	EPA 537(Mod)	634641
320-94388-16	PTH-016	Total/NA	Water	EPA 537(Mod)	634641
320-94388-17	PTH-026	Total/NA	Water	EPA 537(Mod)	634641
320-94388-18	PTH-025	Total/NA	Water	EPA 537(Mod)	634641
320-94388-19	PTH-032	Total/NA	Water	EPA 537(Mod)	634641
320-94388-20	PTH-031	Total/NA	Water	EPA 537(Mod)	634641
MB 320-634641/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	634641
LCS 320-634641/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	634641
LCSD 320-634641/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	634641

Analysis Batch: 640982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94388-21	PTH-037	Total/NA	Water	EPA 537(Mod)	635091
320-94388-22	PTH-015	Total/NA	Water	EPA 537(Mod)	635091
320-94388-23	PTH-207	Total/NA	Water	EPA 537(Mod)	635091
320-94388-24	PTH-206	Total/NA	Water	EPA 537(Mod)	635091
320-94388-25	PTH-013	Total/NA	Water	EPA 537(Mod)	635091
320-94388-26	PTH-201	Total/NA	Water	EPA 537(Mod)	635091
320-94388-27	PTH-205	Total/NA	Water	EPA 537(Mod)	635091
320-94388-28	PTH-202	Total/NA	Water	EPA 537(Mod)	635091
320-94388-29	PTH-145	Total/NA	Water	EPA 537(Mod)	635091
320-94388-30	PTH-116	Total/NA	Water	EPA 537(Mod)	635091
320-94388-31	PTH-146	Total/NA	Water	EPA 537(Mod)	635091
MB 320-635091/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	635091
LCS 320-635091/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	635091
LCSD 320-635091/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	635091

Analysis Batch: 641087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94388-8	PTH-022	Total/NA	Water	EPA 537(Mod)	634641

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-212
Date Collected: 11/10/22 17:54
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.3 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 01:14	K1S	EET SAC

Client Sample ID: PTH-046
Date Collected: 11/10/22 12:57
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.2 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 01:24	K1S	EET SAC

Client Sample ID: PTH-042
Date Collected: 11/10/22 14:30
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.2 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 01:35	K1S	EET SAC

Client Sample ID: PTH-214
Date Collected: 11/10/22 19:11
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.3 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 01:45	K1S	EET SAC

Client Sample ID: PTH-211
Date Collected: 11/09/22 17:03
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.2 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 01:55	K1S	EET SAC

Client Sample ID: PTH-043
Date Collected: 11/09/22 17:53
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.7 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 02:05	K1S	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-049
Date Collected: 11/09/22 11:13
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.8 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 02:15	K1S	EET SAC

Client Sample ID: PTH-022
Date Collected: 11/10/22 12:34
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641087	12/17/22 23:00	AF	EET SAC

Client Sample ID: PTH-029
Date Collected: 11/10/22 15:04
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.7 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 02:55	K1S	EET SAC

Client Sample ID: PTH-045
Date Collected: 11/10/22 18:50
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.8 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 03:05	K1S	EET SAC

Client Sample ID: PTH-213
Date Collected: 11/10/22 18:35
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.4 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 03:16	K1S	EET SAC

Client Sample ID: PTH-020
Date Collected: 11/10/22 18:07
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 03:26	K1S	EET SAC

Client Sample ID: PTH-027
Lab Sample ID: 320-94388-13
Date Collected: 11/10/22 16:14
Matrix: Water
Date Received: 11/15/22 15:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.7 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 03:36	K1S	EET SAC

Client Sample ID: PTH-033
Lab Sample ID: 320-94388-14
Date Collected: 11/10/22 16:59
Matrix: Water
Date Received: 11/15/22 15:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.7 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 03:46	K1S	EET SAC

Client Sample ID: PTH-030
Lab Sample ID: 320-94388-15
Date Collected: 11/09/22 16:54
Matrix: Water
Date Received: 11/15/22 15:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.9 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 03:56	K1S	EET SAC

Client Sample ID: PTH-016
Lab Sample ID: 320-94388-16
Date Collected: 11/10/22 13:11
Matrix: Water
Date Received: 11/15/22 15:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			280.4 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 04:06	K1S	EET SAC

Client Sample ID: PTH-026
Lab Sample ID: 320-94388-17
Date Collected: 11/09/22 14:04
Matrix: Water
Date Received: 11/15/22 15:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.2 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 04:16	K1S	EET SAC

Client Sample ID: PTH-025
Lab Sample ID: 320-94388-18
Date Collected: 11/09/22 13:19
Matrix: Water
Date Received: 11/15/22 15:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.1 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 04:46	K1S	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-032
Date Collected: 11/09/22 14:21
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-19
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.4 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 04:57	K1S	EET SAC

Client Sample ID: PTH-031
Date Collected: 11/09/22 10:58
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-20
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.8 mL	10.0 mL	634641	11/22/22 05:30	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640674	12/17/22 05:07	K1S	EET SAC

Client Sample ID: PTH-037
Date Collected: 11/11/22 15:56
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-21
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			289.9 mL	10.0 mL	635091	11/23/22 12:39	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 12:42	D1R	EET SAC

Client Sample ID: PTH-015
Date Collected: 11/11/22 19:10
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-22
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.8 mL	10.0 mL	635091	11/23/22 12:39	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 12:52	D1R	EET SAC

Client Sample ID: PTH-207
Date Collected: 11/11/22 13:44
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-23
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			289.2 mL	10.0 mL	635091	11/23/22 12:39	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 13:03	D1R	EET SAC

Client Sample ID: PTH-206
Date Collected: 11/11/22 15:16
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-24
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.6 mL	10.0 mL	635091	11/23/22 12:39	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 13:13	D1R	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-013
Date Collected: 11/11/22 18:21
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-25
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.2 mL	10.0 mL	635091	11/23/22 12:39	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 13:23	D1R	EET SAC

Client Sample ID: PTH-201
Date Collected: 11/11/22 17:17
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-26
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.8 mL	10.0 mL	635091	11/23/22 12:39	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 13:33	D1R	EET SAC

Client Sample ID: PTH-205
Date Collected: 11/11/22 13:40
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-27
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.3 mL	10.0 mL	635091	11/23/22 12:40	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 13:43	D1R	EET SAC

Client Sample ID: PTH-202
Date Collected: 11/11/22 14:13
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-28
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			239.1 mL	10.0 mL	635091	11/23/22 12:40	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 14:13	D1R	EET SAC

Client Sample ID: PTH-145
Date Collected: 11/10/22 18:40
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-29
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.7 mL	10.0 mL	635091	11/23/22 12:40	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 14:24	D1R	EET SAC

Client Sample ID: PTH-116
Date Collected: 11/10/22 13:01
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-30
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240.8 mL	10.0 mL	635091	11/23/22 12:40	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 14:34	D1R	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Client Sample ID: PTH-146

Date Collected: 11/10/22 12:47
Date Received: 11/15/22 15:05

Lab Sample ID: 320-94388-31

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			248.6 mL	10.0 mL	635091	11/23/22 12:40	VP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	640982	12/17/22 14:44	D1R	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Job ID: 320-94388-1
Project/Site: Port Heiden (PTH) PFAS

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden (PTH) PFAS

Job ID: 320-94388-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-94388-1	PTH-212	Water	11/10/22 17:54	11/15/22 15:05
320-94388-2	PTH-046	Water	11/10/22 12:57	11/15/22 15:05
320-94388-3	PTH-042	Water	11/10/22 14:30	11/15/22 15:05
320-94388-4	PTH-214	Water	11/10/22 19:11	11/15/22 15:05
320-94388-5	PTH-211	Water	11/09/22 17:03	11/15/22 15:05
320-94388-6	PTH-043	Water	11/09/22 17:53	11/15/22 15:05
320-94388-7	PTH-049	Water	11/09/22 11:13	11/15/22 15:05
320-94388-8	PTH-022	Water	11/10/22 12:34	11/15/22 15:05
320-94388-9	PTH-029	Water	11/10/22 15:04	11/15/22 15:05
320-94388-10	PTH-045	Water	11/10/22 18:50	11/15/22 15:05
320-94388-11	PTH-213	Water	11/10/22 18:35	11/15/22 15:05
320-94388-12	PTH-020	Water	11/10/22 18:07	11/15/22 15:05
320-94388-13	PTH-027	Water	11/10/22 16:14	11/15/22 15:05
320-94388-14	PTH-033	Water	11/10/22 16:59	11/15/22 15:05
320-94388-15	PTH-030	Water	11/09/22 16:54	11/15/22 15:05
320-94388-16	PTH-016	Water	11/10/22 13:11	11/15/22 15:05
320-94388-17	PTH-026	Water	11/09/22 14:04	11/15/22 15:05
320-94388-18	PTH-025	Water	11/09/22 13:19	11/15/22 15:05
320-94388-19	PTH-032	Water	11/09/22 14:21	11/15/22 15:05
320-94388-20	PTH-031	Water	11/09/22 10:58	11/15/22 15:05
320-94388-21	PTH-037	Water	11/11/22 15:56	11/15/22 15:05
320-94388-22	PTH-015	Water	11/11/22 19:10	11/15/22 15:05
320-94388-23	PTH-207	Water	11/11/22 13:44	11/15/22 15:05
320-94388-24	PTH-206	Water	11/11/22 15:16	11/15/22 15:05
320-94388-25	PTH-013	Water	11/11/22 18:21	11/15/22 15:05
320-94388-26	PTH-201	Water	11/11/22 17:17	11/15/22 15:05
320-94388-27	PTH-205	Water	11/11/22 13:40	11/15/22 15:05
320-94388-28	PTH-202	Water	11/11/22 14:13	11/15/22 15:05
320-94388-29	PTH-145	Water	11/10/22 18:40	11/15/22 15:05
320-94388-30	PTH-116	Water	11/10/22 13:01	11/15/22 15:05
320-94388-31	PTH-146	Water	11/10/22 12:47	11/15/22 15:05

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2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins
Attn: D. Allnickr

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	DoD QSM 5.4 B-15 PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PTH-212 ✓		1754 ✓	11/10/22	X	2	Groundwater
PTH-046 ✓		1257 ✓	11/10/22	X		
PTH-042 ✓		1430 ✓	11/10/22			
PTH-214 ✓		1911 ✓	11/10/22			
PTH-211 ✓		1703 ✓	11/9/22 ✓			
PTH-043 ✓		1753 ✓	11/9/22			
PTH-049 ✓		1113 ✓	11/9/22			
PTH-022 ✓		1234 ✓	11/10/22			
PTH-029 ✓		1504 ✓	11/10/22			
PTH-045 ✓		1850 ✓	11/10/22			

Project Information	
Number:	102219-016
Name:	Port Hueden (PTH) PFAS
Contact:	kristen.freiburger@shannonwilson.com
Ongoing Project?	Yes [X] No [ ]
Sampler:	RLW, ARM

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

320-94388 Chain of Custody

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1530	Signature: Time: 1505	Signature: Time:
Printed Name: A Masters Date: 11/14/22	Printed Name: Sandy Peatali Date: 111522	Printed Name: Date:
Company: Shannon + Wilson, Inc.	Company: EETCA 0.9c 4.3c	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 411813

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CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins
Attn: D. Alltucker

Turn Around Time: ☒ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☒ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	DoD QSM Table B-15 PFAS x14	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PTH-213		1835	11/10/22	X	2	Groundwater
PTH-020		1807	11/10/22			
PTH-027		1614	11/10/22			
PTH-033		1659	11/10/22			
PTH-030		1654	11/9/22			
PTH-016		1311	11/10/22			
PTH-026		1404	11/9/22			
PTH-025		1319	11/9/22			
PTH-032		1421	11/9/22			
PTH-031		1058	11/9/22			

Project Information	
Number:	
Name:	
Contact:	
Ongoing Project? Yes ☐ No ☐	
Sampler:	

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1530	Signature: Time: 1505	Signature: Time:
Printed Name: A. Masters Date: 11/14/22	Printed Name: Date: 11.15.22	Printed Name: Date:
Company: Shannon+Wilson, Inc	Company: EETGA 0.9c4.3c	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Notes:

See 1

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 411814

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CHAIN-OF-CUSTODY RECORD

Laboratory ~~D.A~~ Eurofins
Attn: D. Alltucker

Turn Around Time:	
[X] Normal	[ ] Rush
Please Specify	

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18 DoD QSM Table B-15							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PTH-037		1556	11/11/22	X							2	Groundwater
PTH-015		1910	↓	↓							↓	↓
PTH-207		1344										
PTH-206		1516										
PTH-013		1821										
PTH-201		1717										
PTH-205		1340										
PTH-202		1413										
PTH-145		1840	11/10/22									
PTH-116		1301	11/10/22									

Project Information

Number:
Name:
Contact:
Ongoing Project? Yes [ ] No [ ]
Sampler:
See Pg 1

Sample Receipt

Total No. of Containers:
COC Seals/Intact? Y/N/NA
Received Good Cond./Cold
Temp:
Delivery Method:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: [signature] Time: 1530	Signature: [signature] Time: 1503	Signature: Time:
Printed Name: A Masters Date: 11/14/22	Printed Name: Sandy Pratali Date: 11-15-22	Printed Name: Date:
Company: Shannon + Wilson, Inc	Company: EETCA 0.9c 4.3c	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 411815

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CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins
Attn: D Alltucker

Turn Around Time: [X] Normal [ ] Rush — Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS+18 DoD QSM Table B-15							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PTH-146		1247	11/10/22	x							2	Groundwater

Project Information

Number:	
Name:	See Pg 1
Contact:	
Ongoing Project? Yes [ ] No [ ]	
Sampler:	

Sample Receipt

Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1530	Signature: Time: 1505	Signature: Time:
Printed Name: A Masters Date: 11/14/22	Printed Name: SANDY PRATALI Date: 11/15/22	Printed Name: Date:
Company: Shannon+Wilson, Inc	Company: EETCA 0.9c 4.3c	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

No. 411817

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-94388-1

Login Number: 94388
List Number: 1
Creator: Pratali, Sandra A

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEAL
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Amber Masters	**CS Site Name:**	DOT&PF Statewide PFAS: Port Heiden	**Lab Name:**	Eurofins Environment Testing
Title:	Environmental Scientist	**ADEC File No.:**		**Lab Report No.:**	320-943881
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**		**Lab Report Date:**	December 22, 2022

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: The ADEC certified Eurofins Environment Testing, West Sacramento for the analysis of PFAS. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Samples were not subcontracted or transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with QSM 5.3 Table B-15.
   Comments:

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): Cooler temperature was not reported by the laboratory.
Sample temperature(s): A temperature blank was included with the samples in the cooler and is used to access temperature preservation. The temperature blanks were reported at 0.9°C and 4.3°C upon arrival at the laboratory.
Comments:

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: PFAS does not require any additional preservation beyond temperature.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory notes that the samples arrived in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory does not note any discrepancies.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
The laboratory applied an “I” to the PFOS results of *PTH-205* to indicate the transition mass ratio was outside of establish limits. The reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batches 320-635091 and 320-634641.

The laboratory noted the following about samples in preparation batch 320-634641 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction: *PTH-027, PTH-033,* and *PTH-032*.

PTH-211 was light orange in color prior to extraction.

Were all the corrective actions documented?
Yes ☐ No ☐ N/A ☒
Comments: Corrective actions were not needed.

c. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not note an effect on data quality or usability.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LOQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments:

iii. If above LOQ or RL, what samples are affected?
Comments: There were no detections in the method blanks associated with the project samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: LCS/LCSD were reported for method EPA 537(Mod).

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: None. %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐
Comments: MS/MSD samples were not analyzed as a part of this work order; the laboratory analyzed LCS/LCSD samples to assess laboratory accuracy and precision.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: Not applicable, see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Project samples were not affected.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐
Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: PFAS are not volatile compounds; therefore, a trip blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LOQ or RL, what samples are affected?
Comments: None; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:
Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Field duplicate pairs *PTH-046/PTH-146, PTH-045/PTH-145,* and *PTH-016/PTH-116* were submitted with this work order.

ii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐
Comments: RPD are within project objectives, where calculable.

iii. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: See above.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Reusable equipment was not used; therefore, an equipment blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LOQ or RL, specify what samples are affected.

Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☒ No ☐ N/A ☐
Comments:
The PFOS results for sample *PTH-205* was affected by a transition mass ratio failure and quantified manually. These results are considered estimated, biased high, and have been flagged 'JH' in the analytical tables.

Detectable results have been flagged 'J' and non-detect results have been flagged 'UJ' in the analytical tables for the following samples that were collected outside of standard sampling procedure. These results are considered estimates.

- Stabilization criteria were not met for *PTH-020* and *PTH-201.*
- Samples *PTH-022* and *PTH-212* were sampled through a hose

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Amber Masters
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

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JOB DESCRIPTION

Port Heiden PFAS

JOB NUMBER

320-103413-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

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Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Qualifiers

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-103413-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-103413-1

Receipt
The samples were received on 8/8/2023 2:49 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.9º C.

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PTH-205 (320-103413-12)

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-698328.

Method 3535: The following sample in preparation batch 320-698328 was observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PTH-018 (320-103413-5)

Method 3535: During the solid phase extraction process, the following samples contained non-settleable particulates which clogged the solid phase extraction column: preparation batch 320-698328 PTH-018 (320-103413-5).

Method 3535: The following samples in preparation batch 320-698836 were slightly yellow in color prior to extraction: PTH-021 (320-103413-6), PTH-036 (320-103413-8), PTH-206 (320-103413-13) and PTH-306 (320-103413-14).

Method 3535: The following samples in preparation batch 320-698836 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction: PTH-021 (320-103413-6).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-698836.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-699054.

Method 3535: The following samples in preparation batch 320-699054 was yellow in color prior to preparation. PTH-008 (320-103413-15)

Method 3535: The following samples in preparation batch 320-699054 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PTH-008 (320-103413-15)

Method 3535: During the solid phase extraction process, the following samples contain non-settleable particulates which clogged the solid phase extraction column: PTH-008 (320-103413-15)preparation batch 320-699054.

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-004 — Lab Sample ID: 320-103413-1

No Detections.

Client Sample ID: PTH-005 — Lab Sample ID: 320-103413-2

No Detections.

Client Sample ID: PTH-012 — Lab Sample ID: 320-103413-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.0	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.65	J	2.0	0.58	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-011 — Lab Sample ID: 320-103413-4

No Detections.

Client Sample ID: PTH-018 — Lab Sample ID: 320-103413-5

No Detections.

Client Sample ID: PTH-021 — Lab Sample ID: 320-103413-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	11		2.1	0.61	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.7		2.1	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	3.8		2.1	0.89	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	19		2.1	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	75		2.1	0.60	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.3	J	2.1	0.57	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-034 — Lab Sample ID: 320-103413-7

No Detections.

Client Sample ID: PTH-036 — Lab Sample ID: 320-103413-8

No Detections.

Client Sample ID: PTH-040 — Lab Sample ID: 320-103413-9

No Detections.

Client Sample ID: PTH-046 — Lab Sample ID: 320-103413-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	41		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	10		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	8.0		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	54		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	130		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	17		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-146 — Lab Sample ID: 320-103413-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	43		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	12		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	8.3		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	57		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Client Sample ID: PTH-146 (Continued) — Lab Sample ID: 320-103413-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	140		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-205 — Lab Sample ID: 320-103413-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.8		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8		2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	13		2.0	0.83	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.3		2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.1		2.0	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.3	I	2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-206 — Lab Sample ID: 320-103413-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-306 — Lab Sample ID: 320-103413-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.1	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: PTH-008 — Lab Sample ID: 320-103413-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.0	J	1.9	0.83	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-004
Date Collected: 08/01/23 12:48
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-1
Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.84	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		08/14/23 05:11	08/15/23 14:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		08/14/23 05:11	08/15/23 14:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		08/14/23 05:11	08/15/23 14:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		08/14/23 05:11	08/15/23 14:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/14/23 05:11	08/15/23 14:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/14/23 05:11	08/15/23 14:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		08/14/23 05:11	08/15/23 14:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		08/14/23 05:11	08/15/23 14:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C4 PFHpA	*96*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C4 PFOA	*94*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C5 PFNA	*91*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C2 PFDA	*91*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C2 PFUnA	*84*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C2 PFDoA	*77*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C2 PFTeDA	*71*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C3 PFBS	*88*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
18O2 PFHxS	*94*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C4 PFOS	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*
13C3 HFPO-DA	*94*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:43*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-005
Date Collected: 08/01/23 15:25
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-2
Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.71	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		08/14/23 05:11	08/15/23 14:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		08/14/23 05:11	08/15/23 14:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		08/14/23 05:11	08/15/23 14:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		08/14/23 05:11	08/15/23 14:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		08/14/23 05:11	08/15/23 14:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/14/23 05:11	08/15/23 14:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		08/14/23 05:11	08/15/23 14:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		08/14/23 05:11	08/15/23 14:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C4 PFHpA	*90*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C4 PFOA	*95*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C5 PFNA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C2 PFDA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C2 PFUnA	*89*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C2 PFDoA	*84*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C2 PFTeDA	*78*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C3 PFBS	*87*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
18O2 PFHxS	*94*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C4 PFOS	*89*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
d3-NMeFOSAA	*78*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
d5-NEtFOSAA	*84*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*
13C3 HFPO-DA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 14:54*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-012
Date Collected: 08/01/23 14:45
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-3
Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.59	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.86	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.56	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.74	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorobutanesulfonic acid (PFBS)	**1.0**	**J**	2.0	0.20	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorohexanesulfonic acid (PFHxS)	**0.65**	**J**	2.0	0.58	ng/L		08/14/23 05:11	08/15/23 15:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.55	ng/L		08/14/23 05:11	08/15/23 15:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.1	1.2	ng/L		08/14/23 05:11	08/15/23 15:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.1	1.3	ng/L		08/14/23 05:11	08/15/23 15:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/14/23 05:11	08/15/23 15:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		08/14/23 05:11	08/15/23 15:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		08/14/23 05:11	08/15/23 15:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		08/14/23 05:11	08/15/23 15:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C4 PFHpA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C4 PFOA	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C5 PFNA	*90*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C2 PFDA	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C2 PFUnA	*84*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C2 PFDoA	*81*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C2 PFTeDA	*75*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C3 PFBS	*87*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
18O2 PFHxS	*88*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C4 PFOS	*91*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
d5-NEtFOSAA	*79*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*
13C3 HFPO-DA	*97*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:17*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-011
Date Collected: 08/02/23 18:19
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-4
Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.1	0.60	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.26	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorooctanoic acid (PFOA)	ND		2.1	0.88	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.28	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.32	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.1	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.57	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.3	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.75	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.21	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.1	0.59	ng/L		08/15/23 11:58	08/17/23 18:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.1	0.56	ng/L		08/15/23 11:58	08/17/23 18:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.2	1.2	ng/L		08/15/23 11:58	08/17/23 18:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.2	1.3	ng/L		08/15/23 11:58	08/17/23 18:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		08/15/23 11:58	08/17/23 18:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.1	1.5	ng/L		08/15/23 11:58	08/17/23 18:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.33	ng/L		08/15/23 11:58	08/17/23 18:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.41	ng/L		08/15/23 11:58	08/17/23 18:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C4 PFHpA	*89*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C4 PFOA	*87*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C5 PFNA	*95*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C2 PFDA	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C2 PFUnA	*88*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C2 PFDoA	*88*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C2 PFTeDA	*81*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C3 PFBS	*86*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
18O2 PFHxS	*86*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C4 PFOS	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
d3-NMeFOSAA	*81*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*
13C3 HFPO-DA	*97*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:57*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-018

Date Collected: 08/01/23 17:59
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-5

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		08/14/23 05:11	08/15/23 15:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		08/14/23 05:11	08/15/23 15:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		08/14/23 05:11	08/15/23 15:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		08/14/23 05:11	08/15/23 15:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		08/14/23 05:11	08/15/23 15:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		08/14/23 05:11	08/15/23 15:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		08/14/23 05:11	08/15/23 15:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		08/14/23 05:11	08/15/23 15:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*77*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C4 PFHpA	*83*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C4 PFOA	*81*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C5 PFNA	*83*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C2 PFDA	*79*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C2 PFUnA	*74*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C2 PFDoA	*65*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C2 PFTeDA	*60*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C3 PFBS	*73*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
18O2 PFHxS	*83*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C4 PFOS	*74*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
d3-NMeFOSAA	*68*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
d5-NEtFOSAA	*69*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*
13C3 HFPO-DA	*85*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:28*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-021

Date Collected: 08/02/23 14:10
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-6

Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**11**		2.1	0.61	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluoroheptanoic acid (PFHpA)	**4.7**		2.1	0.26	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorooctanoic acid (PFOA)	**3.8**		2.1	0.89	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.28	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.33	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.2	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.58	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorotridecanoic acid (PFTriA)	ND		2.1	1.4	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.77	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorobutanesulfonic acid (PFBS)	**19**		2.1	0.21	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorohexanesulfonic acid (PFHxS)	**75**		2.1	0.60	ng/L		08/15/23 11:58	08/17/23 19:08	1
Perfluorooctanesulfonic acid (PFOS)	**1.3**	**J**	2.1	0.57	ng/L		08/15/23 11:58	08/17/23 19:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.3	1.3	ng/L		08/15/23 11:58	08/17/23 19:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.3	1.4	ng/L		08/15/23 11:58	08/17/23 19:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.25	ng/L		08/15/23 11:58	08/17/23 19:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.2	1.6	ng/L		08/15/23 11:58	08/17/23 19:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.34	ng/L		08/15/23 11:58	08/17/23 19:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ng/L		08/15/23 11:58	08/17/23 19:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C4 PFHpA	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C4 PFOA	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C5 PFNA	*100*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C2 PFDA	*103*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C2 PFUnA	*88*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C2 PFDoA	*78*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C2 PFTeDA	*68*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C3 PFBS	*89*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
18O2 PFHxS	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C4 PFOS	*99*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
d3-NMeFOSAA	*85*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
d5-NEtFOSAA	*75*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*
13C3 HFPO-DA	*104*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:08*	*1*

Client Sample ID: PTH-034
Date Collected: 08/01/23 10:34
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-7
Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		08/14/23 05:11	08/15/23 15:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		08/14/23 05:11	08/15/23 15:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		08/14/23 05:11	08/15/23 15:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		08/14/23 05:11	08/15/23 15:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/14/23 05:11	08/15/23 15:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/14/23 05:11	08/15/23 15:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/14/23 05:11	08/15/23 15:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/14/23 05:11	08/15/23 15:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*58*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C4 PFHpA	*62*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C4 PFOA	*63*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C5 PFNA	*62*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C2 PFDA	*60*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C2 PFUnA	*59*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C2 PFDoA	*56*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C2 PFTeDA	*52*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C3 PFBS	*58*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
18O2 PFHxS	*63*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C4 PFOS	*60*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
d3-NMeFOSAA	*53*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
d5-NEtFOSAA	*52*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*
13C3 HFPO-DA	*62*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:39*	*1*

Client Sample ID: PTH-036
Date Collected: 08/02/23 16:20
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-8
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		08/15/23 11:58	08/17/23 19:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		08/15/23 11:58	08/17/23 19:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		08/15/23 11:58	08/17/23 19:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		08/15/23 11:58	08/17/23 19:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/15/23 11:58	08/17/23 19:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/15/23 11:58	08/17/23 19:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/15/23 11:58	08/17/23 19:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/15/23 11:58	08/17/23 19:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C4 PFHpA	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C4 PFOA	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C5 PFNA	*99*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C2 PFDA	*100*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C2 PFUnA	*97*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C2 PFDoA	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C2 PFTeDA	*81*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C3 PFBS	*87*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
18O2 PFHxS	*89*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C4 PFOS	*93*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
d3-NMeFOSAA	*91*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
d5-NEtFOSAA	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*
13C3 HFPO-DA	*105*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:19*	*1*

Client Sample ID: PTH-040
Date Collected: 08/01/23 17:09
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-9
Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		08/14/23 05:11	08/15/23 15:50	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		08/14/23 05:11	08/15/23 15:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		08/14/23 05:11	08/15/23 15:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		08/14/23 05:11	08/15/23 15:50	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/14/23 05:11	08/15/23 15:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/14/23 05:11	08/15/23 15:50	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		08/14/23 05:11	08/15/23 15:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/14/23 05:11	08/15/23 15:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C4 PFHpA	*94*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C4 PFOA	*98*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C5 PFNA	*95*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C2 PFDA	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C2 PFUnA	*88*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C2 PFDoA	*82*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C2 PFTeDA	*76*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C3 PFBS	*88*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
18O2 PFHxS	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C4 PFOS	*89*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
d3-NMeFOSAA	*77*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
d5-NEtFOSAA	*79*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*
13C3 HFPO-DA	*101*		*50 - 150*	*08/14/23 05:11*	*08/15/23 15:50*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-046

Date Collected: 08/ 01/ 23 13:48
Date Received: 08/ 08/ 23 14:49

Lab Sample ID: 320-103413-10

Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**41**		1.9	0.55	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluoroheptanoic acid (PFHpA)	**10**		1.9	0.24	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorooctanoic acid (PFOA)	**8.0**		1.9	0.81	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorobutanesulfonic acid (PFBS)	**54**		1.9	0.19	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorohexanesulfonic acid (PFHxS)	**130**		1.9	0.54	ng/L		08/14/23 05:11	08/15/23 16:02	1
Perfluorooctanesulfonic acid (PFOS)	**17**		1.9	0.52	ng/L		08/14/23 05:11	08/15/23 16:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		08/14/23 05:11	08/15/23 16:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		08/14/23 05:11	08/15/23 16:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/14/23 05:11	08/15/23 16:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/14/23 05:11	08/15/23 16:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/14/23 05:11	08/15/23 16:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/14/23 05:11	08/15/23 16:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C4 PFHpA	*95*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C4 PFOA	*98*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C5 PFNA	*94*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C2 PFDA	*89*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C2 PFUnA	*85*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C2 PFDoA	*80*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C2 PFTeDA	*73*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C3 PFBS	*87*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
18O2 PFHxS	*98*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C4 PFOS	*94*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*
13C3 HFPO-DA	*99*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:02*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-146

Date Collected: 08/ 01/ 23 13:38
Date Received: 08/ 08/ 23 14:49

Lab Sample ID: 320-103413-11

Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**43**		1.9	0.56	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluoroheptanoic acid (PFHpA)	**12**		1.9	0.24	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorooctanoic acid (PFOA)	**8.3**		1.9	0.81	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorobutanesulfonic acid (PFBS)	**57**		1.9	0.19	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorohexanesulfonic acid (PFHxS)	**140**		1.9	0.55	ng/L		08/14/23 05:11	08/15/23 16:13	1
Perfluorooctanesulfonic acid (PFOS)	**18**		1.9	0.52	ng/L		08/14/23 05:11	08/15/23 16:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		08/14/23 05:11	08/15/23 16:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		08/14/23 05:11	08/15/23 16:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/14/23 05:11	08/15/23 16:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/14/23 05:11	08/15/23 16:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/14/23 05:11	08/15/23 16:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/14/23 05:11	08/15/23 16:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C4 PFHpA	*91*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C4 PFOA	*96*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C5 PFNA	*95*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C2 PFDA	*90*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C2 PFUnA	*85*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C2 PFDoA	*80*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C2 PFTeDA	*74*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C3 PFBS	*88*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
18O2 PFHxS	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C4 PFOS	*90*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
d3-NMeFOSAA	*75*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*
13C3 HFPO-DA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 16:13*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-205

Date Collected: 08/02/23 12:24
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-12

Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**7.8**		2.0	0.57	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluoroheptanoic acid (PFHpA)	**3.8**		2.0	0.25	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorooctanoic acid (PFOA)	**13**		2.0	0.83	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorobutanesulfonic acid (PFBS)	**8.3**		2.0	0.20	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorohexanesulfonic acid (PFHxS)	**6.1**		2.0	0.56	ng/L		08/15/23 11:58	08/17/23 19:31	1
Perfluorooctanesulfonic acid (PFOS)	**2.3**	I	2.0	0.53	ng/L		08/15/23 11:58	08/17/23 19:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		08/15/23 11:58	08/17/23 19:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		08/15/23 11:58	08/17/23 19:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/15/23 11:58	08/17/23 19:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/15/23 11:58	08/17/23 19:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		08/15/23 11:58	08/17/23 19:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		08/15/23 11:58	08/17/23 19:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C4 PFHpA	*102*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C4 PFOA	*102*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C5 PFNA	*109*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C2 PFDA	*109*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C2 PFUnA	*105*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C2 PFDoA	*105*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C2 PFTeDA	*100*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C3 PFBS	*101*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
18O2 PFHxS	*101*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C4 PFOS	*107*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
d3-NMeFOSAA	*97*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
d5-NEtFOSAA	*101*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*
13C3 HFPO-DA	*116*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:31*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-206
Date Collected: 08/02/23 17:01
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-13
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.9	0.19	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		08/15/23 11:58	08/17/23 19:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		08/15/23 11:58	08/17/23 19:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		08/15/23 11:58	08/17/23 19:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		08/15/23 11:58	08/17/23 19:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/15/23 11:58	08/17/23 19:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/15/23 11:58	08/17/23 19:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		08/15/23 11:58	08/17/23 19:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/15/23 11:58	08/17/23 19:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C4 PFHpA	*100*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C4 PFOA	*98*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C5 PFNA	*106*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C2 PFDA	*108*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C2 PFUnA	*102*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C2 PFDoA	*95*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C2 PFTeDA	*96*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C3 PFBS	*98*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
18O2 PFHxS	*97*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C4 PFOS	*109*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
d3-NMeFOSAA	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
d5-NEtFOSAA	*98*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*
13C3 HFPO-DA	*111*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:42*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-306
Date Collected: 08/02/23 16:51
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-14
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	2.0	0.20	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		08/15/23 11:58	08/17/23 19:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		08/15/23 11:58	08/17/23 19:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		08/15/23 11:58	08/17/23 19:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		08/15/23 11:58	08/17/23 19:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/15/23 11:58	08/17/23 19:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/15/23 11:58	08/17/23 19:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		08/15/23 11:58	08/17/23 19:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		08/15/23 11:58	08/17/23 19:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C4 PFHpA	*85*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C4 PFOA	*84*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C5 PFNA	*95*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C2 PFDA	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C2 PFUnA	*79*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C2 PFDoA	*79*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C2 PFTeDA	*75*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C3 PFBS	*81*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
18O2 PFHxS	*84*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C4 PFOS	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
d3-NMeFOSAA	*79*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
d5-NEtFOSAA	*79*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*
13C3 HFPO-DA	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 19:53*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-008
Date Collected: 08/03/23 15:00
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-15
Matrix : Water

Method: EPA 537(Mod) - PFAS for QSM5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.57	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.9	0.83	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.56	ng/L		08/16/23 05:22	08/18/23 04:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.53	ng/L		08/16/23 05:22	08/18/23 04:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		08/16/23 05:22	08/18/23 04:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		08/16/23 05:22	08/18/23 04:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/16/23 05:22	08/18/23 04:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/16/23 05:22	08/18/23 04:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/16/23 05:22	08/18/23 04:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		08/16/23 05:22	08/18/23 04:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C4 PFHpA	*77*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C4 PFOA	*77*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C5 PFNA	*76*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C2 PFDA	*79*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C2 PFUnA	*66*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C2 PFDoA	*52*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C2 PFTeDA	*53*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C3 PFBS	*73*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
18O2 PFHxS	*74*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C4 PFOS	*72*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
d3-NMeFOSAA	*93*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
d5-NEtFOSAA	*66*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*
13C3 HFPO-DA	*77*		*50 - 150*	*08/16/23 05:22*	*08/18/23 04:02*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-103413-1	PTH-004	89	96	94	91	91	84	77	71
320-103413-2	PTH-005	91	90	95	92	92	89	84	78
320-103413-3	PTH-012	86	92	93	90	93	84	81	75
320-103413-4	PTH-011	89	89	87	95	92	88	88	81
320-103413-5	PTH-018	77	83	81	83	79	74	65	60
320-103413-6	PTH-021	94	94	94	100	103	88	78	68
320-103413-7	PTH-034	58	62	63	62	60	59	56	52
320-103413-8	PTH-036	94	94	92	99	100	97	92	81
320-103413-9	PTH-040	89	94	98	95	93	88	82	76
320-103413-10	PTH-046	88	95	98	94	89	85	80	73
320-103413-11	PTH-146	87	91	96	95	90	85	80	74
320-103413-12	PTH-205	106	102	102	109	109	105	105	100
320-103413-13	PTH-206	102	100	98	106	108	102	95	96
320-103413-14	PTH-306	86	85	84	95	92	79	79	75
320-103413-15	PTH-008	78	77	77	76	79	66	52	53
LCS 320-698328/2-A	Lab Control Sample	90	89	95	92	91	86	82	69
LCS 320-698836/2-A	Lab Control Sample	90	88	92	94	96	92	82	76
LCS 320-699054/2-A	Lab Control Sample	92	96	98	97	100	104	100	89
LCSD 320-698328/3-A	Lab Control Sample Dup	92	95	96	95	93	93	85	77
LCSD 320-698836/3-A	Lab Control Sample Dup	105	103	104	109	106	103	106	99
LCSD 320-699054/3-A	Lab Control Sample Dup	99	101	97	103	106	109	110	93
MB 320-698328/1-A	Method Blank	91	92	93	92	93	93	81	72
MB 320-698836/1-A	Method Blank	87	84	88	92	88	85	87	86
MB 320-699054/1-A	Method Blank	92	94	91	99	98	96	96	90

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-103413-1	PTH-004	88	94	93	82	81	94		
320-103413-2	PTH-005	87	94	89	78	84	92		
320-103413-3	PTH-012	87	88	91	80	79	97		
320-103413-4	PTH-011	86	86	94	81	85	97		
320-103413-5	PTH-018	73	83	74	68	69	85		
320-103413-6	PTH-021	89	92	99	85	75	104		
320-103413-7	PTH-034	58	63	60	53	52	62		
320-103413-8	PTH-036	87	89	93	91	92	105		
320-103413-9	PTH-040	88	92	89	77	79	101		
320-103413-10	PTH-046	87	98	94	80	81	99		
320-103413-11	PTH-146	88	93	90	75	81	92		
320-103413-12	PTH-205	101	101	107	97	101	116		
320-103413-13	PTH-206	98	97	109	94	98	111		
320-103413-14	PTH-306	81	84	92	79	79	92		
320-103413-15	PTH-008	73	74	72	93	66	77		
LCS 320-698328/2-A	Lab Control Sample	88	91	90	82	75	92		
LCS 320-698836/2-A	Lab Control Sample	86	86	91	79	79	99		
LCS 320-699054/2-A	Lab Control Sample	91	98	104	113	98	92		
LCSD 320-698328/3-A	Lab Control Sample Dup	90	97	91	84	80	99		
LCSD 320-698836/3-A	Lab Control Sample Dup	95	100	107	91	100	110		
LCSD 320-699054/3-A	Lab Control Sample Dup	96	102	104	116	103	96		
MB 320-698328/1-A	Method Blank	91	96	90	80	81	92		

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
MB 320-698836/1-A	Method Blank	83	82	92	78	85	94		
MB 320-699054/1-A	Method Blank	87	95	100	109	100	91		

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-698828/ 1-A
Matrix : Water
Analysis Batch: 698894

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 698828

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		08/14/23 05:11	08/15/23 13:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		08/14/23 05:11	08/15/23 13:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		08/14/23 05:11	08/15/23 13:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		08/14/23 05:11	08/15/23 13:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/14/23 05:11	08/15/23 13:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		08/14/23 05:11	08/15/23 13:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		08/14/23 05:11	08/15/23 13:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		08/14/23 05:11	08/15/23 13:14	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C4 PFHpA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C4 PFOA	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C5 PFNA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C2 PFDA	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C2 PFUnA	*93*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C2 PFDoA	*81*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C2 PFTeDA	*72*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C3 PFBS	*91*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
18O2 PFHxS	*96*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C4 PFOS	*90*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
d3-NMeFOSAA	*80*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*
13C3 HFPO-DA	*92*		*50 - 150*	*08/14/23 05:11*	*08/15/23 13:14*	*1*

Lab Sample ID: LCS 320-698282-A
Matrix : Water
Analysis Batch: 698894

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 698828

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.8		ng/L		97	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.0		ng/L		105	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.4		ng/L		103	71 - 133
Perfluorononanoic acid (PFNA)	40.0	40.5		ng/L		101	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-698328/2-A
Matrix : Water
Analysis Batch: 698894

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 698328

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	40.4		ng/L		101	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.5		ng/L		101	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.4		ng/L		104	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	40.5		ng/L		101	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.4		ng/L		103	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.8		ng/L		101	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.0		ng/L		93	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	36.8		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.0		ng/L		105	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.6		ng/L		104	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	37.7		ng/L		101	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.0		ng/L		98	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	34.0		ng/L		90	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.1		ng/L		109	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*90*		*50 - 150*
13C4 PFHpA	*89*		*50 - 150*
13C4 PFOA	*95*		*50 - 150*
13C5 PFNA	*92*		*50 - 150*
13C2 PFDA	*91*		*50 - 150*
13C2 PFUnA	*86*		*50 - 150*
13C2 PFDoA	*82*		*50 - 150*
13C2 PFTeDA	*69*		*50 - 150*
13C3 PFBS	*88*		*50 - 150*
18O2 PFHxS	*91*		*50 - 150*
13C4 PFOS	*90*		*50 - 150*
d3-NMeFOSAA	*82*		*50 - 150*
d5-NEtFOSAA	*75*		*50 - 150*
13C3 HFPO-DA	*92*		*50 - 150*

Lab Sample ID: LCSD 320-698328/3-A
Matrix : Water
Analysis Batch: 698894

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 698328

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	37.9		ng/L		95	72 - 129	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.3		ng/L		101	72 - 130	4	30
Perfluorooctanoic acid (PFOA)	40.0	41.0		ng/L		103	71 - 133	1	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-698828/3-A
Matrix : Water
Analysis Batch: 698894

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 698828

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	39.7		ng/L		99	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.6		ng/L		99	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	41.8		ng/L		104	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.0		ng/L		100	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		103	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.5	35.6		ng/L		100	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	33.8		ng/L		93	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	37.9		ng/L		102	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.2		ng/L		98	65 - 136	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.8		ng/L		102	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	37.8		ng/L		101	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		100	72 - 132	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	35.6		ng/L		94	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.3		ng/L		109	81 - 141	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*92*		*50 - 150*
13C4 PFHpA	*95*		*50 - 150*
13C4 PFOA	*96*		*50 - 150*
13C5 PFNA	*95*		*50 - 150*
13C2 PFDA	*93*		*50 - 150*
13C2 PFUnA	*93*		*50 - 150*
13C2 PFDoA	*85*		*50 - 150*
13C2 PFTeDA	*77*		*50 - 150*
13C3 PFBS	*90*		*50 - 150*
18O2 PFHxS	*97*		*50 - 150*
13C4 PFOS	*91*		*50 - 150*
d3-NMeFOSAA	*84*		*50 - 150*
d5-NEtFOSAA	*80*		*50 - 150*
13C3 HFPO-DA	*99*		*50 - 150*

Lab Sample ID: MB 320-698836/ 1-A
Matrix : Water
Analysis Batch: 699721

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 698836

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/15/23 11:58	08/17/23 18:23	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: MB 320-698836/ 1-A
Matrix : Water
Analysis Batch: 699721

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 698836

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		08/15/23 11:58	08/17/23 18:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		08/15/23 11:58	08/17/23 18:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		08/15/23 11:58	08/17/23 18:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		08/15/23 11:58	08/17/23 18:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/15/23 11:58	08/17/23 18:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		08/15/23 11:58	08/17/23 18:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		08/15/23 11:58	08/17/23 18:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.552	J	2.0	0.40	ng/L		08/15/23 11:58	08/17/23 18:23	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C4 PFHpA	*84*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C4 PFOA	*88*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C5 PFNA	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C2 PFDA	*88*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C2 PFUnA	*85*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C2 PFDoA	*87*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C3 PFBS	*83*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
18O2 PFHxS	*82*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C4 PFOS	*92*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
d3-NMeFOSAA	*78*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*
13C3 HFPO-DA	*94*		*50 - 150*	*08/15/23 11:58*	*08/17/23 18:23*	*1*

Lab Sample ID: LCS 320-698836/2-A
Matrix : Water
Analysis Batch: 699721

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 698836

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.1		ng/L		105	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.3		ng/L		101	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	39.7		ng/L		99	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	40.6		ng/L		102	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.7		ng/L		102	69 - 133

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-698836/2-A
Matrix : Water
Analysis Batch: 699721

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 698836

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	43.3		ng/L		108	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	38.2		ng/L		96	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.9		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.2		ng/L		99	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.9		ng/L		96	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	36.9		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.1		ng/L		103	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.1		ng/L		98	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.5		ng/L		103	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.3		ng/L		101	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	35.2		ng/L		93	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.7		ng/L		108	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*90*		*50 - 150*
13C4 PFHpA	*88*		*50 - 150*
13C4 PFOA	*92*		*50 - 150*
13C5 PFNA	*94*		*50 - 150*
13C2 PFDA	*96*		*50 - 150*
13C2 PFUnA	*92*		*50 - 150*
13C2 PFDoA	*82*		*50 - 150*
13C2 PFTeDA	*76*		*50 - 150*
13C3 PFBS	*86*		*50 - 150*
18O2 PFHxS	*86*		*50 - 150*
13C4 PFOS	*91*		*50 - 150*
d3-NMeFOSAA	*79*		*50 - 150*
d5-NEtFOSAA	*79*		*50 - 150*
13C3 HFPO-DA	*99*		*50 - 150*

Lab Sample ID: LCSD 320-698836/3-A
Matrix : Water
Analysis Batch: 699721

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 698836

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.3		ng/L		101	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.0		ng/L		103	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	41.5		ng/L		104	71 - 133	4	30
Perfluorononanoic acid (PFNA)	40.0	41.9		ng/L		105	69 - 130	3	30
Perfluorodecanoic acid (PFDA)	40.0	41.7		ng/L		104	71 - 129	3	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-69886/3-A
Matrix : Water
Analysis Batch: 699721

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 69886

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)			40.0	41.4		ng/L		103	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)			40.0	42.8		ng/L		107	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)			40.0	40.1		ng/L		100	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)			40.0	43.6		ng/L		109	71 - 132	4	30
Perfluorobutanesulfonic acid (PFBS)			35.5	37.7		ng/L		106	72 - 130	7	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	35.5		ng/L		97	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)			37.2	36.3		ng/L		98	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	43.6		ng/L		109	65 - 136	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.2		ng/L		105	61 - 135	8	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	40.0		ng/L		107	77 - 137	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.1		ng/L		103	72 - 132	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	37.9		ng/L		100	76 - 136	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	38.6		ng/L		102	81 - 141	5	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*105*		*50 - 150*
13C4 PFHpA	*103*		*50 - 150*
13C4 PFOA	*104*		*50 - 150*
13C5 PFNA	*109*		*50 - 150*
13C2 PFDA	*106*		*50 - 150*
13C2 PFUnA	*103*		*50 - 150*
13C2 PFDoA	*106*		*50 - 150*
13C2 PFTeDA	*99*		*50 - 150*
13C3 PFBS	*95*		*50 - 150*
18O2 PFHxS	*100*		*50 - 150*
13C4 PFOS	*107*		*50 - 150*
d3-NMeFOSAA	*91*		*50 - 150*
d5-NEtFOSAA	*100*		*50 - 150*
13C3 HFPO-DA	*110*		*50 - 150*

Lab Sample ID: MB 320-699054/ 1-A
Matrix : Water
Analysis Batch: 699534

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 699054

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/16/23 05:22	08/18/23 03:32	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: MB 320-699054/ 1-A
Matrix : Water
Analysis Batch: 699534

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 699054

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		08/16/23 05:22	08/18/23 03:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		08/16/23 05:22	08/18/23 03:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		08/16/23 05:22	08/18/23 03:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		08/16/23 05:22	08/18/23 03:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/16/23 05:22	08/18/23 03:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		08/16/23 05:22	08/18/23 03:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		08/16/23 05:22	08/18/23 03:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		08/16/23 05:22	08/18/23 03:32	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C4 PFHpA	*94*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C4 PFOA	*91*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C5 PFNA	*99*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C2 PFDA	*98*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C2 PFUnA	*96*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C2 PFDoA	*96*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C3 PFBS	*87*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
18O2 PFHxS	*95*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C4 PFOS	*100*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
d3-NMeFOSAA	*109*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
d5-NEtFOSAA	*100*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*
13C3 HFPO-DA	*91*		*50 - 150*	*08/16/23 05:22*	*08/18/23 03:32*	*1*

Lab Sample ID: LCS 320-699054/2-A
Matrix : Water
Analysis Batch: 699534

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 699054

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.6		ng/L		107	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.8		ng/L		107	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	44.9		ng/L		112	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	42.0		ng/L		105	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.0		ng/L		105	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.8		ng/L		115	72 - 134

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-699054/2-A
Matrix : Water
Analysis Batch: 699534

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 699054

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotridecanoic acid (PFTriA)	40.0	40.2		ng/L		101	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	37.7		ng/L		94	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	39.7		ng/L		112	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.4		ng/L		100	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	38.6		ng/L		104	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.3		ng/L		98	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.4		ng/L		106	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.5		ng/L		106	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.2		ng/L		108	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	38.4		ng/L		102	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.4		ng/L		104	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*92*		*50 - 150*
13C4 PFHpA	*96*		*50 - 150*
13C4 PFOA	*98*		*50 - 150*
13C5 PFNA	*97*		*50 - 150*
13C2 PFDA	*100*		*50 - 150*
13C2 PFUnA	*104*		*50 - 150*
13C2 PFDoA	*100*		*50 - 150*
13C2 PFTeDA	*89*		*50 - 150*
13C3 PFBS	*91*		*50 - 150*
18O2 PFHxS	*98*		*50 - 150*
13C4 PFOS	*104*		*50 - 150*
d3-NMeFOSAA	*113*		*50 - 150*
d5-NEtFOSAA	*98*		*50 - 150*
13C3 HFPO-DA	*92*		*50 - 150*

Lab Sample ID: LCSD 320-699054/3-A
Matrix : Water
Analysis Batch: 699534

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 699054

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	41.2		ng/L		103	72 - 129	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.1		ng/L		108	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	46.6		ng/L		116	71 - 133	4	30
Perfluorononanoic acid (PFNA)	40.0	41.5		ng/L		104	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	40.7		ng/L		102	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.8		ng/L		105	69 - 133	0	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-699054/3-A
Matrix : Water
Analysis Batch: 699534

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 699054

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)			40.0	44.0		ng/L		110	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.4		ng/L		99	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)			40.0	37.4		ng/L		94	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)			35.5	38.5		ng/L		108	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	35.3		ng/L		97	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)			37.2	37.6		ng/L		101	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	37.5		ng/L		94	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	41.9		ng/L		105	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	40.1		ng/L		107	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	42.4		ng/L		106	72 - 132	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	38.5		ng/L		102	76 - 136	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	40.2		ng/L		106	81 - 141	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*99*		*50 - 150*
13C4 PFHpA	*101*		*50 - 150*
13C4 PFOA	*97*		*50 - 150*
13C5 PFNA	*103*		*50 - 150*
13C2 PFDA	*106*		*50 - 150*
13C2 PFUnA	*109*		*50 - 150*
13C2 PFDoA	*110*		*50 - 150*
13C2 PFTeDA	*93*		*50 - 150*
13C3 PFBS	*96*		*50 - 150*
18O2 PFHxS	*102*		*50 - 150*
13C4 PFOS	*104*		*50 - 150*
d3-NMeFOSAA	*116*		*50 - 150*
d5-NEtFOSAA	*103*		*50 - 150*
13C3 HFPO-DA	*96*		*50 - 150*

LCMS

Prep Batch: 698328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103413-1	PTH-004	Total/NA	Water	3535	
320-103413-2	PTH-005	Total/NA	Water	3535	
320-103413-3	PTH-012	Total/NA	Water	3535	
320-103413-5	PTH-018	Total/NA	Water	3535	
320-103413-7	PTH-034	Total/NA	Water	3535	
320-103413-9	PTH-040	Total/NA	Water	3535	
320-103413-10	PTH-046	Total/NA	Water	3535	
320-103413-11	PTH-146	Total/NA	Water	3535	
MB 320-698328/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-698328/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-698328/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 698836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103413-4	PTH-011	Total/NA	Water	3535	
320-103413-6	PTH-021	Total/NA	Water	3535	
320-103413-8	PTH-036	Total/NA	Water	3535	
320-103413-12	PTH-205	Total/NA	Water	3535	
320-103413-13	PTH-206	Total/NA	Water	3535	
320-103413-14	PTH-306	Total/NA	Water	3535	
MB 320-698836/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-698836/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-698836/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 698894

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103413-1	PTH-004	Total/NA	Water	EPA 537(Mod)	698328
320-103413-2	PTH-005	Total/NA	Water	EPA 537(Mod)	698328
320-103413-3	PTH-012	Total/NA	Water	EPA 537(Mod)	698328
320-103413-5	PTH-018	Total/NA	Water	EPA 537(Mod)	698328
320-103413-7	PTH-034	Total/NA	Water	EPA 537(Mod)	698328
320-103413-9	PTH-040	Total/NA	Water	EPA 537(Mod)	698328
320-103413-10	PTH-046	Total/NA	Water	EPA 537(Mod)	698328
320-103413-11	PTH-146	Total/NA	Water	EPA 537(Mod)	698328
MB 320-698328/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	698328
LCS 320-698328/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	698328
LCSD 320-698328/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	698328

Prep Batch: 699054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103413-15	PTH-008	Total/NA	Water	3535	
MB 320-699054/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-699054/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-699054/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 699534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103413-15	PTH-008	Total/NA	Water	EPA 537(Mod)	699054
MB 320-699054/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	699054
LCS 320-699054/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	699054
LCSD 320-699054/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	699054

LCMS

Analysis Batch: 699721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-103413-4	PTH-011	Total/NA	Water	EPA 537(Mod)	698836
320-103413-6	PTH-021	Total/NA	Water	EPA 537(Mod)	698836
320-103413-8	PTH-036	Total/NA	Water	EPA 537(Mod)	698836
320-103413-12	PTH-205	Total/NA	Water	EPA 537(Mod)	698836
320-103413-13	PTH-206	Total/NA	Water	EPA 537(Mod)	698836
320-103413-14	PTH-306	Total/NA	Water	EPA 537(Mod)	698836
MB 320-698836/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	698836
LCS 320-698836/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	698836
LCSD 320-698836/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	698836

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-004
Date Collected: 08/01/23 12:48
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.9 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 14:43	C1P	EET SAC

Client Sample ID: PTH-005
Date Collected: 08/01/23 15:25
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.1 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 14:54	C1P	EET SAC

Client Sample ID: PTH-012
Date Collected: 08/01/23 14:45
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.4 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 15:17	C1P	EET SAC

Client Sample ID: PTH-011
Date Collected: 08/02/23 18:19
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			242 mL	10.0 mL	698836	08/15/23 11:58	BLR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	699721	08/17/23 18:57	RS1	EET SAC

Client Sample ID: PTH-018
Date Collected: 08/01/23 17:59
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.1 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 15:28	C1P	EET SAC

Client Sample ID: PTH-021
Date Collected: 08/02/23 14:10
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			237.8 mL	10.0 mL	698836	08/15/23 11:58	BLR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	699721	08/17/23 19:08	RS1	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-034
Date Collected: 08/01/23 10:34
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 15:39	C1P	EET SAC

Client Sample ID: PTH-036
Date Collected: 08/02/23 16:20
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.1 mL	10.0 mL	698836	08/15/23 11:58	BLR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	699721	08/17/23 19:19	RS1	EET SAC

Client Sample ID: PTH-040
Date Collected: 08/01/23 17:09
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.8 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 15:50	C1P	EET SAC

Client Sample ID: PTH-046
Date Collected: 08/01/23 13:48
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.5 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 16:02	C1P	EET SAC

Client Sample ID: PTH-146
Date Collected: 08/01/23 13:38
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.9 mL	10.0 mL	698328	08/14/23 05:11	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	698894	08/15/23 16:13	C1P	EET SAC

Client Sample ID: PTH-205
Date Collected: 08/02/23 12:24
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.7 mL	10.0 mL	698836	08/15/23 11:58	BLR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	699721	08/17/23 19:31	RS1	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Client Sample ID: PTH-206
Date Collected: 08/02/23 17:01
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265 mL	10.0 mL	698836	08/15/23 11:58	BLR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	699721	08/17/23 19:42	RS1	EET SAC

Client Sample ID: PTH-306
Date Collected: 08/02/23 16:51
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-14
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.8 mL	10.0 mL	698836	08/15/23 11:58	BLR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	699721	08/17/23 19:53	RS1	EET SAC

Client Sample ID: PTH-008
Date Collected: 08/03/23 15:00
Date Received: 08/08/23 14:49

Lab Sample ID: 320-103413-15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.6 mL	10.0 mL	699054	08/16/23 05:22	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	699534	08/18/23 04:02	RS1	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: Port Heiden PFAS

Job ID: 320-103413-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-103413-1	PTH-004	Water	08/01/23 12:48	08/08/23 14:49
320-103413-2	PTH-005	Water	08/01/23 15:25	08/08/23 14:49
320-103413-3	PTH-012	Water	08/01/23 14:45	08/08/23 14:49
320-103413-4	PTH-011	Water	08/02/23 18:19	08/08/23 14:49
320-103413-5	PTH-018	Water	08/01/23 17:59	08/08/23 14:49
320-103413-6	PTH-021	Water	08/02/23 14:10	08/08/23 14:49
320-103413-7	PTH-034	Water	08/01/23 10:34	08/08/23 14:49
320-103413-8	PTH-036	Water	08/02/23 16:20	08/08/23 14:49
320-103413-9	PTH-040	Water	08/01/23 17:09	08/08/23 14:49
320-103413-10	PTH-046	Water	08/01/23 13:48	08/08/23 14:49
320-103413-11	PTH-146	Water	08/01/23 13:38	08/08/23 14:49
320-103413-12	PTH-205	Water	08/02/23 12:24	08/08/23 14:49
320-103413-13	PTH-206	Water	08/02/23 17:01	08/08/23 14:49
320-103413-14	PTH-306	Water	08/02/23 16:51	08/08/23 14:49
320-103413-15	PTH-008	Water	08/03/23 15:00	08/08/23 14:49

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www shannonwilson com

CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins
Attn

Turn Around Time: ☒ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☒ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No	Time	Date Sampled	PFAS x18 DoD table B-15	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PTH-004		1248	8/1/23	X	2	Groundwater
PTH-005		1525	8/1/23	X		
PTH-012		1445	8/1/23	X		
PTH-011		1819	8/2/23	X		
PTH-018		1759	8/1/23	X		
PTH-021		1410	8/2/23	X		
PTH-034		1034	8/1/23	X		
PTH-036		1620	8/2/23	X		
PTH-040		1709	8/1/23	X		
PTH-046		1348	8/1/23	X		

320-103413 Chain of Custody

Project Information	
Number	102219-016
Name	Fort Wainwright PFAS
Contact	Amber Masters
Ongoing Project?	Yes ☒ No ☐
Sampler	A Masters

Sample Receipt	
Total No of Containers	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp	
Delivery Method	

Notes:

5.9c

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature Time: 1225	Signature Time 1100	Signature Time
Printed Name A Masters Date 8/4/23	Printed Name Sean Webb Date 8/7/23	Printed Name Date
Company Shannon + Wilson Inc	Company Shannon + Wilson Inc	Company

Received By: 1.	Received By: 2.	Received By: 3.
Signature Time	Signature Time 1449	Signature Time
Printed Name Date	Printed Name SANDY P Date 8/8/23	Printed Name Date
Company	Company: EETCA	Company

Distribution White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No.

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www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Page 2 of 2
Laboratory Eurofins
Attn

Turn Around Time: [X] Normal [ ] Rush
Please Specify

Quote No:

J-Flags: [X] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18 DOD table B-15							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
PTH-146		1338	8/1/23	X							2	Groundwater
PTH-205		1224	8/2/23	X							2	↓
PTH-206		1701	8/2/23	X							2	↓
PTH-306		1651	8/2/23	X							2	↓
PTH-008		1500	8/3/23	X							2	↓

Project Information	
Number	See page 1
Name	
Contact	
Ongoing Project?	Yes [ ] No [ ]
Sampler	

Sample Receipt	
Total No. of Containers	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp.	
Delivery Method	

	Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature	[signature]	[signature]	
Time	1225	11:00	
Printed Name	A Masters	Sean Webb	
Date	8/4/23	8/7/23	
Company	Shannon+Wilson Inc	Shannon+Wilson Inc.	

	Received By: 1.	Received By: 2.	Received By: 3.
Signature	[signature]	[signature]	
Time		1449	
Printed Name		SANDY P	
Date		8823	
Company		EETCA	

Notes:

5.9c

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. ________

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	KND	**CS Site Name:**	Port Heiden Airport Statewide PFAS	**Lab Name:**	Eurofins Environment Testing
Title:	Environmental Geology Staff	**ADEC File No.:**	2637.38.008	**Lab Report No.:**	320-103413-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	27800	**Lab Report Date:**	August 23, 2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. Laboratory

a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
Yes ☒ No ☐ N/A ☐
Comments: The ADEC certified Eurofins Environment Testing, West Sacramento for the analysis of PFAS. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
Yes ☐ No ☐ N/A ☒
Comments: Sample analyses were not subcontracted or transferred to another laboratory.

2. Chain of Custody (CoC)

a. Is the CoC information completed, signed, and dated (including released/received by)?
Yes ☒ No ☐ N/A ☐
Comments:

b. Were the correct analyses requested?
Yes ☒ No ☐ N/A ☐
Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories version 5.3 Table B-15.
Comments: Analysis performed as requested.

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): Cooler temperature was not reported by the laboratory.
Sample temperature(s): A temperature blank was included with the samples in the cooler and is used to assess sample temperature. The temperature blank was reported at 5.9°C upon arrival at the laboratory.
Comments: None

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: PFAS does not require any additional preservation beyond temperature control.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory notes that the samples arrived in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory does not note any discrepancies.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
- The "I" qualifier means the transition mass ratio for PFOS was above the established ratio limits in sample *PTH-205*. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. Due to this uncertainty, the results of this analyte in the noted sample is considered an estimate, biased high, and flagged 'JH*' in the analytical table.
- Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batches 320-698328, 320-698836 and 320-699054. See Section 6.c for details regarding impacts to data quality and/or usability, as applicable.
- The following samples in preparation batches 320-698328, 320-698836, and 320-699054 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction: *PTH-018, PTH-021*, and *PTH-008*, respectively. Data quality and/or usability not affected.
- During the solid phase extraction process, the following sample contained non-settleable particulates which clogged the solid phase extraction column: preparation batch 320-698328 *PTH-018*. Data quality and/or usability not affected.
- The following samples in preparation batch 320-698836 were slightly yellow in color prior to extraction: *PTH-021, PTH-036, PTH-206* and *PTH-306*. Data quality and/or usability not affected.
- The following sample in preparation batch 320-699054 was yellow in color prior to preparation. PTH-008. Data quality and/or usability not affected.
- During the solid phase extraction process, the following sample contain non-settleable particulates which clogged the solid phase extraction column: PTH-008, preparation batch 320-699054. Data quality and/or usability not affected.

c. Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments: Where required.

d. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not note an effect on data quality or usability.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: However, ADONA was detected in the method blank sample at a concentration below the LOQ. ADONA was not detected in any associated sample. Data quality and/or usability not affected.

iii. If above LoQ or RL, what samples are affected?
Comments: Not applicable, see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: LCS/LCSD were reported for each preparatory batch.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: None. %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐

Comments: MS/MSD samples were not reported for any preparatory batch; however, precision can be assessed with the LCS/LCSD.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐

Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments:

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: PFAS are not volatile compounds; therefore, a trip blank is not required.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LoQ or RL, what samples are affected?
Comments: None; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Sample *PTH-146* and *PTH-306* are the field duplicate samples of *PTH-046* and *PTH-206*, respectively.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

iv. Is the data quality or usability affected? (Explain)
Yes ☒ No ☐ N/A ☐
Comments: RPD are within project DQOs, where calculable.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Reusable equipment was not used; therefore, an equipment blank is not required

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LoQ or RL, specify what samples are affected.
Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☒ No ☐ N/A ☐
Comments: See 4.b. above.

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

January 3, 2023

Name
General Delivery
Port Heiden, AK 99549

RE: RESULTS OF 2022 PFAS WATER SUPPLY WELL SAMPLING, PORT HEIDEN AIRPORT

Thank you for participating in our water supply well sampling program to evaluate the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Port Heiden Airport (PTH). Shannon & Wilson, Inc. collected a water sample from your water supply well at address on date. We have also sent a copy of this letter to your tenant.

The water sample was analyzed for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and several other PFAS compounds. We compare these concentrations to the Alaska Department of Environmental Conservation (DEC) drinking water action level of 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by Eurofins Environment Testing indicate that PFOS was not detected, and PFOA was not detected in the groundwater sample from your well. *(Insert detected PFAS)* were detected in the sample; however, DEC has not promulgated groundwater or drinking water standards for this/these compounds. The portions of the original laboratory report that apply to your well (sample number *PW-039*) are enclosed for your records.

Shannon & Wilson has conducted this sampling event on behalf of the Alaska Department of Transportation and Public Facilities (DOT&PF). Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website.

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

If you have any questions regarding your results, please feel free to contact us.

Sincerely,

SHANNON & WILSON, INC.

Staff
Title

Enc: Select Pages of Test America Laboratory Report No. 320-94388-1
PFAS Fact Sheet – Port Heiden Airport

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF Port Heiden Airport Sitewide PFAS

File Number: 2637.38.008

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

PFAS has been detected in groundwater at the site, likely as a result of AFFF releases to the ground surface. PFAS affected soil is likely present.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

AFFF releases to the ground surface could cause soil contamination. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

PFAS was detected in groundwater at the site, including residential water supply wells.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

We don't anticipate potentially affected surface bodies in the airport vicinity are being used as a drinking water source. However, the potential exists and we consider this pathway potentially complete.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No surface soil samples have been collected at the PTH. However, AFFF was likely released to the ground surface on the lightly graveled runways that can be dusty in the summertime.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No sediment samples have been collected at the PTH. However, AFFF was likely release to the ground surface in unpaved and/or lightly graveled areas open to DOT&PF employees and the public. Additionally, local residents use subsistence practices (e.g., berry picking and fishing) that may expose them to sediment.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF Port Heiden Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)
Check all exposure media identified in (2).

(4)
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F			
	☐ Volatilization — check air									
	☑ Runoff or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil	☑ groundwater	☑ Ingestion of Groundwater	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to groundwater — check groundwater		☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☐ Volatilization — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater — check groundwater	☐ air	☐ Inhalation of Outdoor Air							
	☐ Volatilization — check air		☐ Inhalation of Indoor Air							
	☐ Flow to surface water body — check surface water		☐ Inhalation of Fugitive Dust							
	☐ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water — check surface water	☑ surface water	☐ Ingestion of Surface Water							
	☐ Volatilization — check air		☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☑ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment — check sediment	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Resuspension, runoff, or erosion — check surface water									
	☑ Uptake by plants or animals — check biota	☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Other (list):									

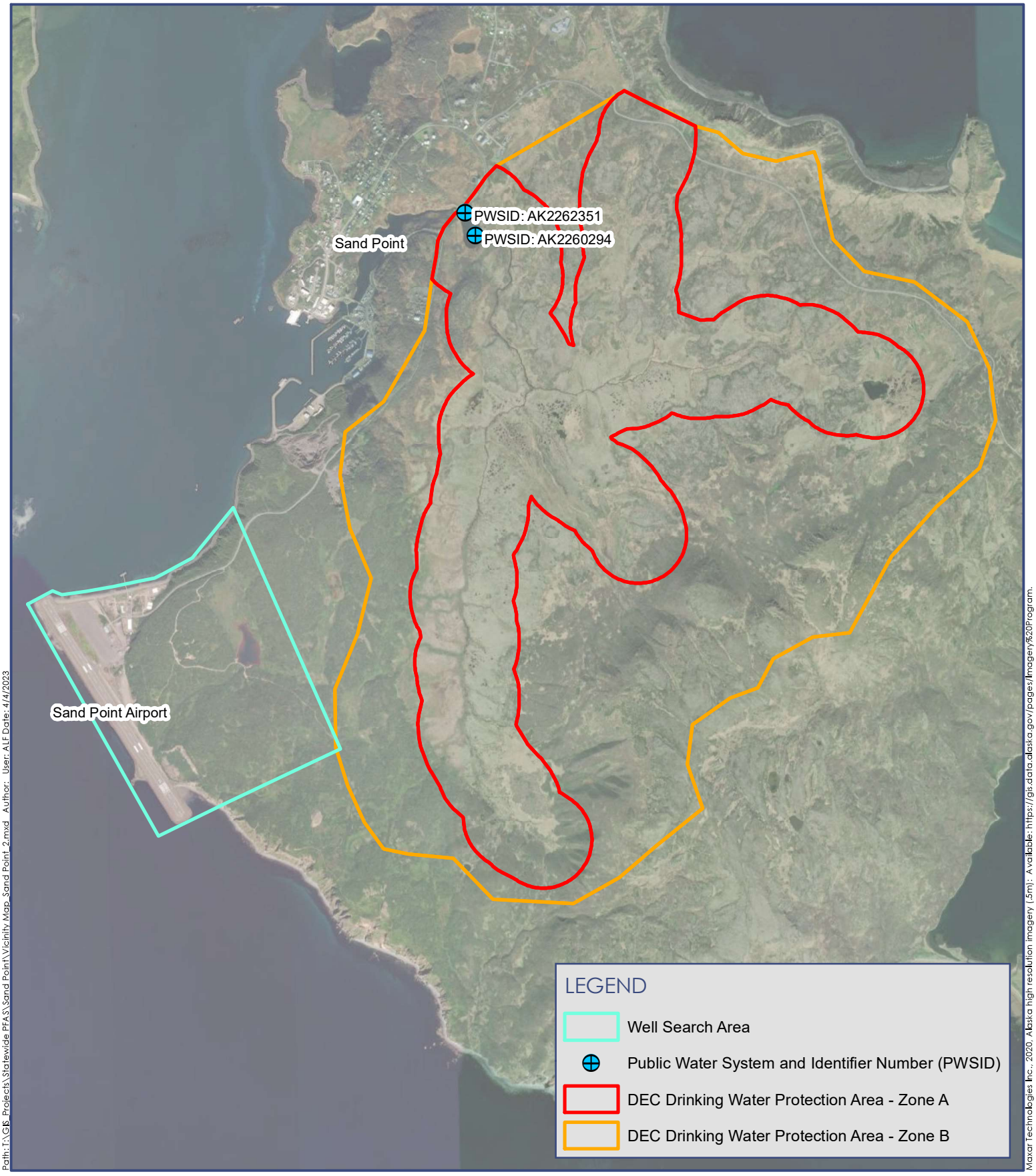
Revised, 10/01/2010

APPENDIX F: SAND POINT AIRPORT SUPPORTING DOCUMENTS

Appendix F

Sand Point Airport Supporting Documents

CONTENTS



January 2024

VICINITY MAP

Figure F1

SHANNON & WILSON

102219-017

Statewide PFAS
Alaska DOT&PF
Sand Point, Alaska

Path: I:\GIS_Projects\Statewide PFAS\Sand Point\Site Map_Sand Point_2.mxd Author: User: ALF Date: 5/24/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/Imagery%20Program.

N

0 1

Miles

January 2024

SITE MAP

Figure F2

Path: I:\GIS_Projects\Statewide PFAS\Sand Point\Sand Point Analytical Results Summary_2023 Report.mxd Author: User: ALF Date: 4/11/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/imagery%20Program.

N

0 2,000

Feet

Notes:
1. AFFF: Aqueous Film Foarming Foam
2. Locations are approximate
3. Samples collected in February 2023

ng/L = nanograms per liter, equivalent to parts per trillion (ppt)

January 2024

ANALYTICAL RESULTS SUMMARY

Figure F3

Table F1 — Sand Point Water Supply Well Analytical Results - February 2023

Analytical Method	Analyte	Regulatory Limit	Units	SDP-001	SDP-002		SDP-003
				2/8/2023	2/8/2023	Duplicate	2/9/2023
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.7	18	20	<1.8
	Perfluorooctanoic acid (PFOA)		ng/L	<1.7	4.0	4.4	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.4	<3.5	<3.5	<3.5
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.7	1.6J	1.7J	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.7	0.41J	0.50JH*	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.7	<1.7	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.7	22	24	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	0.86J	14	16	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.7	70	76	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.7	1.7	1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.7	<1.7	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.7	<1.7	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.7	<1.7	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.7	<1.7	<1.8	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.7	<1.7	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.7	<1.7	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.2	<4.3	<4.4	<4.4
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.2	<4.3	<4.4	<4.4

Notes:
Results reported from Eurofins Environment Testing work order 320-96818-1.
† Final EPA PFAS LHAs (HFPO-DA/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of quanittation (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet –Sand Point Airport

February 2023

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents/businesses with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 3/3/2023 2:22:04 PM

JOB DESCRIPTION

Sand Point DOT PFAS

JOB NUMBER

320-96818-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

Generated
3/3/2023 2:22:04 PM

Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Qualifiers

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-96818-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-96818-1

Receipt
The samples were received on 2/15/2023 12:41 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.4º C.

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte: SDP-102 (320-96818-3).

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-654144.

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: SDP-002 (320-96818-2) and SDP-102 (320-96818-3).
preparation batch 320-654144

Method 3535: The following samples were light yellow prior to extraction: SDP-001 (320-96818-1) and SDP-003 (320-96818-4).
preparation batch 320-654144

Method 3535: During the solid phase extraction process, the following samples contained non-settable particulates which clogged the solid phase extraction column: SDP-002 (320-96818-2) and SDP-102 (320-96818-3).
preparation batch 320-654144

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Client Sample ID: SDP-001 — Lab Sample ID: 320-96818-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.86	J	1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: SDP-002 — Lab Sample ID: 320-96818-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	70		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	22		1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	4.0		1.7	0.74	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.7		1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.41	J	1.7	0.27	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: SDP-102 — Lab Sample ID: 320-96818-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	76		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	24		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	4.4		1.8	0.75	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.8		1.8	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.50	J I	1.8	0.27	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	16		1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	20		1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: SDP-003 — Lab Sample ID: 320-96818-4

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Client Sample ID: SDP-001
Date Collected: 02/08/23 14:47
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-1
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorohexanesulfonic acid (PFHxS)	**0.86**	**J**	1.7	0.48	ng/L		02/16/23 11:37	03/01/23 09:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		02/16/23 11:37	03/01/23 09:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		02/16/23 11:37	03/01/23 09:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		02/16/23 11:37	03/01/23 09:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		02/16/23 11:37	03/01/23 09:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		02/16/23 11:37	03/01/23 09:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		02/16/23 11:37	03/01/23 09:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		02/16/23 11:37	03/01/23 09:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*108*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C4 PFHpA	*101*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C4 PFOA	*105*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C5 PFNA	*102*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C2 PFDA	*104*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C2 PFUnA	*10*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C2 PFDoA	*104*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C2 PFTeDA	*97*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C3 PFBS	*103*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
18O2 PFHxS	*104*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C4 PFOS	*105*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
d3-NMeFOSAA	*125*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
d5-NEtFOSAA	*127*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	
13C3 HFPO-DA	*100*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:02*	

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Client Sample ID: SDP-002
Date Collected: 02/08/23 14:10
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-2
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**70**		1.7	0.50	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluoroheptanoic acid (PFHpA)	**22**		1.7	0.22	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorooctanoic acid (PFOA)	**4.0**		1.7	0.74	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorononanoic acid (PFNA)	**1.7**		1.7	0.23	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorodecanoic acid (PFDA)	**0.41**	**J**	1.7	0.27	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.7	0.17	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorohexanesulfonic acid (PFHxS)	**14**		1.7	0.49	ng/L		02/16/23 11:37	03/01/23 09:12	1
Perfluorooctanesulfonic acid (PFOS)	**18**		1.7	0.47	ng/L		02/16/23 11:37	03/01/23 09:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		02/16/23 11:37	03/01/23 09:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		02/16/23 11:37	03/01/23 09:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		02/16/23 11:37	03/01/23 09:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		02/16/23 11:37	03/01/23 09:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		02/16/23 11:37	03/01/23 09:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		02/16/23 11:37	03/01/23 09:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C4 PFHpA	*86*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C4 PFOA	*88*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C5 PFNA	*84*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C2 PFDA	*80*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C2 PFUnA	*79*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C2 PFDoA	*72*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C2 PFTeDA	*65*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C3 PFBS	*88*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
18O2 PFHxS	*86*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C4 PFOS	*82*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
d3-NMeFOSAA	*85*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
d5-NEtFOSAA	*84*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	
13C3 HFPO-DA	*83*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:12*	

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Client Sample ID: SDP-102

Date Collected: 02/08/23 14:00
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-3

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**76**		1.8	0.51	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluoroheptanoic acid (PFHpA)	**24**		1.8	0.22	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorooctanoic acid (PFOA)	**4.4**		1.8	0.75	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorononanoic acid (PFNA)	**1.8**		1.8	0.24	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorodecanoic acid (PFDA)	**0.50**	**J I**	1.8	0.27	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**	**J**	1.8	0.18	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorohexanesulfonic acid (PFHxS)	**16**		1.8	0.50	ng/L		02/16/23 11:37	03/01/23 09:22	1
Perfluorooctanesulfonic acid (PFOS)	**20**		1.8	0.48	ng/L		02/16/23 11:37	03/01/23 09:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		02/16/23 11:37	03/01/23 09:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		02/16/23 11:37	03/01/23 09:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		02/16/23 11:37	03/01/23 09:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		02/16/23 11:37	03/01/23 09:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		02/16/23 11:37	03/01/23 09:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		02/16/23 11:37	03/01/23 09:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C4 PFHpA	*78*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C4 PFOA	*85*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C5 PFNA	*76*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C2 PFDA	*76*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C2 PFUnA	*74*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C2 PFDoA	*66*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C2 PFTeDA	*61*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C3 PFBS	*79*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
18O2 PFHxS	*77*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C4 PFOS	*76*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
d3-NMeFOSAA	*79*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*
13C3 HFPO-DA	*77*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:22*	*1*

Client Sample ID: SDP-003
Date Collected: 02/09/23 09:09
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-4
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		02/16/23 11:37	03/01/23 09:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		02/16/23 11:37	03/01/23 09:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		02/16/23 11:37	03/01/23 09:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		02/16/23 11:37	03/01/23 09:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		02/16/23 11:37	03/01/23 09:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		02/16/23 11:37	03/01/23 09:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		02/16/23 11:37	03/01/23 09:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		02/16/23 11:37	03/01/23 09:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA			*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C4 PFHpA	*106*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C4 PFOA	*107*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C5 PFNA	*106*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C2 PFDA	*108*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C2 PFUnA	*109*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C2 PFDoA	*104*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C2 PFTeDA	*81*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C3 PFBS	*104*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
18O2 PFHxS	*101*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C4 PFOS	*100*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
d3-NMeFOSAA	*12*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
d5-NEtFOSAA	*120*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	
13C3 HFPO-DA	*106*		*50 - 150*	*02/16/23 11:37*	*03/01/23 09:32*	

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTDA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-96818-1	SDP-001	108	101	105	102	104	110	104	97
320-96818-2	SDP-002	97	86	88	84	80	79	72	65
320-96818-3	SDP-102	88	78	85	76	76	74	66	61
320-96818-4	SDP-003	111	106	107	106	108	109	104	81
LCS 320-654144/2-A	Lab Control Sample	107	105	108	104	109	104	106	109
LCSD 320-654144/3-A	Lab Control Sample Dup	104	102	108	102	107	106	101	104
MB 320-654144/1-A	Method Blank	104	102	107	107	107	110	102	107

		Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS	PFHxS	PFOS	d3NMFOS	d5NEFOS	HFPODA
Lab Sample ID	Client Sample ID	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)	(50-150)
320-96818-1	SDP-001	103	104	105	125	127	100
320-96818-2	SDP-002	88	86	82	85	84	83
320-96818-3	SDP-102	79	77	76	79	81	77
320-96818-4	SDP-003	104	101	100	112	120	106
LCS 320-654144/2-A	Lab Control Sample	107	102	103	113	121	101
LCSD 320-654144/3-A	Lab Control Sample Dup	103	105	106	111	117	95
MB 320-654144/1-A	Method Blank	101	98	103	118	128	105

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-654144/1-A
Matrix: Water
Analysis Batch: 657267

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 654144

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/16/23 11:37	03/01/23 08:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/16/23 11:37	03/01/23 08:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/16/23 11:37	03/01/23 08:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/16/23 11:37	03/01/23 08:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/16/23 11:37	03/01/23 08:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/16/23 11:37	03/01/23 08:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/16/23 11:37	03/01/23 08:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C4 PFHpA	*102*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C4 PFOA	*107*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C5 PFNA	*107*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C2 PFDA	*107*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C2 PFUnA	*110*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C2 PFDoA	*102*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C2 PFTeDA	*107*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C3 PFBS	*101*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
18O2 PFHxS	*98*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C4 PFOS	*103*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
d3-NMeFOSAA	*118*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
d5-NEtFOSAA	*128*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*
13C3 HFPO-DA	*105*		*50 - 150*	*02/16/23 11:37*	*03/01/23 08:11*	*1*

Lab Sample ID: LCS 320-654144/2-A
Matrix: Water
Analysis Batch: 657267

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 654144

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.5		ng/L		96	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	41.1		ng/L		103	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	39.5		ng/L		99	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		105	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-654144/2-A
Matrix: Water
Analysis Batch: 657267

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 654144

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	41.9		ng/L		105	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.0		ng/L		107	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.8		ng/L		105	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	40.8		ng/L		102	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.8		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	36.9		ng/L		104	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.9		ng/L		98	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.0		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.1		ng/L		103	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.3		ng/L		101	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	37.8		ng/L		101	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.5		ng/L		99	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	38.5		ng/L		102	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.7		ng/L		110	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*107*		*50 - 150*
13C4 PFHpA	*105*		*50 - 150*
13C4 PFOA	*108*		*50 - 150*
13C5 PFNA	*104*		*50 - 150*
13C2 PFDA	*109*		*50 - 150*
13C2 PFUnA	*104*		*50 - 150*
13C2 PFDoA	*106*		*50 - 150*
13C2 PFTeDA	*109*		*50 - 150*
13C3 PFBS	*107*		*50 - 150*
18O2 PFHxS	*102*		*50 - 150*
13C4 PFOS	*103*		*50 - 150*
d3-NMeFOSAA	*113*		*50 - 150*
d5-NEtFOSAA	*121*		*50 - 150*
13C3 HFPO-DA	*101*		*50 - 150*

Lab Sample ID: LCSD 320-654144/3-A
Matrix: Water
Analysis Batch: 657267

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 654144

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	41.6		ng/L		104	72 - 129	8	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		104	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	39.6		ng/L		99	71 - 133	0	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-654144/3-A
Matrix: Water
Analysis Batch: 657267

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 654144

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	44.1		ng/L		110	69 - 130	5	30
Perfluorodecanoic acid (PFDA)			40.0	41.5		ng/L		104	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)			40.0	41.8		ng/L		104	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)			40.0	43.1		ng/L		108	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)			40.0	44.5		ng/L		111	65 - 144	9	30
Perfluorotetradecanoic acid (PFTeA)			40.0	42.5		ng/L		106	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)			35.5	37.0		ng/L		104	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	35.2		ng/L		97	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)			37.2	37.3		ng/L		100	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	40.8		ng/L		102	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	41.4		ng/L		104	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	37.9		ng/L		101	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.6		ng/L		104	72 - 132	5	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	37.7		ng/L		100	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	40.3		ng/L		107	81 - 141	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*104*		*50 - 150*
13C4 PFHpA	*102*		*50 - 150*
13C4 PFOA	*108*		*50 - 150*
13C5 PFNA	*102*		*50 - 150*
13C2 PFDA	*107*		*50 - 150*
13C2 PFUnA	*106*		*50 - 150*
13C2 PFDoA	*101*		*50 - 150*
13C2 PFTeDA	*104*		*50 - 150*
13C3 PFBS	*103*		*50 - 150*
18O2 PFHxS	*105*		*50 - 150*
13C4 PFOS	*106*		*50 - 150*
d3-NMeFOSAA			*50 - 150*
d5-NEtFOSAA	*17*		*50 - 150*
13C3 HFPO-DA	*95*		*50 - 150*

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

LCMS

Prep Batch: 654144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96818-1	SDP-001	Total/NA	Water	3535	
320-96818-2	SDP-002	Total/NA	Water	3535	
320-96818-3	SDP-102	Total/NA	Water	3535	
320-96818-4	SDP-003	Total/NA	Water	3535	
MB 320-654144/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-654144/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-654144/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 657267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96818-1	SDP-001	Total/NA	Water	EPA 537(Mod)	654144
320-96818-2	SDP-002	Total/NA	Water	EPA 537(Mod)	654144
320-96818-3	SDP-102	Total/NA	Water	EPA 537(Mod)	654144
320-96818-4	SDP-003	Total/NA	Water	EPA 537(Mod)	654144
MB 320-654144/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	654144
LCS 320-654144/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	654144
LCSD 320-654144/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	654144

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Client Sample ID: SDP-001
Date Collected: 02/08/23 14:47
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			295.2 mL	10.0 mL	654144	02/16/23 11:37	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	657267	03/01/23 09:02	K1S	EET SAC

Client Sample ID: SDP-002
Date Collected: 02/08/23 14:10
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.6 mL	10.0 mL	654144	02/16/23 11:37	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	657267	03/01/23 09:12	K1S	EET SAC

Client Sample ID: SDP-102
Date Collected: 02/08/23 14:00
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.3 mL	10.0 mL	654144	02/16/23 11:37	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	657267	03/01/23 09:22	K1S	EET SAC

Client Sample ID: SDP-003
Date Collected: 02/09/23 09:09
Date Received: 02/15/23 12:41

Lab Sample ID: 320-96818-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.8 mL	10.0 mL	654144	02/16/23 11:37	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	657267	03/01/23 09:32	K1S	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: Sand Point DOT PFAS

Job ID: 320-96818-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-96818-1	SDP-001	Water	02/08/23 14:47	02/15/23 12:41
320-96818-2	SDP-002	Water	02/08/23 14:10	02/15/23 12:41
320-96818-3	SDP-102	Water	02/08/23 14:00	02/15/23 12:41
320-96818-4	SDP-003	Water	02/09/23 09:09	02/15/23 12:41

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins
Attn: David Alltucker

Turn Around Time:	Quote No:
☑ Normal ☐ Rush	J-Flags: ☑ Yes ☐ No
Please Specify	

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x 18 DSM Table B-15	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
SDP-001		1447	2/8/23	x	2	water Samples
~~SDP-002~~		~~1400~~	~~2/8/23~~			
SDP-002		1410	2/8/23	x	2	
SDP-102		1400	2/8/23	x	2	
SDP-003		0909	2/9/23	x	2	

320-96818 Chain of Custody

Project Information	
Number:	102219-017
Name:	Sand Point DOT PFAS
Contact:	Kristen Freiburger
Ongoing Project?	Yes ☐ No ☐
Sampler:	CZH

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: Time: 1600	Signature: Time:	Signature: Time:
Printed Name: Christopher Hall Date: 2/14/23	Printed Name Date:	Printed Name: Date:
Company: Shannon & Wilson, Inc	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1241	Signature: Time:	Signature: Time:
Printed Name: Salvador Vazquez Date: 2/15/23	Printed Name Date:	Printed Name: Date:
Company: EE Tech	Company:	Company:

Notes:

Kristen.Freiburger@shanwil.com

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

5, yes

No.

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-96818-1

Login Number: 96818
List Number: 1
Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEALS
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	GEL PACKS
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Christopher Hall	**CS Site Name:**	N/A	**Lab Name:**	Eurofins Environment Testing
Title:	Environmental Scientist	**ADEC File No.:**	N/A	**Lab Report No.:**	320-96818-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	N/A	**Lab Report Date:**	3/3/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: The samples were submitted to the DEC certified Eurofins Environment Testing laboratory in West Sacramento for the analysis of PFAS. These compounds were included in the DEC's contaminated sites laboratory approval 17-020.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Sample analyses were not subcontracted or transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories version 5.3 Table B-15.
   Comments:

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): The cooler temperature was reported 5.4° C.
Sample temperature(s): A temperature blank was included with the samples in the cooler however, a temperature was not recorded.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: PFAS does not require any additional preservation beyond temperature control.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory noted that the samples arrived in good condition within the case narrative.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory did not note any discrepancies.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. This is associated with PFDA for sample SDP-102.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-654144.

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction with samples SDP-002 and SDP-102 preparation batch 320-654144.

Method 3535: The following samples were light yellow prior to extraction: SDP-001 and SDP-003 for preparation batch 320-654144.

Method 3535: During the solid phase extraction process, the following samples contained non-settable particulates which clogged the solid phase extraction column: SDP-002 and SDP-102 preparation batch 320-654144.

c. Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not note an effect on data quality or usability. See the following sections for our assessment.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LOQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments:

iii. If above LOQ or RL, what samples are affected?
Comments: There are no detections in the method blank associated with the project samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments:

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: N/A; the %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐
Comments: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate. Precision can be assessed with the LCS/LCSD.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments:

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐
Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability are not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LOQ or RL, what samples are affected?
Comments: N/A; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Field duplicate sample pair *SDP-002*/*SDP-102* was submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐
Comments: RPD are within project DQOs, where calculable.

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability are not affected.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Reusable equipment was not used; therefore, an equipment blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LOQ or RL, specify what samples are affected.
Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☐
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☐ No ☐ N/A ☒
Comments: The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. This is associated with PFDA for sample *SDP-102*. We consider this result to be estimated, biased high, and have flagged the datum with a “JH” in the analytical database.

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

February 15, 2023

Name
Address
Sand Point, AK 83864

RE: RESULTS OF 2023 PFAS WATER SUPPLY WELL SAMPLING, SAND POINT AIRPORT

Thank you for participating in our water supply well sampling program to evaluate the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Sand Point Airport (SDP). Shannon & Wilson, Inc. collected a water sample from your water supply well at address on date. We have also sent a copy of this letter to your tenant.

The water sample was analyzed for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and several other PFAS compounds. We compare these concentrations to the Alaska Department of Environmental Conservation (DEC) drinking water action level of 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by Eurofins Environment Testing indicate that PFOS was not detected, and PFOA was not detected in the groundwater sample from your well. Based on the laboratory results from this sampling event the sum of PFOS and PFOA for your water sample is XX ppt, which is above/below the DEC drinking water action level. *(Insert other detected PFAS)* were also detected in the sample; however, DEC has not promulgated groundwater or drinking water standards for this/these compounds. The portions of the original laboratory report that apply to your well (sample number *PW-039*) are enclosed for your records.

Shannon & Wilson has conducted this sampling event on behalf of the Alaska Department of Transportation and Public Facilities (DOT&PF). Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website.

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

If you have any questions regarding your results, please feel free to contact us.

Sincerely,

SHANNON & WILSON, INC.

Staff
Title

Enc: Select Pages of Test America Laboratory Report No. 320-96818-1
PFAS Fact Sheet – Sand Point Airport

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF Sand Point Airport Sitewide PFAS

File Number: 2646.38.008

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

PFAS has been detected in groundwater at the site, likely as a result of AFFF releases to the ground surface. PFAS affected soil is likely present.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

To our knowledge, no surface soil samples have been analyzed for PFAS at the Sand Point Airport. However, AFFF releases to the ground surface could cause soil contamination. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

PFAS were detected in groundwater at the site which could potentially be used as a drinking water.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Surface bodies in the airport vicinity are being used as a drinking water source. However, the potential exists and we consider this pathway potentially complete.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No surface soil samples have been collected at the SDP. However, AFFF was likely released to the ground surface on the lightly graveled runways that can be dusty in the summertime.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No sediment samples have been collected at the SDP. However, AFFF was likely release to the ground surface in unpaved and/or lightly graveled areas open to DOT&PF employees and the public. Additionally, local residents use subsistence practices (e.g., berry picking and fishing) that may expose them to sediment.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF Sand Point Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

Media	Transport Mechanisms
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil ☑ Migration to subsurface — check soil ☑ Migration to groundwater — check groundwater ☐ Volatilization — check air ☑ Runoff or erosion — check surface water ☑ Uptake by plants or animals — check biota ☐ Other (list):
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil ☑ Migration to groundwater — check groundwater ☐ Volatilization — check air ☑ Uptake by plants or animals — check biota ☐ Other (list):
☑ Ground-water	☑ Direct release to groundwater — check groundwater ☐ Volatilization — check air ☐ Flow to surface water body — check surface water ☐ Flow to sediment — check sediment ☐ Uptake by plants or animals — check biota ☐ Other (list):
☑ Surface Water	☑ Direct release to surface water — check surface water ☐ Volatilization — check air ☑ Sedimentation — check sediment ☑ Uptake by plants or animals — check biota ☐ Other (list):
☑ Sediment	☑ Direct release to sediment — check sediment ☑ Resuspension, runoff, or erosion — check surface water ☑ Uptake by plants or animals — check biota ☐ Other (list):

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F	C/F	C/F	
☑ groundwater	☑ Ingestion of Groundwater	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☐ Inhalation of Volatile Compounds in Tap Water							
☐ air	☐ Inhalation of Outdoor Air							
	☐ Inhalation of Indoor Air							
	☐ Inhalation of Fugitive Dust							
☑ surface water	☐ Ingestion of Surface Water							
	☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☐ Inhalation of Volatile Compounds in Tap Water							
☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	

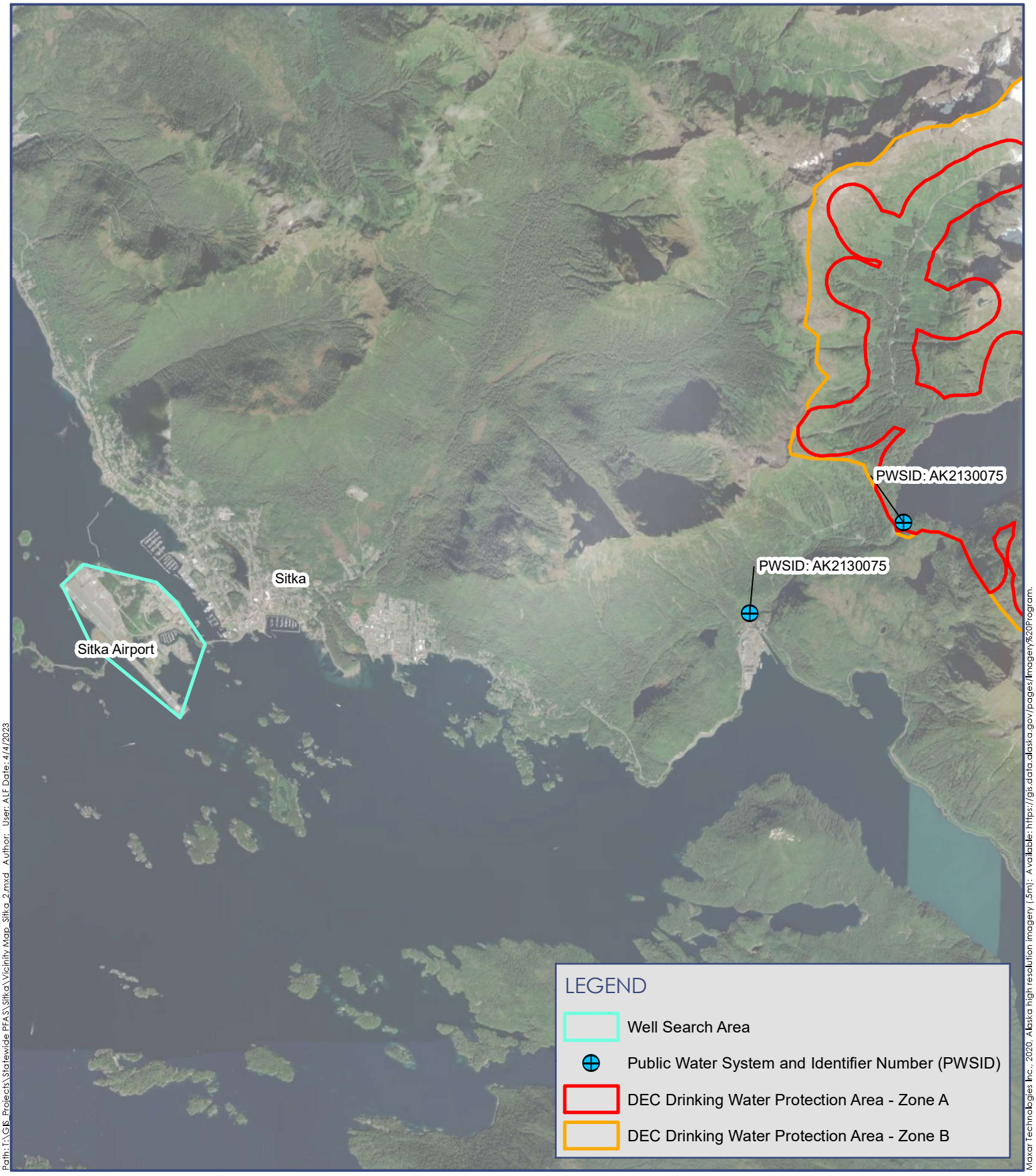
Revised, 10/01/2010

APPENDIX G: SITKA AIRPORT SUPPORTING DOCUMENTS

Appendix G

Sitka Airport Supporting Documents

CONTENTS



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Miles

January 2024

VICINITY MAP

Figure G1

Path: T:\GIS_Projects\Statewide PFAS\Sitka\Site Map_Sitka_2.mxd Author: User: ALF Date: 5/24/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/Imagery%20Program.

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0 1

Miles

January 2024

SITE MAP

Figure G2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

December 2022

Dear Property Owner or Occupant:

The Department of Transportation and Public Facilities (DOT&PF) is conducting a comprehensive evaluation of for per- and polyfluoroalkyl substances (PFAS) contamination at and near state-owned or state-operated airports. Due to requirements by the Federal Aviation Administration (FAA), firefighters at the Sitka Rocky Gutierrez Airport (SIT) have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, to extinguish hydrocarbon fires during training exercises and emergency events.

Out of an abundance of caution, the DOT&PF has contracted with environmental consulting firm, Shannon & Wilson, Inc. to sample water supply wells near airports across the state. We understand Sitka is primarily served by the City of Sitka Water Utility and that the surface water lake/s used as the source for the municipal water supply are not impacted by AFFF use at the Sitka Airport. However, you are receiving this letter as part of our efforts to identify water supply wells that may be in use near the SIT. For the City of Sitka, we have identified an area near the SIT where we are searching for water supply wells. This area is outlined on the enclosed map.

If you have an active well within the search area, please call Shannon & Wilson at (907) 458-3156 or complete the enclosed Water Supply Well Survey and return to:

Shannon & Wilson
c/o Kristen Freiburger
2355 Hill Road
Fairbanks, AK 99712
Or email: kristen.freiburger@shanwil.com

Water supply well sample results will be compared to the Alaska Department of Conservation drinking water action level of 70 parts per trillion for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two compounds within the PFAS family.

PFAS are emerging contaminants, and the research into the health effects of exposure to PFAS is ongoing. Results of water samples will be shared with property owners and residents. If your drinking-water well is found to have PFAS above the action level, DOT&PF will assist with access to alternative drinking water.

If you have any questions, please contact me, or see the enclosed contact list to identify the most appropriate person or agency for your inquiry. We appreciate your patience as we work through this process.

Sincerely,

Sammy Cummings
PFAS Program Manager, DOT&PF Statewide Aviation

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Water Supply Well Inventory Survey Form

Date: _____

Parcel: _____

Name (Owner): _____

Name (Occupant): _____

Physical Address: _____

Mailing Address: _____

Email Address (optional): _____

Contact Phone Number: (owner) _____ (occupant) _____

Number of persons residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: _____ Full-Time ☐ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Water Supply Utility ☐ b) Well Water ☐
   c) Water Delivery ☐ d) Other ☐

2) If you have a water well, please answer the following questions:
   a) Where is the well located on the property? _____
   b) Is the well in use? Yes ☐ No ☐
   c) If yes, please check all that apply regarding the usage of your well water:
      Drinking ☐ Cooking ☐ Gardening ☐ Pets ☐ Other _____
   d) If no, is the well usable, unusable, or properly abandoned?
      Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   e) When was the well installed? _____
   f) What is the well depth? _____ Do you have the well log? ☐ Yes ☐ No
   g) What is the well diameter? _____
   h) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   i) Do you have any treatment on your well (e.g. water softener)? Please describe. _____
      _____

3) Sample Permission
   Does the Alaska Department of Transportation & Public Facilities (DOT&PF) have permission to sample your private water well? ☐ Yes ☐ No

_____ _____
Signature Date

Path: T:\GIS_Projects\Statewide PFAS\Sitka\Site Map_Sitka.mxd Author: User: KRF Date: 10/5/2022

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/Imagery%20Program.

N

0 0.25

Miles

Notes:
1. AFFF: Aqueous Film Foarming Foam
2. Search area is approximate

October 2022

SITE MAP

Figure 2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet – Sitka Airport

November 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS groundwater contamination in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Department of Environmental Conservation (DEC) adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Dept. of Health
Sarah Yoder, Env. Public Health Program Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents with test results above the DEC drinking water action level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC drinking water action level, DOT&PF will assist with access to an alternate source of drinking water.

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF Sitka Airport Sitewide PFAS

File Number: 1525.38.061

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

To our knowledge, no surface soil samples have been analyzed at the site for PFAS. However, AFFF releases to the ground surface could cause soil contamination.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

AFFF releases to the ground surface could cause soil contamination. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Site assessment activities indicated there aren't any water supply wells on Japonski Island and installation of water wells is prohibited.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

It is unlikely the surface water near SIT would be used as a drinking water source. If our investigative efforts determine this to be false, we will update this CSM.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No surface soil samples have been collected at the SIT. However, AFFF was likely released to the ground surface on the lightly graveled runways that can be dusty in the summertime.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No sediment samples have been collected at the SIT. Due to the potential for residents to access potentially contaminated surface water bodies, this has been marked as a pathway in need of further evaluation.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF Sitka Airport - Statewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

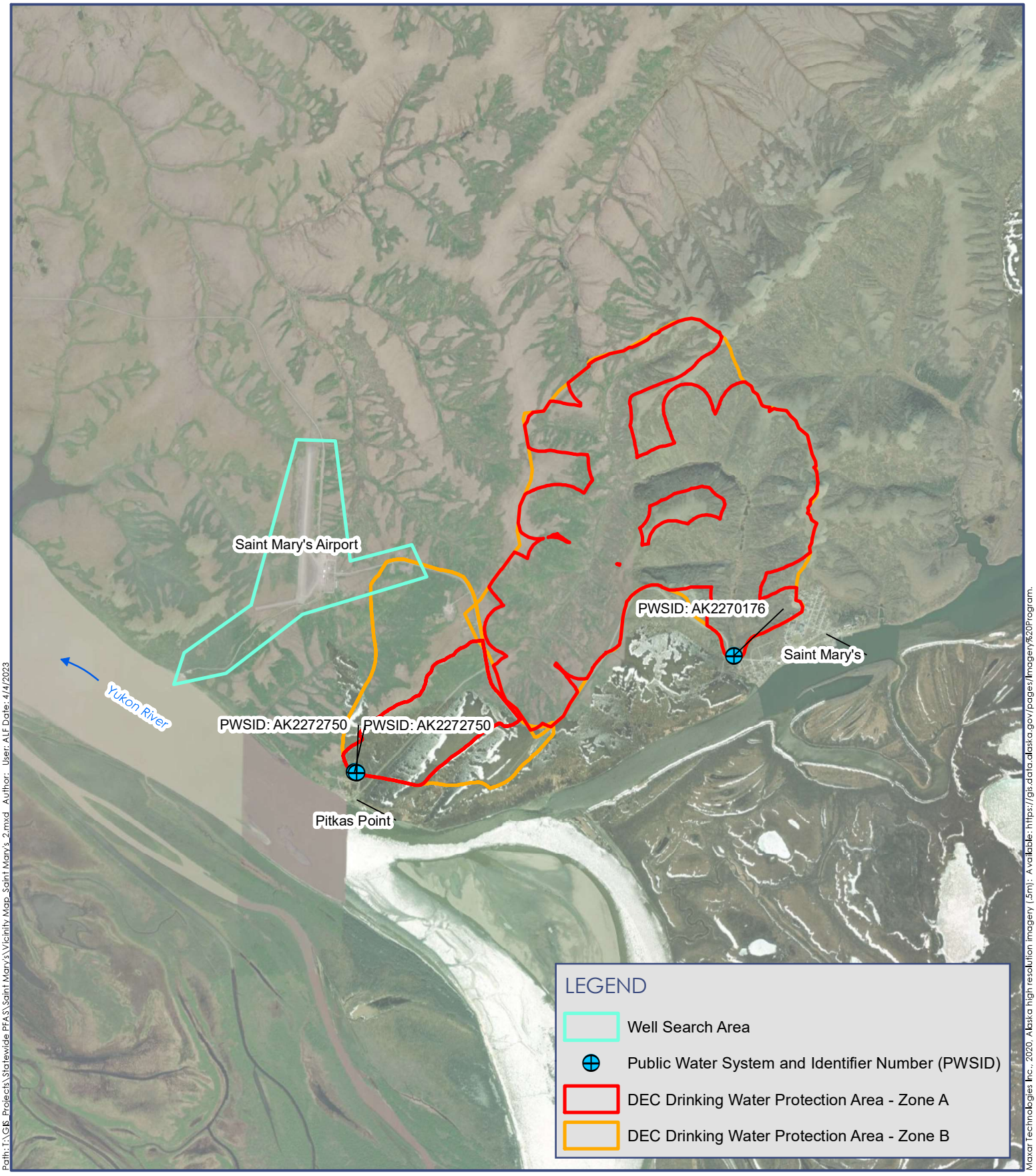
Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F			
	☐ Volatilization — check air	☑ groundwater	☐ Ingestion of Groundwater							
	☑ Runoff or erosion — check surface water		☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☑ Uptake by plants or animals — check biota		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Other (list):	☐ air	☐ Inhalation of Outdoor Air							
☑ Subsurface Soil (2-15 ft bgs)	Direct release to subsurface soil — check soil		☐ Inhalation of Indoor Air							
	☑ Migration to groundwater — check groundwater		☐ Inhalation of Fugitive Dust							
	☐ Volatilization — check air	☑ surface water	☐ Ingestion of Surface Water							
	☑ Uptake by plants or animals — check biota		☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☐ Other (list):		☐ Inhalation of Volatile Compounds in Tap Water							
☑ Ground-water	Direct release to groundwater — check groundwater	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Volatilization — check air	☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Flow to surface water body — check surface water									
	☐ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Surface Water	Direct release to surface water — check surface water									
	☐ Volatilization — check air									
	☑ Sedimentation — check sediment									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Sediment	Direct release to sediment — check sediment									
	☑ Resuspension, runoff, or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									

Revised, 10/01/2010

Appendix H

St. Mary's Airport Supporting Documents

CONTENTS



N

0 2
Miles

January 2024

VICINITY MAP

Figure H1

Path: I:\GIS_Projects\Statewide PFAS\Saint Mary's\Site Map_Saint Mary's_2.mxd Author: User: ALF Date: 5/22/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/imagery%20Program.

N

0 1

Miles

January 2024

SITE MAP

Figure H2

Path: I:\GIS_Projects\Statewide PFAS\Saint Mary's\St.Mary's Analytical Results Summary_2023 Report.mxd Author: User: DHF Date: 12/15/2023

Imagery provided by Maxar Products. Dynamic Mosaic © 2020 Maxar Technologies Inc., Alaska Geospatial Office, USGS; available: https://geoportal.alaska.gov/portal/home/item.html?id=b6cddaa8872a8458085e99defa723f168, accessed December 2023.

N

0 1,000
Feet

Notes:
1. AFFF: Aqueous Film Foaming Foam
2. Locations are approximate
3. Samples collected in February and August 2023
ng/L = nanograms per liter, equivalent to parts per trillion (ppt)

January 2024

HIGHEST SUM OF PFOS + PFOA

Figure H3

Table H1 — St. Mary's Water Supply Well Analytical Results - February 2023

Analytical Method	Analyte	Regulatory Limit	Units	KSM-005 2/24/2023	KSM-005 Duplicate
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	4.2	4.4
	Perfluorooctanoic acid (PFOA)		ng/L	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.6	<3.6
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.8	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	1.5J	1.6J
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	1.4J	1.5J
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.5	<4.5
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.5	<4.5

Notes:
Results reported from Eurofins Environment Testing work order 320-97213-1.
† Final EPA PFAS LHAs (HFPO-DA/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of quanittation (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.

Table H2 - St. Mary's Water Supply Well Analytical Results - August 2023

Analytical Method	Analyte	DEC Regulatory Limit	Units	*KSM-005* 8/28/2023
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	3.8
	Perfluorooctanoic acid (PFOA)		ng/L	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.6
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	1.3J
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	1.3J
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.4
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.4

Notes:
Results reported from Eurofins work order J104638-1.
† Final EPA PFAS LHAs (HFPO/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (LOQ). Flag applied by the laboratory.

Table H3 — St. Mary's Monitoring Well Analytical Results - February 2023

Analytical Method	Analyte	DEC Regulatory Limit	Units	SM-MW22-1 2/24/2023	SM-MW22-1 Duplicate	SM-MW22-2 2/24/2023
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	8.4	9.2	250
	Perfluorooctanoic acid (PFOA)	400	ng/L	<1.9	0.94J	7.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	N/A	ng/L	<3.8	<3.8	<3.8
	Perfluorobutanesulfonic acid (PFBS)	N/A	ng/L	0.63J	0.58J	13
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.9	<1.9	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.9	<1.9	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	0.35J	0.70J	2.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	5.0	5.0	120
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	4.7JH*	5.1	47
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.9	<1.9	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.9	<1.9	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.9	<1.9	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.9	<1.9	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.9	<1.9	<1.9
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.9	<1.9	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.9	<1.9	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.8	<4.7	<4.8
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.8	<4.7	<4.8

Notes:
Results reported from Eurofins Environment Testing work order 320-97213-1.
† Final EPA PFAS LHAs (HFPO-DA/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of quanittation (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
JH* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

Table H4 - St. Mary's Monitoring Well Analytical Results - August 2023

Analytical Method	Analyte	DEC Regulatory Limit	Units	SM-MW22-1 8/31/2023	SM-MW22-2 8/31/2023	SM-MW23-3 Primary 8/30/2023	SM-MW23-3 Duplicate 8/30/2023	SM-MW23-4 8/30/2023	SM-TWP23-1 8/28/2023
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	400	ng/L	50	**1,200**	280	280	67	270 J*
	Perfluorooctanoic acid (PFOA)	400	ng/L	2.1	18	7.1	7.0	6.6	6.0 J*
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	N/A	ng/L	<3.5	<3.5	<3.6	<3.6	<3.5	<3.4 J*
	Perfluorobutanesulfonic acid (PFBS)	N/A	ng/L	1.7J	25	9.9	9.7	3.4	8.5 J*
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	0.98J	6.7	3.0	2.8	3.7	2.8 J*
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	19	320	130	120	59	110 J*
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	5.3	66	34	32	10	35 J*
	Perfluorononanoic acid (PFNA)	N/A	ng/L	0.29J	0.91J	<1.8	<1.8	0.35J	0.26 J*
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.7	<1.8	<1.8	<1.7	<1.7 J*
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.4	<4.3	<4.5	<4.5	<4.4	<4.3 J*
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.4	<4.3	<4.5	<4.5	<4.4	<4.3 J*

Notes:
Results reported from Eurofins work order J104638-1.

DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
Bold The detected concentration exceeds the regulatory limit for the associated analyte.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (LOQ). Flag applied by the laboratory.
J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

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PFAS Fact Sheet –St. Mary's Airport

March 2023

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents/businesses with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

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PFAS Fact Sheet –St. Mary's Airport

August 2023

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Website: www.dot.alaska.gov/airportwater/

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Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Andrew Cyr, Public Health Specialist
Phone: 907-269-8054
Email: andrew.cyr@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents/businesses with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

LOG OF BORING

Date Started 7/19/22	**Location** Approximately 8.5 feet East from the Former SM-IW-2 Location	**Ground Elevation:** 323.6
Date Completed 7/19/22		**Typical Run Length** 5 feet
Total Depth (ft) 22.0	**Drilling Company:** GeoTek Alaska	**Hole Diameter:** 2 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
		Olive-gray, *Silty Gravel (GM)*; moist.			0.2 0			
5		Yellow-brown, *Silt with Sand (ML)*; moist.	5.0					5
		Olive-brown, *Silty Gravel (GM)*; moist.	5.6		0.3 0.2			
10	G	Light gray-brown, *Poorly Graded Gravel with Sand (GP)*; moist.	10.0		0.6			10
		REFUSAL AT 11.5' Next Macrocore run interval: 17' to 22'	11.5		0.6		*SM22-SB02-2 (10' to 11.5')*	
15								15
		Dark gray, *Silty Gravel with Sand (GM)*; moist.	17.0		0		*SM22-SB02-3 (17' to 17.6')*	
20								20
			22.0					
25		BORING COMPLETED 7/19/2022 Monitoring Well SM-MW22-1 Completed 7/26/2022 Construction Details: Flush-mount Monument Top of Casing Elevation: 323.35 feet 2-inch Diameter PVC Riser Pipe 20/40 Gradation Silica Sand Pre-pack Screen Interval: 17 to 27 feet bgs Total Depth of Well: 27.1 feet bgs						25
30								30

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Piezometer Screen and Sand Filter

DOT&PF Saint Mary's Airport Maintenance Station
2022 Site Characterization Report
Saint Mary's, Alaska

LOG OF BORING SM22-SB02

March 2023 31-1-11729-110

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure 7

REV 2 - Log in Progress

GEOPROBE WELL 31-1-11729-110 2022.GPJ 21-20447.GPJ 1/12/23 Rev: JAS Typ: MGM

LOG OF BORING

Date Started 7/18/22	**Location** On the North Side of the 3-Bay Building	**Ground Elevation:** 325.5
Date Completed 7/18/22		**Typical Run Length** 5 feet
Total Depth (ft) 21.0	**Drilling Company:** GeoTek Alaska	**Hole Diameter:** 2 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
		Gray, *Poorly Graded Gravel with Silt and Sand (GP-GM)*; moist.			0.5			
5		Gray, *Silty Gravel (GM)*; moist; with dark red-brown organic layers.	5.0		0.4			5
		Olive-brown, *Silty Gravel with Sand (GM)*; moist.	6.2		0.4			
10	G	Dark gray, *Poorly Graded Gravel with Sand (GP)*; wet.	10.0		0.7	During Drilling	*SM22-SB06-1 (10' to 11.5')*	10
	G				22.3		*SM22-SB06-2 (12.5' to 13.5')*	
15		REFUSAL AT 15.5'	15.5					15
		Next Macrocore run interval: 17' to 21'	17.0		1.3			
	G	Dark gray, *Poorly Graded Gravel with Sand (GP)*; wet.					*SM22-SB06-3 (17' to 18.6')*	
20			21.0					20
		BORING COMPLETED 7/18/2022						
		Monitoring Well SM-MW22-2 Completed 7/25/2022						
25		Construction Details: Flush-mount Monument Top of Casing Elevation: 324.93 feet 2-inch Diameter PVC Riser Pipe 20/40 Gradation Silica Sand Pre-pack						25
30		Screen Interval: 16 to 26 feet bgs Total Depth of Well: 26.4 feet bgs						30

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Piezometer Screen and Sand Filter
Ground Water Level ATD

DOT&PF Saint Mary's Airport Maintenance Station
2022 Site Characterization Report
Saint Mary's, Alaska

LOG OF BORING SM22-SB06

March 2023 31-1-11729-110

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Figure 11

REV 2 - Log in Progress

GEOPROBE WELL 31-1-11729-110 2022.GPJ 21-20447.GPJ 1/12/23 Typ: MGM Rev: JAS

SHANNON & WILSON

GEOPROBE LOG

DOT UIC
Saint Mary's Airport Maintenance Station

SM23-SB03

EXPLORATION INFORMATION

Total Depth:	*22 feet*
Top Elevation:	*n/a*
Vertical Datum:	*Mean Sea Level*
Northing:	
Easting:	
Horizontal Datum:	*n/a*

PROBING INFORMATION

Geoprobe Company:	*Discovery Drilling*
Geoprobe Equipment:	*7822 DT*
Sampling System:	*Dual Tube*
Hole Diameter:	*4 inch*
Date Completed:	*August 29, 2023*

BASIC LEGEND

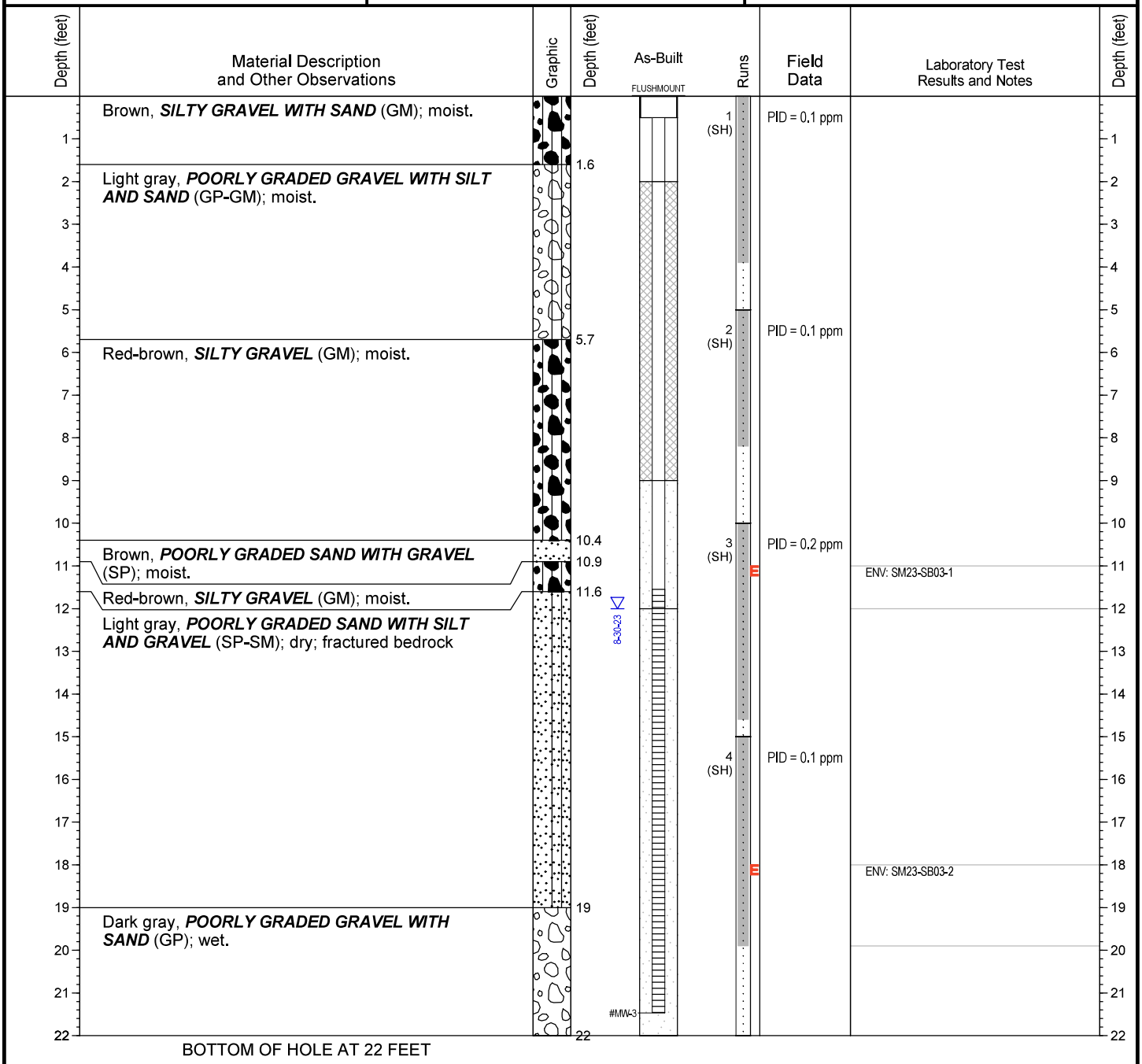
(See separate LOG KEY for additional symbols, acronyms, and definitions)

Symbols

Run Number / Sample Type → 5 (SH) — Gray bar indicates percent of sample length recovered
Groundwater Level During Probing
Sample Location for Analytical Testing

Abbreviations

bgs	below ground surface	GE	Geotechnical sample
CT	Corrosion test sample	SH	Plastic sheath
EN	Environmental sample	TR	Thermal resistivity sample



NOTES:
- Refer to LOG KEY for explanation of symbols, codes, abbreviations, and definitions.
- Where recovery was low in the upper part of the run, the soil sample may have slid down the tube prior to removal from the ground.
- Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
- Group symbol is based on visual-manual identification and selected lab testing.
- Report text contains limitations and information needed to contextually understand this log.

FINAL

Logged by:	DHF
Review by:	DHF
Version:	1

Job#: 31-1-11729-110 | Template Ver:1 | File: 31-1-11729-113.GPJ | Rpt: GEOPROBE ENVIRO | Library: SW GINT LIBRARY.GLB | Date: 11/7/23

SHANNON & WILSON

GEOPROBE LOG

DOT UIC
Saint Mary's Airport Maintenance Station

SM23-SB04

EXPLORATION INFORMATION

Total Depth:	22 feet
Top Elevation:	n/a
Vertical Datum:	Mean Sea Level
Northing:	
Easting:	
Horizontal Datum:	n/a

PROBING INFORMATION

Geoprobe Company:	Discovery Drilling
Geoprobe Equipment:	7822 DT
Sampling System:	Dual Tube
Hole Diameter:	4 inch
Date Completed:	August 29, 2023

BASIC LEGEND

(See separate LOG KEY for additional symbols, acronyms, and definitions)

Symbols

Run Number → 5
Sample Type → (SH)
Gray bar indicates percent of sample length recovered
Groundwater Level During Probing
Sample Location for Analytical Testing

Abbreviations

bgs	below ground surface	GE	Geotechnical sample
CT	Corrosion test sample	SH	Plastic sheath
EN	Environmental sample	TR	Thermal resistivity sample

Depth (feet)	Material Description and Other Observations	Graphic	Depth (feet)	As-Built	Runs	Field Data	Laboratory Test Results and Notes	Depth (feet)
0–3	Brown, ***POORLY GRADED GRAVEL WITH SILT AND SAND*** (GP-GM); moist.			FLUSHMOUNT	1 (SH)	PID = 0.2 ppm		
3–4	Red-brown, ***SILTY GRAVEL WITH SAND*** (GM); moist.		3 – 3.5					
5	Red-brown, ***POORLY GRADED GRAVEL WITH SAND*** (GP); dry; fractured bedrock.		5		2 (SH)	PID = 0.1 ppm		
6	Brown, ***POORLY GRADED SAND WITH GRAVEL*** (SP); dry; fractured bedrock.		6					
7–10	Red-brown to gray, ***SILTY GRAVEL WITH SAND*** (GM); moist; fractured bedrock.		10	8-29-23	3 (SH)	PID = 0 ppm	ENV: SM23-SB04-1	
11–15	Light gray, ***POORLY GRADED SAND WITH GRAVEL WITH COBBLES*** (SP); dry; fractured bedrock.		15		4 (SH)	PID = 0 ppm	ENV: SM23-SB04-2	
16–22	Brown to light gray, ***POORLY GRADED GRAVEL WITH SAND*** (GP); moist to wet; fractured bedrock.		22	#MW-4				

BOTTOM OF HOLE AT 22 FEET

NOTES:
- Refer to LOG KEY for explanation of symbols, codes, abbreviations, and definitions.
- Where recovery was low in the upper part of the run, the soil sample may have slid down the tube prior to removal from the ground.
- Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
- Group symbol is based on visual-manual identification and selected lab testing.
- Report text contains limitations and information needed to contextually understand this log.

FINAL

Logged by:	DHF
Review by:	DHF
Version:	1

Job#: 31-1-11729-110 | Template Ver:1 | File: 31-1-11729-113.GPJ | Rpt: GEOPROBE ENVIRO | Library: SW GINT LIBRARY.GLB | Date: 11/7/23

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 3/19/2023 5:19:43 PM

JOB DESCRIPTION

St. Mary's WSW

JOB NUMBER

320-97213-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

myEOL

Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

Generated
3/19/2023 5:19:43 PM

Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-97213-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-97213-1

Receipt
The samples were received on 2/28/2023 3:55 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.4º C.

LCMS
Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. MW-1 (320-97213-1)

Method EPA 537(Mod): The low level continuing calibration verification (CCVL) associated with batch 320-660487 recovered above the upper control limit for Perfluorohexanesulfonic acid (PFHxS). The samples associated with this CCVL
are bracketed by continuing calibration verifications (CCVs) which are in control for this analyte. (CCVL 320-660487/5)

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 320-658365.

Method 3535: The following samples were brown and contained a thin layer of sediment at the bottom of the bottle prior to extraction: MW-1 (320-97213-1) and MW-2 (320-97213-3).
preparation batch 320-658365

Method 3535: Due to the thin layer of sediment at the bottom of the bottle, the following samples were centrifuged and decanted into new 250 mL container: MW-1 (320-97213-1) and MW-2 (320-97213-3). After centrifuging and decanting, the samples were fortified with IDA and then extracted.
preparation batch 320-658365

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-659712.

Method 3535: The following samples in preparation batch 320-659712 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. GAC (320-97213-6)

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: MW-1 — Lab Sample ID: 320-97213-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	4.7	I	1.9	0.55	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.35		1.9	0.24	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.63		1.9	0.19	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.0		1.9	0.54	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.4		1.9	0.51	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MW-101 — Lab Sample ID: 320-97213-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.1		1.9	0.55	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.70		1.9	0.24	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.94		1.9	0.80	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.58		1.9	0.19	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.0		1.9	0.54	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.2		1.9	0.51	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: MW-2 — Lab Sample ID: 320-97213-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	47		1.9	0.55	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9		1.9	0.24	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	7.9		1.9	0.81	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	13		1.9	0.19	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	120		1.9	0.54	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	250		1.9	0.52	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: KSM-005 — Lab Sample ID: 320-97213-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.4		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.2		1.8	0.48	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: KSM-105 — Lab Sample ID: 320-97213-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.5		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.4		1.8	0.49	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: GAC — Lab Sample ID: 320-97213-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.5	J B	1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	11		1.8	0.49	ng/L	1	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: MW-1

Date Collected: 02/24/23 11:04
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-1

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**4.7**	**I**	1.9	0.55	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluoroheptanoic acid (PFHpA)	**0.35**	**J**	1.9	0.24	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorobutanesulfonic acid (PFBS)	**0.63**	**J**	1.9	0.19	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorohexanesulfonic acid (PFHxS)	**5.0**		1.9	0.54	ng/L		03/06/23 06:36	03/08/23 20:43	1
Perfluorooctanesulfonic acid (PFOS)	**8.4**		1.9	0.51	ng/L		03/06/23 06:36	03/08/23 20:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		03/06/23 06:36	03/08/23 20:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		03/06/23 06:36	03/08/23 20:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		03/06/23 06:36	03/08/23 20:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		03/06/23 06:36	03/08/23 20:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		03/06/23 06:36	03/08/23 20:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		03/06/23 06:36	03/08/23 20:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C4 PFHpA	*106*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C4 PFOA	*104*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C5 PFNA	*107*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C2 PFDA	*105*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C2 PFUnA	*103*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C2 PFDoA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C2 PFTeDA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C3 PFBS	*97*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
18O2 PFHxS	*103*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C4 PFOS	*103*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
d3-NMeFOSAA	*97*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
d5-NEtFOSAA	*103*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*
13C3 HFPO-DA	*95*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:43*	*1*

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: MW-101

Date Collected: 02/24/23 10:54
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-2

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**5.1**		1.9	0.55	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluoroheptanoic acid (PFHpA)	**0.70**	**J**	1.9	0.24	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorooctanoic acid (PFOA)	**0.94**	**J**	1.9	0.80	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorobutanesulfonic acid (PFBS)	**0.58**	**J**	1.9	0.19	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorohexanesulfonic acid (PFHxS)	**5.0**		1.9	0.54	ng/L		03/06/23 06:36	03/08/23 20:53	1
Perfluorooctanesulfonic acid (PFOS)	**9.2**		1.9	0.51	ng/L		03/06/23 06:36	03/08/23 20:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		03/06/23 06:36	03/08/23 20:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		03/06/23 06:36	03/08/23 20:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		03/06/23 06:36	03/08/23 20:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		03/06/23 06:36	03/08/23 20:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		03/06/23 06:36	03/08/23 20:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		03/06/23 06:36	03/08/23 20:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C4 PFHpA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C4 PFOA	*105*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C5 PFNA	*100*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C2 PFDA	*95*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C2 PFUnA	*89*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C2 PFDoA	*78*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C2 PFTeDA	*75*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C3 PFBS	*89*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
18O2 PFHxS	*97*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C4 PFOS	*91*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
d3-NMeFOSAA	*84*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
d5-NEtFOSAA	*83*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	
13C3 HFPO-DA	*92*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:53*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: MW-2

Date Collected: 02/24/23 13:15
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-3

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**47**		1.9	0.55	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluoroheptanoic acid (PFHpA)	**2.9**		1.9	0.24	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorooctanoic acid (PFOA)	**7.9**		1.9	0.81	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorobutanesulfonic acid (PFBS)	**13**		1.9	0.19	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorohexanesulfonic acid (PFHxS)	**120**		1.9	0.54	ng/L		03/06/23 06:36	03/08/23 21:03	1
Perfluorooctanesulfonic acid (PFOS)	**250**		1.9	0.52	ng/L		03/06/23 06:36	03/08/23 21:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		03/06/23 06:36	03/08/23 21:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		03/06/23 06:36	03/08/23 21:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		03/06/23 06:36	03/08/23 21:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		03/06/23 06:36	03/08/23 21:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		03/06/23 06:36	03/08/23 21:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		03/06/23 06:36	03/08/23 21:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C4 PFHpA	*107*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C4 PFOA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C5 PFNA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C2 PFDA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C2 PFUnA	*104*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C2 PFDoA	*100*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C2 PFTeDA	*96*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C3 PFBS	*91*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
18O2 PFHxS	*97*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C4 PFOS	*92*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
d3-NMeFOSAA	*89*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
d5-NEtFOSAA	*98*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	
13C3 HFPO-DA	*91*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:03*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: KSM-005

Date Collected: 02/24/23 09:41
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-4

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.4**	**J**	1.8	0.52	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorohexanesulfonic acid (PFHxS)	**1.5**	**J**	1.8	0.51	ng/L		03/06/23 06:36	03/08/23 21:13	1
Perfluorooctanesulfonic acid (PFOS)	**4.2**		1.8	0.48	ng/L		03/06/23 06:36	03/08/23 21:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/06/23 06:36	03/08/23 21:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/06/23 06:36	03/08/23 21:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		03/06/23 06:36	03/08/23 21:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		03/06/23 06:36	03/08/23 21:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/06/23 06:36	03/08/23 21:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/06/23 06:36	03/08/23 21:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C4 PFHpA	*104*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C4 PFOA	*106*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C5 PFNA	*104*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C2 PFDA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C2 PFUnA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C2 PFDoA	*100*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C2 PFTeDA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C3 PFBS	*94*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
18O2 PFHxS	*100*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C4 PFOS	*98*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
d3-NMeFOSAA	*96*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
d5-NEtFOSAA	*97*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	
13C3 HFPO-DA	*94*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:13*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: KSM-105

Date Collected: 02/24/23 09:31
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-5

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.5**	**J**	1.8	0.52	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J**	1.8	0.51	ng/L		03/06/23 06:36	03/08/23 21:23	1
Perfluorooctanesulfonic acid (PFOS)	**4.4**		1.8	0.49	ng/L		03/06/23 06:36	03/08/23 21:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/06/23 06:36	03/08/23 21:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/06/23 06:36	03/08/23 21:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/06/23 06:36	03/08/23 21:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		03/06/23 06:36	03/08/23 21:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/06/23 06:36	03/08/23 21:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/06/23 06:36	03/08/23 21:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C4 PFHpA	*103*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C4 PFOA	*106*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C5 PFNA	*107*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C2 PFDA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C2 PFUnA	*100*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C2 PFDoA	*99*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C2 PFTeDA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C3 PFBS	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
18O2 PFHxS	*103*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C4 PFOS	*99*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
d3-NMeFOSAA	*95*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
d5-NEtFOSAA	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	
13C3 HFPO-DA	*96*		*50 - 150*	*03/06/23 06:36*	*03/08/23 21:23*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: GAC

Date Collected: 02/24/23 14:15
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-6

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorohexanesulfonic acid (PFHxS)	**1.5**	**J B**	1.8	0.51	ng/L		03/09/23 19:11	03/13/23 22:02	1
Perfluorooctanesulfonic acid (PFOS)	**11**		1.8	0.49	ng/L		03/09/23 19:11	03/13/23 22:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/09/23 19:11	03/13/23 22:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/09/23 19:11	03/13/23 22:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/09/23 19:11	03/13/23 22:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		03/09/23 19:11	03/13/23 22:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/09/23 19:11	03/13/23 22:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/09/23 19:11	03/13/23 22:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C4 PFHpA	*86*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C4 PFOA	*86*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C5 PFNA	*86*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C2 PFDA	*83*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C2 PFUnA	*81*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C2 PFDoA	*72*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C2 PFTeDA	*69*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C3 PFBS	*84*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
18O2 PFHxS	*81*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C4 PFOS	*78*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
d3-NMeFOSAA	*72*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
d5-NEtFOSAA	*71*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*
13C3 HFPO-DA	*87*		*50 - 150*	*03/09/23 19:11*	*03/13/23 22:02*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-97213-1	MW-1	104	106	104	107	105	103	102	101
320-97213-2	MW-101	102	101	105	100	95	89	78	75
320-97213-3	MW-2	102	107	102	101	101	104	100	96
320-97213-4	KSM-005	103	104	106	104	102	101	100	101
320-97213-5	KSM-105	104	103	106	107	102	100	99	101
320-97213-6	GAC	90	86	86	86	83	81	72	69
LCS 320-658365/2-A	Lab Control Sample	105	108	103	105	106	102	102	98
LCS 320-659712/2-A	Lab Control Sample	109	111	106	110	110	107	102	101
LCSD 320-658365/3-A	Lab Control Sample Dup	105	109	106	105	104	106	101	95
LCSD 320-659712/3-A	Lab Control Sample Dup	108	106	103	104	106	100	99	93
MB 320-658365/1-A	Method Blank	100	104	105	102	107	102	99	91
MB 320-659712/1-A	Method Blank	110	106	106	108	107	110	100	95

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-97213-1	MW-1	97	103	103	97	103	95
320-97213-2	MW-101	89	97	91	84	83	92
320-97213-3	MW-2	91	97	92	89	98	91
320-97213-4	KSM-005	94	100	98	96	97	94
320-97213-5	KSM-105	101	103	99	95	101	96
320-97213-6	GAC	84	81	78	72	71	87
LCS 320-658365/2-A	Lab Control Sample	101	101	97	98	96	101
LCS 320-659712/2-A	Lab Control Sample	106	106	104	98	100	112
LCSD 320-658365/3-A	Lab Control Sample Dup	98	103	98	96	98	99
LCSD 320-659712/3-A	Lab Control Sample Dup	96	100	97	92	93	104
MB 320-658365/1-A	Method Blank	94	101	95	91	90	96
MB 320-659712/1-A	Method Blank	102	102	104	105	101	109

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-658365/1-A
Matrix: Water
Analysis Batch: 659314

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 658365

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		03/06/23 06:36	03/08/23 20:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		03/06/23 06:36	03/08/23 20:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		03/06/23 06:36	03/08/23 20:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		03/06/23 06:36	03/08/23 20:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		03/06/23 06:36	03/08/23 20:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		03/06/23 06:36	03/08/23 20:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		03/06/23 06:36	03/08/23 20:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		03/06/23 06:36	03/08/23 20:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C4 PFHpA	*104*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C4 PFOA	*105*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C5 PFNA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C2 PFDA	*107*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C2 PFUnA	*102*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C2 PFDoA	*99*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C2 PFTeDA	*91*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C3 PFBS	*94*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
18O2 PFHxS	*101*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C4 PFOS	*95*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
d3-NMeFOSAA	*91*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
d5-NEtFOSAA	*90*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	
13C3 HFPO-DA	*96*		*50 - 150*	*03/06/23 06:36*	*03/08/23 20:13*	

Lab Sample ID: LCS 320-658365/2-A
Matrix: Water
Analysis Batch: 659314

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 658365

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		102	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	39.6		ng/L		99	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.8		ng/L		107	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.5		ng/L		104	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-658365/2-A
Matrix: Water
Analysis Batch: 659314

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 658365

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	38.9		ng/L		97	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	45.7		ng/L		114	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.8		ng/L		105	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	40.5		ng/L		101	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	37.0		ng/L		104	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.3		ng/L		97	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.5		ng/L		106	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.1		ng/L		98	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.2		ng/L		108	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.5		ng/L		103	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.0		ng/L		98	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	38.2		ng/L		101	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.9		ng/L		119	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*105*		*50 - 150*
13C4 PFHpA	*108*		*50 - 150*
13C4 PFOA	*103*		*50 - 150*
13C5 PFNA	*105*		*50 - 150*
13C2 PFDA	*106*		*50 - 150*
13C2 PFUnA	*102*		*50 - 150*
13C2 PFDoA	*102*		*50 - 150*
13C2 PFTeDA	*98*		*50 - 150*
13C3 PFBS	*101*		*50 - 150*
18O2 PFHxS	*101*		*50 - 150*
13C4 PFOS	*97*		*50 - 150*
d3-NMeFOSAA	*98*		*50 - 150*
d5-NEtFOSAA	*96*		*50 - 150*
13C3 HFPO-DA	*101*		*50 - 150*

Lab Sample ID: LCSD 320-658365/3-A
Matrix: Water
Analysis Batch: 659314

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 658365

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.4		ng/L		101	72 - 129	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.7		ng/L		99	72 - 130	0	30
Perfluorooctanoic acid (PFOA)	40.0	41.1		ng/L		103	71 - 133	4	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-658365/3-A
Matrix: Water
Analysis Batch: 659314

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 658365

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	41.5		ng/L		104	69 - 130	0	30
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		100	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.9		ng/L		107	69 - 133	6	30
Perfluorododecanoic acid (PFDoA)	40.0	42.4		ng/L		106	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	39.7		ng/L		99	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	71 - 132	5	30
Perfluorobutanesulfonic acid (PFBS)	35.5	36.9		ng/L		104	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.4		ng/L		94	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.7		ng/L		107	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.6		ng/L		99	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.6		ng/L		104	61 - 135	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.9		ng/L		104	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		100	72 - 132	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	38.8		ng/L		103	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.2		ng/L		112	81 - 141	6	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*105*		*50 - 150*
13C4 PFHpA	*109*		*50 - 150*
13C4 PFOA	*106*		*50 - 150*
13C5 PFNA	*105*		*50 - 150*
13C2 PFDA	*104*		*50 - 150*
13C2 PFUnA	*106*		*50 - 150*
13C2 PFDoA	*101*		*50 - 150*
13C2 PFTeDA	*95*		*50 - 150*
13C3 PFBS	*98*		*50 - 150*
18O2 PFHxS	*103*		*50 - 150*
13C4 PFOS	*98*		*50 - 150*
d3-NMeFOSAA	*96*		*50 - 150*
d5-NEtFOSAA	*98*		*50 - 150*
13C3 HFPO-DA	*99*		*50 - 150*

Lab Sample ID: MB 320-659712/1-A
Matrix: Water
Analysis Batch: 660487

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 659712

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		03/09/23 19:11	03/13/23 20:51	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: MB 320-659712/1-A
Matrix: Water
Analysis Batch: 660487

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 659712

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorohexanesulfonic acid (PFHxS)	0.603	J	2.0	0.57	ng/L		03/09/23 19:11	03/13/23 20:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		03/09/23 19:11	03/13/23 20:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		03/09/23 19:11	03/13/23 20:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		03/09/23 19:11	03/13/23 20:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		03/09/23 19:11	03/13/23 20:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		03/09/23 19:11	03/13/23 20:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		03/09/23 19:11	03/13/23 20:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		03/09/23 19:11	03/13/23 20:51	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*110*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C4 PFHpA	*106*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C4 PFOA	*106*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C5 PFNA	*108*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C2 PFDA	*107*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C2 PFUnA	*110*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C2 PFDoA	*100*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C2 PFTeDA	*95*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C3 PFBS	*102*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
18O2 PFHxS	*102*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C4 PFOS	*104*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
d3-NMeFOSAA	*105*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
d5-NEtFOSAA	*101*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*
13C3 HFPO-DA	*109*		*50 - 150*	*03/09/23 19:11*	*03/13/23 20:51*	*1*

Lab Sample ID: LCS 320-659712/2-A
Matrix: Water
Analysis Batch: 660487

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 659712

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.5		ng/L		96	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.7		ng/L		102	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.2		ng/L		100	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.0		ng/L		102	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	40.2		ng/L		101	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.7		ng/L		104	69 - 133

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-659712/2-A
Matrix: Water
Analysis Batch: 660487

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 659712

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluorododecanoic acid (PFDoA)			40.0	41.8		ng/L		104	72 - 134		
Perfluorotridecanoic acid (PFTriA)			40.0	42.5		ng/L		106	65 - 144		
Perfluorotetradecanoic acid (PFTeA)			40.0	38.8		ng/L		97	71 - 132		
Perfluorobutanesulfonic acid (PFBS)			35.5	36.0		ng/L		101	72 - 130		
Perfluorohexanesulfonic acid (PFHxS)			36.5	36.4		ng/L		100	68 - 131		
Perfluorooctanesulfonic acid (PFOS)			37.2	38.3		ng/L		103	65 - 140		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	37.1		ng/L		93	65 - 136		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	38.1		ng/L		95	61 - 135		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	39.4		ng/L		105	77 - 137		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	40.9		ng/L		102	72 - 132		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	37.1		ng/L		98	76 - 136		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	42.4		ng/L		112	81 - 141		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*109*		*50 - 150*
13C4 PFHpA			*50 - 150*
13C4 PFOA	*106*		*50 - 150*
13C5 PFNA	*10*		*50 - 150*
13C2 PFDA	*10*		*50 - 150*
13C2 PFUnA	*107*		*50 - 150*
13C2 PFDoA	*102*		*50 - 150*
13C2 PFTeDA	*101*		*50 - 150*
13C3 PFBS	*106*		*50 - 150*
18O2 PFHxS	*106*		*50 - 150*
13C4 PFOS	*104*		*50 - 150*
d3-NMeFOSAA	*98*		*50 - 150*
d5-NEtFOSAA	*100*		*50 - 150*
13C3 HFPO-DA	*12*		*50 - 150*

Lab Sample ID: LCSD 320-659712/3-A
Matrix: Water
Analysis Batch: 660487

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 659712

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			40.0	39.9		ng/L		100	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)			40.0	44.1		ng/L		110	72 - 130	8	30
Perfluorooctanoic acid (PFOA)			40.0	43.9		ng/L		110	71 - 133	9	30
Perfluorononanoic acid (PFNA)			40.0	44.2		ng/L		111	69 - 130	8	30
Perfluorodecanoic acid (PFDA)			40.0	43.4		ng/L		108	71 - 129	7	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-659712/3-A
Matrix: Water
Analysis Batch: 660487

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 659712

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)			40.0	46.4		ng/L		116	69 - 133	11	30
Perfluorododecanoic acid (PFDoA)			40.0	41.3		ng/L		103	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)			40.0	43.2		ng/L		108	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)			40.0	43.9		ng/L		110	71 - 132	12	30
Perfluorobutanesulfonic acid (PFBS)			35.5	41.2		ng/L		116	72 - 130	13	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	38.9		ng/L		107	68 - 131	7	30
Perfluorooctanesulfonic acid (PFOS)			37.2	38.9		ng/L		105	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	41.9		ng/L		105	65 - 136	12	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	43.1		ng/L		108	61 - 135	12	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	42.8		ng/L		114	77 - 137	8	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	44.2		ng/L		110	72 - 132	8	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	41.9		ng/L		111	76 - 136	12	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	45.0		ng/L		119	81 - 141	6	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*108*		*50 - 150*
13C4 PFHpA	*106*		*50 - 150*
13C4 PFOA	*103*		*50 - 150*
13C5 PFNA	*104*		*50 - 150*
13C2 PFDA	*106*		*50 - 150*
13C2 PFUnA	*100*		*50 - 150*
13C2 PFDoA	*99*		*50 - 150*
13C2 PFTeDA	*93*		*50 - 150*
13C3 PFBS	*96*		*50 - 150*
18O2 PFHxS	*100*		*50 - 150*
13C4 PFOS	*97*		*50 - 150*
d3-NMeFOSAA	*92*		*50 - 150*
d5-NEtFOSAA	*93*		*50 - 150*
13C3 HFPO-DA	*104*		*50 - 150*

LCMS

Prep Batch: 658365

Lab Sampl e ID	Client Sampl e ID	Prep Type	Matrix	Method	Prep Batch
320-97213-1	MW-1	Total/NA	Water	3535	
320-97213-2	MW-101	Total/NA	Water	3535	
320-97213-3	MW-2	Total/NA	Water	3535	
320-97213-4	KSM-005	Total/NA	Water	3535	
320-97213-5	KSM-105	Total/NA	Water	3535	
MB 320-658365/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-658365/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-658365/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Anal ysis Batch: 659314

Lab Sampl e ID	Client Sampl e ID	Prep Type	Matrix	Method	Prep Batch
320-97213-1	MW-1	Total/NA	Water	EPA 537(Mod)	658365
320-97213-2	MW-101	Total/NA	Water	EPA 537(Mod)	658365
320-97213-3	MW-2	Total/NA	Water	EPA 537(Mod)	658365
320-97213-4	KSM-005	Total/NA	Water	EPA 537(Mod)	658365
320-97213-5	KSM-105	Total/NA	Water	EPA 537(Mod)	658365
MB 320-658365/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	658365
LCS 320-658365/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	658365
LCSD 320-658365/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	658365

Prep Batch: 659712

Lab Sampl e ID	Client Sampl e ID	Prep Type	Matrix	Method	Prep Batch
320-97213-6	GAC	Total/NA	Water	3535	
MB 320-659712/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-659712/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-659712/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Anal ysis Batch: 660487

Lab Sampl e ID	Client Sampl e ID	Prep Type	Matrix	Method	Prep Batch
320-97213-6	GAC	Total/NA	Water	EPA 537(Mod)	659712
MB 320-659712/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	659712
LCS 320-659712/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	659712
LCSD 320-659712/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	659712

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Client Sample ID: MW-1
Date Collected: 02/24/23 11:04
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.6 mL	10.0 mL	658365	03/06/23 06:36	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	659314	03/08/23 20:43	D1R	EET SAC

Client Sample ID: MW-101
Date Collected: 02/24/23 10:54
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.9 mL	10.0 mL	658365	03/06/23 06:36	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	659314	03/08/23 20:53	D1R	EET SAC

Client Sample ID: MW-2
Date Collected: 02/24/23 13:15
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.1 mL	10.0 mL	658365	03/06/23 06:36	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	659314	03/08/23 21:03	D1R	EET SAC

Client Sample ID: KSM-005
Date Collected: 02/24/23 09:41
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.6 mL	10.0 mL	658365	03/06/23 06:36	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	659314	03/08/23 21:13	D1R	EET SAC

Client Sample ID: KSM-105
Date Collected: 02/24/23 09:31
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.7 mL	10.0 mL	658365	03/06/23 06:36	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	659314	03/08/23 21:23	D1R	EET SAC

Client Sample ID: GAC
Date Collected: 02/24/23 14:15
Date Received: 02/28/23 15:55

Lab Sample ID: 320-97213-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.1 mL	10.0 mL	659712	03/09/23 19:11	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	660487	03/13/23 22:02	K1S	EET SAC

Laboratory References:
EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-97213-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-97213-1	MW-1	Water	02/24/23 11:04	02/28/23 15:55
320-97213-2	MW-101	Water	02/24/23 10:54	02/28/23 15:55
320-97213-3	MW-2	Water	02/24/23 13:15	02/28/23 15:55
320-97213-4	KSM-005	Water	02/24/23 09:41	02/28/23 15:55
320-97213-5	KSM-105	Water	02/24/23 09:31	02/28/23 15:55
320-97213-6	GAC	Water	02/24/23 14:15	02/28/23 15:55

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins
Attn: David Althacker

Turn Around Time: ☒ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☒ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	QSM Table B-15 PFAS x18	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1		1104	2-24-23	X	2	Groundwater
MW-101		1054		X		
MW-2		1315		X		
KSM-005		0941		X		
KSM-105		0931		X		
GAC		1415	↓	X	↓	↓

320-97213 Chain of Custody

Project Information	
Number:	102219-019
Name:	St. Mary's WSW
Contact:	KRF
Ongoing Project?	Yes ☒ No ☐
Sampler:	MSC

Sample Receipt	
Total No. of Containers:	12
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1230	Signature: Time:	Signature: Time:
Printed Name: Mason Croker Date: 2-27-23	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 1454	Signature: Time:	Signature: Time:
Printed Name: SANDY Date: 2-28-23	Printed Name: Date:	Printed Name: Date:
Company: EETCA 4.4c	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No.

3/19/2023

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-97213-1

Login Number: 97213
List Number: 1
Creator: Pratali, Sandra A

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEAL
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Andrew Frick	**CS Site Name:**	N/A	**Lab Name:**	Eurofins Environment Testing
Title:	Environmental Scientist	**ADEC File No.:**	N/A	**Lab Report No.:**	320-97213-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	N/A	**Lab Report Date:**	3/19/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: The samples were submitted to the DEC certified Eurofins Environment Testing laboratory in West Sacramento for the analysis of PFAS. These compounds were included in the DEC's contaminated sites laboratory approval 17-020.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Sample analyses were not subcontracted or transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories version 5.3 Table B-15.
   Comments:

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): The cooler temperature was reported 4.4° C.
Sample temperature(s): A temperature blank was included with the samples in the cooler however, a temperature was not recorded.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: PFAS does not require any additional preservation beyond temperature control.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory noted that the samples arrived in good condition within the case narrative.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory did not note any discrepancies.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
The laboratory applied an “I” qualifier to the PFHxA result for sample *MW-1* to indicate the transition mass ratio was outside of establish limits. The reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

The low-level continuing calibration verification (CCVL) associated with batch 320-660487 recovered above the upper control limit for perfluorohexanesulfonic acid (PFHxS). The samples associated with this CCVL are bracketed by continuing calibration verifications (CCVs) which are in control for this analyte. (CCVL 320-660487/5)

Insufficient sample volume was available to perform matrix spike/matrix spike duplicates (MS/MSD) associated with preparation batches 320-658365 and 320-659712.

The laboratory noted the following samples in preparation batch 320-658365 were observed to be brown in color and have a thin layer of sediment present in the bottom of the bottle prior to extraction: *MW-1* and *MW-2*. A thin layer of sediment was observed in sample *GAC* in preparation batch 320-97213. Due to the thin layer of sediment at the bottom of the bottles, samples *MW-1* and *MW-2* were centrifuged and decanted into new 250 mL containers. After centrifuging and decanting, the samples were fortified with IDA and then extracted.

c. Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not note an effect on data quality or usability. See the following sections for our assessment.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LOQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: However, PFHxS was detected in MB 320-659712/1-A associated with preparation batch 659712 at a concentration less than the RL but greater than the MDL.

iii. If above LOQ or RL, what samples are affected?
Comments: Sample *GAC* was the only project sample included in preparation batch 659712. PFHxS was detected in sample *GAC* at concentrations less than the RL but greater than the MDL. The PFHxS result for sample *GAC* is considered not-detected at the RL due to the PFHxS contamination identified in MB 320-659712/1-A.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Sample results for *GAC* are not included in the analytical data tables; sampling was performed to assess the effectiveness of the granular activated carbon filtration used for field disposal of purge water.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments:

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: N/A; the %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐
Comments: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate. Precision can be assessed with the LCS/LCSD.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments:

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐
Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐

Comments: Data quality or usability are not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LOQ or RL, what samples are affected?
Comments: N/A; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Field duplicate sample pairs *MW-1 / MW-101* and *KSM-005 / KSM-105* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐
Comments: RPD are within project DQOs, where calculable (detectable results above the RL for both samples in the duplicate pair).

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐

Comments: Data quality or usability are not affected.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Reusable equipment was not used; therefore, an equipment blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LOQ or RL, specify what samples are affected.
Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☐
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☐ No ☐ N/A ☒
Comments: The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. This is associated with PFHxA for sample *MW-1*. We consider this result to be estimated, biased high, and have flagged the datum with a “JH” in the analytical database.

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 9/21/2023 9:50:18 AM

JOB DESCRIPTION

St. Mary's WSW

JOB NUMBER

320-104638-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

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9/21/2023 9:50:18 AM

Authorized for release by
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(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-104638-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-104638-1

Receipt
The samples were received on 9/7/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6º C.

LCMS
Method EPA 537(Mod): The low level continuing calibration verification (CCVL) associated with batch 320-705641 recovered above the upper control limit for Perfluorooctanoic acid (PFOA). The field samples associated with this CCVL were either non-detect or had detections below the reporting limit (RL) for the affected analyte. The continuing calibration verifications (CCV) bracketing the associated samples were in control for this analyte; therefore, the data have been reported. The associated samples are impacted: KSM-005 (320-104638-5) and (CCVL 320-705641/5).

Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-704981 and analytical batch 320-705649 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method EPA 537(Mod): Due to the high concentration of Perfluorohexanesulfonic acid (PFHxS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-704981 and analytical batch 320-706021 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Method EPA 537(Mod): Results for samples (570-150649-A-1-A), (570-150649-A-1-B MS) and (570-150649-A-1-C MSD) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method EPA 537(Mod): Results for sample SM-MW22-2 (320-104638-8) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: SM-TWP23-1 (320-104638-7). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

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

Organic Prep
Method 3535: The following sample in preparation batch 320-704981 was observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. SM-TWP23-1 (320-104638-7)

Method 3535: During the solid phase extraction process, the following sample contain non-settleable particulates which clogged the solid phase extraction column: SM-TWP23-1 (320-104638-7).
preparation batch 320-704981

Method 3535: The following samples in preparation batch 320-704981 were yellow in color prior to extraction. SM-TWP23-1 (320-104638-7)
preparation batch 320-704981

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-705341.

Method 3535: The following samples in preparation batch 320-705341 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. SM-MW23-13 (320-104638-2), SM-MW22-1 (320-104638-3) and SM-MW23-3 (320-104638-6)

Method 3535: The following sample in preparation batch 320-705341 was light brown in color and observed to have a thin layer of

Job ID: 320-104638-1 (Continued)

Laboratory: Eurofins Sacramento (Continued)

sediment present in the bottom of the bottle prior to extraction. SM-MW23-4 (320-104638-1)

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-MW23-4 — Lab Sample ID: 320-104638-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	10		1.7	0.50	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.7		1.7	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	6.6		1.7	0.74	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.35		1.7	0.23	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.4		1.7	0.17	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	59		1.7	0.50	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	67		1.7	0.47	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SM-MW23-13 — Lab Sample ID: 320-104638-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	32		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.8	0.23	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	7.0		1.8	0.77	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	9.7		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	120		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	280		1.8	0.49	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SM-MW22-1 — Lab Sample ID: 320-104638-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	5.3		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.98		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.75	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.29		1.8	0.24	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	19		1.8	0.50	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	50		1.8	0.48	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SM-EB — Lab Sample ID: 320-104638-4

No Detections.

Client Sample ID: KSM-005 — Lab Sample ID: 320-104638-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.3		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		1.8	0.48	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SM-MW23-3 — Lab Sample ID: 320-104638-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	34		1.8	0.52	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	7.1		1.8	0.76	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	9.9		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	130		1.8	0.51	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	280		1.8	0.48	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SM-TWP23-1 — Lab Sample ID: 320-104638-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	35		1.7	0.50	ng/L	1	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Client Sample ID: SM-TWP23-1 (Continued)

Lab Sample ID: 320-104638-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	2.8		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	6.0		1.7	0.73	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.26	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.5		1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	110		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	270		1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

Client Sample ID: SM-MW22-2

Lab Sample ID: 320-104638-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	66		1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.7		1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	18		1.7	0.73	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.91	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	25		1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	320		8.6	2.5	ng/L	5		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1200		8.6	2.3	ng/L	5		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-MW23-4
Date Collected: 08/30/23 20:27
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-1
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**10**		1.7	0.50	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluoroheptanoic acid (PFHpA)	**3.7**		1.7	0.22	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorooctanoic acid (PFOA)	**6.6**		1.7	0.74	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorononanoic acid (PFNA)	**0.35**	**J**	1.7	0.23	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorobutanesulfonic acid (PFBS)	**3.4**		1.7	0.17	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorohexanesulfonic acid (PFHxS)	**59**		1.7	0.50	ng/L		09/12/23 05:32	09/14/23 03:11	1
Perfluorooctanesulfonic acid (PFOS)	**67**		1.7	0.47	ng/L		09/12/23 05:32	09/14/23 03:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		09/12/23 05:32	09/14/23 03:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		09/12/23 05:32	09/14/23 03:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/12/23 05:32	09/14/23 03:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/12/23 05:32	09/14/23 03:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/12/23 05:32	09/14/23 03:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		09/12/23 05:32	09/14/23 03:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C4 PFHpA	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C4 PFOA	*105*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C5 PFNA	*105*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C2 PFDA	*100*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C2 PFUnA	*103*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C2 PFDoA	*99*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C2 PFTeDA	*93*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C3 PFBS	*106*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
18O2 PFHxS	*105*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C4 PFOS	*105*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
d3-NMeFOSAA	*109*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
d5-NEtFOSAA	*15*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	
13C3 HFPO-DA	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:1*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-MW23-13

Date Collected: 08/30/23 19:19
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-2

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**32**		1.8	0.52	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluoroheptanoic acid (PFHpA)	**2.8**		1.8	0.23	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorooctanoic acid (PFOA)	**7.0**		1.8	0.77	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorobutanesulfonic acid (PFBS)	**9.7**		1.8	0.18	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorohexanesulfonic acid (PFHxS)	**120**		1.8	0.52	ng/L		09/12/23 05:32	09/14/23 03:23	1
Perfluorooctanesulfonic acid (PFOS)	**280**		1.8	0.49	ng/L		09/12/23 05:32	09/14/23 03:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/12/23 05:32	09/14/23 03:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/12/23 05:32	09/14/23 03:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/12/23 05:32	09/14/23 03:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/12/23 05:32	09/14/23 03:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/12/23 05:32	09/14/23 03:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/12/23 05:32	09/14/23 03:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*14*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C4 PFHpA	*13*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C4 PFOA	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C5 PFNA	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C2 PFDA	*105*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C2 PFUnA	*103*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C2 PFDoA	*101*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C2 PFTeDA	*102*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C3 PFBS	*109*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
18O2 PFHxS	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C4 PFOS	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
d3-NMeFOSAA	*18*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
d5-NEtFOSAA	*126*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	
13C3 HFPO-DA	*12*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:23*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-MW22-1
Date Collected: 08/31/23 17:27
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-3
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**5.3**		1.8	0.51	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluoroheptanoic acid (PFHpA)	**0.98**	**J**	1.8	0.22	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.8	0.75	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorononanoic acid (PFNA)	**0.29**	**J**	1.8	0.24	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**	**J**	1.8	0.18	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorohexanesulfonic acid (PFHxS)	**19**		1.8	0.50	ng/L		09/12/23 05:32	09/14/23 03:34	1
Perfluorooctanesulfonic acid (PFOS)	**50**		1.8	0.48	ng/L		09/12/23 05:32	09/14/23 03:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		09/12/23 05:32	09/14/23 03:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		09/12/23 05:32	09/14/23 03:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		09/12/23 05:32	09/14/23 03:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/12/23 05:32	09/14/23 03:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		09/12/23 05:32	09/14/23 03:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		09/12/23 05:32	09/14/23 03:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*113*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C4 PFHpA	*110*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C4 PFOA	*112*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C5 PFNA	*113*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C2 PFDA	*110*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C2 PFUnA	*103*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C2 PFDoA	*95*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C2 PFTeDA	*95*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C3 PFBS	*116*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
18O2 PFHxS	*109*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C4 PFOS	*111*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
d3-NMeFOSAA	*112*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
d5-NEtFOSAA	*120*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*
13C3 HFPO-DA	*116*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:34*	*1*

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-EB
Date Collected: 09/05/23 11:30
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-4
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.51	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.50	ng/L		09/12/23 05:32	09/14/23 03:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		09/12/23 05:32	09/14/23 03:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		09/12/23 05:32	09/14/23 03:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		09/12/23 05:32	09/14/23 03:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/12/23 05:32	09/14/23 03:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/12/23 05:32	09/14/23 03:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/12/23 05:32	09/14/23 03:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		09/12/23 05:32	09/14/23 03:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C4 PFHpA	*13*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C4 PFOA	*109*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C5 PFNA	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C2 PFDA	*17*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C2 PFUnA	*121*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C2 PFDoA	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C2 PFTeDA	*98*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C3 PFBS	*108*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
18O2 PFHxS	*106*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C4 PFOS	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
d3-NMeFOSAA	*16*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
d5-NEtFOSAA	*137*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	
13C3 HFPO-DA	*101*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:45*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: KSM-005
Date Collected: 08/28/23 16:00
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-5
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**1.3**	**J**	1.8	0.52	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.8	0.51	ng/L		09/08/23 18:59	09/12/23 05:52	1
Perfluorooctanesulfonic acid (PFOS)	**3.8**		1.8	0.48	ng/L		09/08/23 18:59	09/12/23 05:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		09/08/23 18:59	09/12/23 05:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		09/08/23 18:59	09/12/23 05:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		09/08/23 18:59	09/12/23 05:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		09/08/23 18:59	09/12/23 05:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		09/08/23 18:59	09/12/23 05:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/08/23 18:59	09/12/23 05:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C4 PFHpA	*99*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C4 PFOA	*95*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C5 PFNA	*96*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C2 PFDA	*99*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C2 PFUnA	*102*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C2 PFDoA	*93*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C2 PFTeDA	*92*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C3 PFBS	*94*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
18O2 PFHxS	*98*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C4 PFOS	*95*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
d3-NMeFOSAA	*95*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
d5-NEtFOSAA	*100*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*
13C3 HFPO-DA	*93*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:52*	*1*

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-MW23-3
Date Collected: 08/30/23 19:29
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-6
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**34**		1.8	0.52	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		1.8	0.22	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorooctanoic acid (PFOA)	**7.1**		1.8	0.76	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorobutanesulfonic acid (PFBS)	**9.9**		1.8	0.18	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorohexanesulfonic acid (PFHxS)	**130**		1.8	0.51	ng/L		09/12/23 05:32	09/14/23 03:57	1
Perfluorooctanesulfonic acid (PFOS)	**280**		1.8	0.48	ng/L		09/12/23 05:32	09/14/23 03:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/12/23 05:32	09/14/23 03:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/12/23 05:32	09/14/23 03:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		09/12/23 05:32	09/14/23 03:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		09/12/23 05:32	09/14/23 03:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/12/23 05:32	09/14/23 03:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/12/23 05:32	09/14/23 03:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C4 PFHpA	*104*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C4 PFOA	*104*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C5 PFNA	*103*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C2 PFDA	*99*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C2 PFUnA	*102*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C2 PFDoA	*94*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C2 PFTeDA	*92*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C3 PFBS	*104*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
18O2 PFHxS	*101*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C4 PFOS	*101*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
d3-NMeFOSAA	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
d5-NEtFOSAA	*106*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	
13C3 HFPO-DA	*106*		*50 - 150*	*09/12/23 05:32*	*09/14/23 03:57*	

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-TWP23-1
Date Collected: 08/28/23 18:37
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-7
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**35**		1.7	0.50	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluoroheptanoic acid (PFHpA)	**2.8**		1.7	0.21	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorooctanoic acid (PFOA)	**6.0**		1.7	0.73	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorononanoic acid (PFNA)	**0.26**	**J**	1.7	0.23	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorobutanesulfonic acid (PFBS)	**8.5**		1.7	0.17	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorohexanesulfonic acid (PFHxS)	**110**		1.7	0.49	ng/L		09/08/23 18:59	09/15/23 02:00	1
Perfluorooctanesulfonic acid (PFOS)	**270**		1.7	0.46	ng/L		09/08/23 18:59	09/15/23 02:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		09/08/23 18:59	09/15/23 02:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		09/08/23 18:59	09/15/23 02:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/08/23 18:59	09/15/23 02:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		09/08/23 18:59	09/15/23 02:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		09/08/23 18:59	09/15/23 02:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		09/08/23 18:59	09/15/23 02:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*45*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C4 PFHpA	*48*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C4 PFOA	*48*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C5 PFNA	*48*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C2 PFDA	*46*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C2 PFUnA	*39*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C2 PFDoA	*35*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C2 PFTeDA	*39*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C3 PFBS	*41*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
18O2 PFHxS	*41*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C4 PFOS	*39*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
d3-NMeFOSAA	*36*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
d5-NEtFOSAA	*38*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*
13C3 HFPO-DA	*44*	**5-*	*50 - 150*	*09/08/23 18:59*	*09/15/23 02:00*	*1*

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-MW22-2

Date Collected: 08/31/23 16:10
Date Received: 09/07/23 09:40

Lab Sample ID: 320-104638-8

Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**66**		1.7	0.50	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluoroheptanoic acid (PFHpA)	**6.7**		1.7	0.22	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluorooctanoic acid (PFOA)	**18**		1.7	0.73	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluorononanoic acid (PFNA)	**0.91**	**J**	1.7	0.23	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		09/12/23 05:32	09/14/23 04:08	1
Perfluorobutanesulfonic acid (PFBS)	**25**		1.7	0.17	ng/L		09/12/23 05:32	09/14/23 04:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		09/12/23 05:32	09/14/23 04:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		09/12/23 05:32	09/14/23 04:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		09/12/23 05:32	09/14/23 04:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		09/12/23 05:32	09/14/23 04:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		09/12/23 05:32	09/14/23 04:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		09/12/23 05:32	09/14/23 04:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C4 PFHpA	*14*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C4 PFOA	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C5 PFNA	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C2 PFDA	*99*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C2 PFUnA	*109*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C2 PFDoA	*95*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C2 PFTeDA	*93*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C3 PFBS	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C4 PFOS	*103*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
d3-NMeFOSAA	*108*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
d5-NEtFOSAA	*16*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	
13C3 HFPO-DA	*16*		*50 - 150*	*09/12/23 05:32*	*09/14/23 04:08*	

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	**320**		8.6	2.5	ng/L		09/12/23 05:32	09/18/23 23:34	5
Perfluorooctanesulfonic acid (PFOS)	**1200**		8.6	2.3	ng/L		09/12/23 05:32	09/18/23 23:34	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*105*		*50 - 150*	*09/12/23 05:32*	*09/18/23 23:34*	*5*
13C4 PFOS	*93*		*50 - 150*	*09/12/23 05:32*	*09/18/23 23:34*	*5*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-104638-1	SM-MW23-4	107	110	105	105	100	103	99	93
320-104638-2	SM-MW23-13	114	113	107	107	105	103	101	102
320-104638-3	SM-MW22-1	113	110	112	113	110	103	95	95
320-104638-4	SM-EB	104	113	109	110	117	121	110	98
320-104638-5	KSM-005	99	99	95	96	99	102	93	92
320-104638-6	SM-MW23-3	103	104	104	103	99	102	94	92
320-104638-7	SM-TWP23-1	45 *5-	48 *5-	48 *5-	48 *5-	46 *5-	39 *5-	35 *5-	39 *5-
320-104638-8	SM-MW22-2	110	114	107	107	99	109	95	93
320-104638-8 - DL	SM-MW22-2								
570-150649-A-1-B MS	Matrix Spike	89	88		88	86	97	89	85
570-150649-A-1-B MS - DL	Matrix Spike								
570-150649-A-1-B MS - RA	Matrix Spike			88					
570-150649-A-1-C MSD	Matrix Spike Duplicate	83	78		80	90	92	87	84
570-150649-A-1-C MSD - DL	Matrix Spike Duplicate								
570-150649-A-1-C MSD - RA	Matrix Spike Duplicate			87					
LCS 320-704981/2-A	Lab Control Sample	87	98	88	91	95	94	92	83
LCS 320-705341/2-A	Lab Control Sample	106	113	109	107	103	106	106	104
LCSD 320-704981/3-A	Lab Control Sample Dup	88	88	86	85	86	89	82	78
LCSD 320-705341/3-A	Lab Control Sample Dup	113	119	115	118	119	120	111	109
MB 320-704981/1-A	Method Blank	85	90	91	87	90	88	87	90
MB 320-705341/1-A	Method Blank	104	110	106	110	108	109	105	97

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-104638-1	SM-MW23-4	106	105	105	109	115	107		
320-104638-2	SM-MW23-13	109	107	107	118	126	112		
320-104638-3	SM-MW22-1	116	109	111	112	120	116		
320-104638-4	SM-EB	108	106	110	116	137	101		
320-104638-5	KSM-005	94	98	95	95	100	93		
320-104638-6	SM-MW23-3	104	101	101	107	106	106		
320-104638-7	SM-TWP23-1	41 *5-	41 *5-	39 *5-	36 *5-	38 *5-	44 *5-		
320-104638-8	SM-MW22-2	110		103	108	116	116		
320-104638-8 - DL	SM-MW22-2		105	93					
570-150649-A-1-B MS	Matrix Spike	88		91	89	95	82		
570-150649-A-1-B MS - DL	Matrix Spike		84	83					
570-150649-A-1-B MS - RA	Matrix Spike								
570-150649-A-1-C MSD	Matrix Spike Duplicate	92		85	87	95	83		
570-150649-A-1-C MSD - DL	Matrix Spike Duplicate		88	81					
570-150649-A-1-C MSD - RA	Matrix Spike Duplicate								
LCS 320-704981/2-A	Lab Control Sample	96	88	90	87	93	85		
LCS 320-705341/2-A	Lab Control Sample	100	104	106	118	123	97		
LCSD 320-704981/3-A	Lab Control Sample Dup	86	84	80	81	87	80		
LCSD 320-705341/3-A	Lab Control Sample Dup	115	116	119	127	125	108		
MB 320-704981/1-A	Method Blank	94	82	88	86	92	83		
MB 320-705341/1-A	Method Blank	104	107	102	116	118	103		

Surrogate Legend

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-704981/ 1-A
Matrix : Water
Analysis Batch: 705649

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/08/23 18:59	09/12/23 05:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/08/23 18:59	09/12/23 05:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/08/23 18:59	09/12/23 05:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/08/23 18:59	09/12/23 05:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/08/23 18:59	09/12/23 05:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/08/23 18:59	09/12/23 05:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/08/23 18:59	09/12/23 05:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/08/23 18:59	09/12/23 05:21	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C4 PFHpA	*90*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C4 PFOA	*91*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C5 PFNA	*87*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C2 PFDA	*90*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C2 PFUnA	*88*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C2 PFDoA	*87*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C2 PFTeDA	*90*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C3 PFBS	*94*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
18O2 PFHxS	*82*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C4 PFOS	*88*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
d3-NMeFOSAA	*86*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
d5-NEtFOSAA	*92*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	
13C3 HFPO-DA	*83*		*50 - 150*	*09/08/23 18:59*	*09/12/23 05:21*	

Lab Sample ID: LCS 320-704981/2-A
Matrix : Water
Analysis Batch: 705649

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	45.9		ng/L		115	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	46.1		ng/L		115	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.4		ng/L		104	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-704981/2-A
Matrix : Water
Analysis Batch: 705649

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	44.1		ng/L		110	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.2		ng/L		108	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	44.2		ng/L		110	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	39.8		ng/L		100	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	43.0		ng/L		107	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.5		ng/L		100	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.8		ng/L		98	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	36.9		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.3		ng/L		106	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.4		ng/L		109	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.7		ng/L		104	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.0		ng/L		110	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	40.2		ng/L		106	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.5		ng/L		118	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*87*		*50 - 150*
13C4 PFHpA	*98*		*50 - 150*
13C4 PFOA	*88*		*50 - 150*
13C5 PFNA	*91*		*50 - 150*
13C2 PFDA	*95*		*50 - 150*
13C2 PFUnA	*94*		*50 - 150*
13C2 PFDoA	*92*		*50 - 150*
13C2 PFTeDA	*83*		*50 - 150*
13C3 PFBS	*96*		*50 - 150*
18O2 PFHxS	*88*		*50 - 150*
13C4 PFOS	*90*		*50 - 150*
d3-NMeFOSAA	*87*		*50 - 150*
d5-NEtFOSAA	*93*		*50 - 150*
13C3 HFPO-DA	*85*		*50 - 150*

Lab Sample ID: LCSD 320-704981/3-A
Matrix : Water
Analysis Batch: 705649

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.5		ng/L		101	72 - 129	13	30
Perfluoroheptanoic acid (PFHpA)	40.0	44.1		ng/L		110	72 - 130	4	30
Perfluorooctanoic acid (PFOA)	40.0	38.2		ng/L		96	71 - 133	19	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-704981/3-A
Matrix : Water
Analysis Batch: 705649

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	40.6		ng/L		101	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	40.0		ng/L		100	71 - 129	10	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.2		ng/L		103	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	40.0	43.4		ng/L		109	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.8		ng/L		109	65 - 144	9	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.6		ng/L		102	71 - 132	6	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.5		ng/L		108	72 - 130	8	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.7		ng/L		101	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.3		ng/L		106	65 - 140	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.1		ng/L		103	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.2		ng/L		100	61 - 135	8	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.8		ng/L		109	77 - 137	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.9		ng/L		112	72 - 132	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	42.3		ng/L		112	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.6		ng/L		115	81 - 141	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*88*		*50 - 150*
13C4 PFHpA	*88*		*50 - 150*
13C4 PFOA	*86*		*50 - 150*
13C5 PFNA	*85*		*50 - 150*
13C2 PFDA	*86*		*50 - 150*
13C2 PFUnA	*89*		*50 - 150*
13C2 PFDoA	*82*		*50 - 150*
13C2 PFTeDA	*78*		*50 - 150*
13C3 PFBS	*86*		*50 - 150*
18O2 PFHxS	*84*		*50 - 150*
13C4 PFOS	*80*		*50 - 150*
d3-NMeFOSAA	*81*		*50 - 150*
d5-NEtFOSAA	*87*		*50 - 150*
13C3 HFPO-DA	*80*		*50 - 150*

Lab Sample ID: 570-150649-A-1-B MS
Matrix : Water
Analysis Batch: 705649

Client Sample ID: Matrix Spike
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	130	F1	36.0	155	F1	ng/L		63	72 - 129
Perfluoroheptanoic acid (PFHpA)	69		36.0	108		ng/L		110	72 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: 570-150649-A-1-B MS — **Client Sample ID: Matrix Spike**
Matrix : Water — **Prep Type: Total/ NA**
Analysis Batch: 705649 — **Prep Batch: 704981**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanoic acid (PFNA)	30		36.0	67.7		ng/L		105	69 - 130
Perfluorodecanoic acid (PFDA)	0.93		36.0	39.2		ng/L		106	71 - 129
Perfluoroundecanoic acid (PFUnA)	5.8		36.0	44.8		ng/L		109	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		36.0	38.9		ng/L		108	72 - 134
Perfluorotridecanoic acid (PFTriA)	ND		36.0	38.0		ng/L		106	65 - 144
Perfluorotetradecanoic acid (PFTeA)	ND		36.0	36.3		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	53		31.9	86.6		ng/L		104	72 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		36.0	35.3		ng/L		98	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		36.0	34.9		ng/L		97	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		33.6	34.2		ng/L		102	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		36.0	40.3		ng/L		112	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		33.9	34.4		ng/L		101	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		34.0	36.5		ng/L		107	81 - 141

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C2 PFHxA	*89*		*50 - 150*
13C4 PFHpA	*88*		*50 - 150*
13C5 PFNA	*88*		*50 - 150*
13C2 PFDA	*86*		*50 - 150*
13C2 PFUnA	*97*		*50 - 150*
13C2 PFDoA	*89*		*50 - 150*
13C2 PFTeDA	*85*		*50 - 150*
13C3 PFBS	*88*		*50 - 150*
13C4 PFOS	*91*		*50 - 150*
d3-NMeFOSAA	*89*		*50 - 150*
d5-NEtFOSAA	*95*		*50 - 150*
13C3 HFPO-DA	*82*		*50 - 150*

Lab Sample ID: 570-150649-A-1-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix : Water — **Prep Type: Total/ NA**
Analysis Batch: 705649 — **Prep Batch: 704981**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	130	F1	34.6	154	F1	ng/L		65	72 - 129	0	30
Perfluoroheptanoic acid (PFHpA)	69		34.6	113		ng/L		129	72 - 130	5	30
Perfluorononanoic acid (PFNA)	30		34.6	67.3		ng/L		108	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	0.93		34.6	37.0		ng/L		104	71 - 129	6	30
Perfluoroundecanoic acid (PFUnA)	5.8		34.6	41.9		ng/L		104	69 - 133	7	30
Perfluorododecanoic acid (PFDoA)	ND		34.6	40.2		ng/L		116	72 - 134	3	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: 570-150649-A-1-C MSD
Matrix : Water
Analysis Batch: 705649

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTriA)	ND		34.6	34.6		ng/L		100	65 - 144	9	30
Perfluorotetradecanoic acid (PFTeA)	ND		34.6	33.8		ng/L		98	71 - 132	7	30
Perfluorobutanesulfonic acid (PFBS)	53		30.7	84.8		ng/L		102	72 - 130	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		34.6	35.7		ng/L		103	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		34.6	35.1		ng/L		101	61 - 135	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		32.3	34.8		ng/L		108	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		34.6	37.0		ng/L		107	72 - 132	8	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		32.7	32.6		ng/L		100	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		32.8	33.5		ng/L		102	81 - 141	9	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C2 PFHxA	*83*		*50 - 150*
13C4 PFHpA	*78*		*50 - 150*
13C5 PFNA	*80*		*50 - 150*
13C2 PFDA	*90*		*50 - 150*
13C2 PFUnA	*92*		*50 - 150*
13C2 PFDoA	*87*		*50 - 150*
13C2 PFTeDA	*84*		*50 - 150*
13C3 PFBS	*92*		*50 - 150*
13C4 PFOS	*85*		*50 - 150*
d3-NMeFOSAA	*87*		*50 - 150*
d5-NEtFOSAA	*95*		*50 - 150*
13C3 HFPO-DA	*83*		*50 - 150*

Lab Sample ID: MB 320-705341/ 1-A
Matrix : Water
Analysis Batch: 705983

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 705341

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/12/23 05:32	09/14/23 02:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/12/23 05:32	09/14/23 02:37	1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: MB 320-705341/ 1-A
Matrix : Water
Analysis Batch: 705983

Client Sample ID: Method Blank
Prep Type: Total/ NA
Prep Batch: 705341

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/12/23 05:32	09/14/23 02:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/12/23 05:32	09/14/23 02:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/12/23 05:32	09/14/23 02:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/12/23 05:32	09/14/23 02:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/12/23 05:32	09/14/23 02:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/12/23 05:32	09/14/23 02:37	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C4 PFHpA	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C4 PFOA	*106*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C5 PFNA	*10*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C2 PFDA	*108*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C2 PFUnA	*109*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C2 PFDoA	*105*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C2 PFTeDA	*97*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C3 PFBS	*104*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
18O2 PFHxS	*107*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C4 PFOS	*102*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
d3-NMeFOSAA	*16*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
d5-NEtFOSAA	*18*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	
13C3 HFPO-DA	*103*		*50 - 150*	*09/12/23 05:32*	*09/14/23 02:37*	

Lab Sample ID: LCS 320-705341/2-A
Matrix : Water
Analysis Batch: 705983

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 705341

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.4		ng/L		103	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	40.9		ng/L		102	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.3		ng/L		108	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.8		ng/L		107	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	45.2		ng/L		113	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.4		ng/L		108	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	46.3		ng/L		116	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	42.5		ng/L		106	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.6		ng/L		107	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	39.3		ng/L		111	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.6		ng/L		103	68 - 131

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-705341/2-A
Matrix : Water
Analysis Batch: 705983

Client Sample ID: Lab Control Sample
Prep Type: Total/ NA
Prep Batch: 705341

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluorooctanesulfonic acid (PFOS)			37.2	39.2		ng/L		105	65 - 140		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	40.0		ng/L		100	65 - 136		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	39.1		ng/L		98	61 - 135		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	40.3		ng/L		108	77 - 137		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	44.8		ng/L		112	72 - 132		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	40.5		ng/L		107	76 - 136		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	43.9		ng/L		116	81 - 141		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*106*		*50 - 150*
13C4 PFHpA	*13*		*50 - 150*
13C4 PFOA	*109*		*50 - 150*
13C5 PFNA	*107*		*50 - 150*
13C2 PFDA	*103*		*50 - 150*
13C2 PFUnA	*106*		*50 - 150*
13C2 PFDoA	*106*		*50 - 150*
13C2 PFTeDA	*104*		*50 - 150*
13C3 PFBS	*100*		*50 - 150*
18O2 PFHxS	*104*		*50 - 150*
13C4 PFOS	*106*		*50 - 150*
d3-NMeFOSAA	*18*		*50 - 150*
d5-NEtFOSAA	*123*		*50 - 150*
13C3 HFPO-DA	*97*		*50 - 150*

Lab Sample ID: LCSD 320-705341/3-A
Matrix : Water
Analysis Batch: 705983

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 705341

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			40.0	43.0		ng/L		107	72 - 129	4	30
Perfluoroheptanoic acid (PFHpA)			40.0	43.4		ng/L		108	72 - 130	6	30
Perfluorooctanoic acid (PFOA)			40.0	44.3		ng/L		111	71 - 133	2	30
Perfluorononanoic acid (PFNA)			40.0	43.2		ng/L		108	69 - 130	1	30
Perfluorodecanoic acid (PFDA)			40.0	42.7		ng/L		107	71 - 129	6	30
Perfluoroundecanoic acid (PFUnA)			40.0	40.7		ng/L		102	69 - 133	6	30
Perfluorododecanoic acid (PFDoA)			40.0	46.7		ng/L		117	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)			40.0	43.9		ng/L		110	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	41.9		ng/L		105	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)			35.5	38.9		ng/L		110	72 - 130	1	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-705341/3-A
Matrix : Water
Analysis Batch: 705983

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/ NA
Prep Batch: 705341

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanesulfonic acid (PFHxS)			36.5	37.5		ng/L		103	68 - 131	0	30
Perfluorooctanesulfonic acid (PFOS)			37.2	38.4		ng/L		103	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	39.8		ng/L		99	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	39.3		ng/L		98	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	40.6		ng/L		109	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	45.3		ng/L		113	72 - 132	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	39.5		ng/L		105	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	42.0		ng/L		111	81 - 141	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*13*		*50 - 150*
13C4 PFHpA	*19*		*50 - 150*
13C4 PFOA	*15*		*50 - 150*
13C5 PFNA	*18*		*50 - 150*
13C2 PFDA	*19*		*50 - 150*
13C2 PFUnA	*120*		*50 - 150*
13C2 PFDoA			*50 - 150*
13C2 PFTeDA	*109*		*50 - 150*
13C3 PFBS	*15*		*50 - 150*
18O2 PFHxS	*16*		*50 - 150*
13C4 PFOS	*19*		*50 - 150*
d3-NMeFOSAA	*127*		*50 - 150*
d5-NEtFOSAA	*125*		*50 - 150*
13C3 HFPO-DA	*108*		*50 - 150*

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

Lab Sample ID: 570-150649-A-1-B MS
Matrix : Water
Analysis Batch: 706021

Client Sample ID: Matrix Spike
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS) - DL	450		32.8	476	4	ng/L		84	68 - 131
Perfluorooctanesulfonic acid (PFOS) - DL	500		33.4	523	4	ng/L		83	65 - 140

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
18O2 PFHxS - DL	*84*		*50 - 150*
13C4 PFOS - DL	*83*		*50 - 150*

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL (Continued)

Lab Sample ID: 570-150649-A-1-C MSD
Matrix : Water
Analysis Batch: 706021

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanesulfonic acid (PFHxS) - DL	450		31.6	431	4	ng/L		-57	68 - 131	10	30
Perfluorooctanesulfonic acid (PFOS) - DL	500		32.2	526	4	ng/L		97	65 - 140	1	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
18O2 PFHxS - DL	*88*		*50 - 150*
13C4 PFOS - DL	*81*		*50 - 150*

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA

Lab Sample ID: 570-150649-A-1-B MS
Matrix : Water
Analysis Batch: 707834

Client Sample ID: Matrix Spike
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanoic acid (PFOA) - RA	46		36.0	81.1		ng/L		97	71 - 133

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA - RA	*88*		*50 - 150*

Lab Sample ID: 570-150649-A-1-C MSD
Matrix : Water
Analysis Batch: 707834

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/ NA
Prep Batch: 704981

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA) - RA	46		34.6	80.8		ng/L		100	71 - 133	0	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA - RA	*87*		*50 - 150*

LCMS

Prep Batch: 704981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104638-5	KSM-005	Total/NA	Water	3535	
320-104638-7	SM-TWP23-1	Total/NA	Water	3535	
MB 320-704981/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-704981/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-704981/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
570-150649-A-1-B MS	Matrix Spike	Total/NA	Water	3535	
570-150649-A-1-B MS - DL	Matrix Spike	Total/NA	Water	3535	
570-150649-A-1-B MS - RA	Matrix Spike	Total/NA	Water	3535	
570-150649-A-1-C MSD - DL	Matrix Spike Duplicate	Total/NA	Water	3535	
570-150649-A-1-C MSD - RA	Matrix Spike Duplicate	Total/NA	Water	3535	
570-150649-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

Prep Batch: 705341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104638-1	SM-MW23-4	Total/NA	Water	3535	
320-104638-2	SM-MW23-13	Total/NA	Water	3535	
320-104638-3	SM-MW22-1	Total/NA	Water	3535	
320-104638-4	SM-EB	Total/NA	Water	3535	
320-104638-6	SM-MW23-3	Total/NA	Water	3535	
320-104638-8 - DL	SM-MW22-2	Total/NA	Water	3535	
320-104638-8	SM-MW22-2	Total/NA	Water	3535	
MB 320-705341/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-705341/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-705341/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 705649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104638-5	KSM-005	Total/NA	Water	EPA 537(Mod)	704981
MB 320-704981/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	704981
LCS 320-704981/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	704981
LCSD 320-704981/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	704981
570-150649-A-1-B MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	704981
570-150649-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	704981

Analysis Batch: 705983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104638-1	SM-MW23-4	Total/NA	Water	EPA 537(Mod)	705341
320-104638-2	SM-MW23-13	Total/NA	Water	EPA 537(Mod)	705341
320-104638-3	SM-MW22-1	Total/NA	Water	EPA 537(Mod)	705341
320-104638-4	SM-EB	Total/NA	Water	EPA 537(Mod)	705341
320-104638-6	SM-MW23-3	Total/NA	Water	EPA 537(Mod)	705341
320-104638-8	SM-MW22-2	Total/NA	Water	EPA 537(Mod)	705341
MB 320-705341/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	705341
LCS 320-705341/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	705341
LCSD 320-705341/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	705341

Analysis Batch: 706021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-150649-A-1-B MS - DL	Matrix Spike	Total/NA	Water	EPA 537(Mod)	704981
570-150649-A-1-C MSD - DL	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	704981

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

LCMS

Analysis Batch: 706271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104638-7	SM-TWP23-1	Total/NA	Water	EPA 537(Mod)	704981

Analysis Batch: 707336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104638-8 - DL	SM-MW22-2	Total/NA	Water	EPA 537(Mod)	705341

Analysis Batch: 707834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-150649-A-1-B MS - RA	Matrix Spike	Total/NA	Water	EPA 537(Mod)	704981
570-150649-A-1-C MSD - RA	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	704981

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-MW23-4
Lab Sample ID: 320-104638-1
Date Collected: 08/30/23 20:27
Matrix: Water
Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.3 mL	10.0 mL	705341	09/12/23 05:32	GAT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	705983	09/14/23 03:11	S1C	EET SAC

Client Sample ID: SM-MW23-13
Lab Sample ID: 320-104638-2
Date Collected: 08/30/23 19:19
Matrix: Water
Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.5 mL	10.0 mL	705341	09/12/23 05:32	GAT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	705983	09/14/23 03:23	S1C	EET SAC

Client Sample ID: SM-MW22-1
Lab Sample ID: 320-104638-3
Date Collected: 08/31/23 17:27
Matrix: Water
Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.1 mL	10.0 mL	705341	09/12/23 05:32	GAT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	705983	09/14/23 03:34	S1C	EET SAC

Client Sample ID: SM-EB
Lab Sample ID: 320-104638-4
Date Collected: 09/05/23 11:30
Matrix: Water
Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.1 mL	10.0 mL	705341	09/12/23 05:32	GAT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	705983	09/14/23 03:45	S1C	EET SAC

Client Sample ID: KSM-005
Lab Sample ID: 320-104638-5
Date Collected: 08/28/23 16:00
Matrix: Water
Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.5 mL	10.0 mL	704981	09/08/23 18:59	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	705649	09/12/23 05:52	C1P	EET SAC

Client Sample ID: SM-MW23-3
Lab Sample ID: 320-104638-6
Date Collected: 08/30/23 19:29
Matrix: Water
Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.9 mL	10.0 mL	705341	09/12/23 05:32	GAT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	705983	09/14/23 03:57	S1C	EET SAC

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Client Sample ID: SM-TWP23-1

Lab Sample ID: 320-104638-7

Date Collected: 08/28/23 18:37

Matrix: Water

Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			291.3 mL	10.0 mL	704981	09/08/23 18:59	ERR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	706271	09/15/23 02:00	D1R	EET SAC

Client Sample ID: SM-MW22-2

Lab Sample ID: 320-104638-8

Date Collected: 08/31/23 16:10

Matrix: Water

Date Received: 09/07/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		289.2 mL	10.0 mL	705341	09/12/23 05:32	GAT	EET SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5	1 mL	1 mL	707336	09/18/23 23:34	K1S	EET SAC
Total/NA	Prep	3535			289.2 mL	10.0 mL	705341	09/12/23 05:32	GAT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	705983	09/14/23 04:08	S1C	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: St. Mary's WSW

Job ID: 320-104638-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-104638-1	SM-MW23-4	Water	08/30/23 20:27	09/07/23 09:40
320-104638-2	SM-MW23-13	Water	08/30/23 19:19	09/07/23 09:40
320-104638-3	SM-MW22-1	Water	08/31/23 17:27	09/07/23 09:40
320-104638-4	SM-EB	Water	09/05/23 11:30	09/07/23 09:40
320-104638-5	KSM-005	Water	08/28/23 16:00	09/07/23 09:40
320-104638-6	SM-MW23-3	Water	08/30/23 19:29	09/07/23 09:40
320-104638-7	SM-TWP23-1	Water	08/28/23 18:37	09/07/23 09:40
320-104638-8	SM-MW22-2	Water	08/31/23 16:10	09/07/23 09:40

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Eurofins Test America
Attn: David Alltuckes

Turn Around Time: ☑ Normal ☐ Rush — Please Specify

Quote No:

J-Flags: ☒ Yes ☐ No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	PFAS x18 (DoD-Table B-15)	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
SM-MW23-4		2027	8/30/23	X	2	groundwater
SM-MW23-13		1919	8/30/23	X		
SM-MW22-1		1727	8/31/23			
SM-EB		1130	9/5/23			Lab-supplied PFAS-free water
KSM-005		1600	8/28/23			
SM-MW23-3		1929	8/30/23			
SM-TWP23-1		1887	8/28/23			
SM-MW22-2		1610	8/31/23	X	2	

320-104638 Chain of Custody

Project Information	
Number:	102219-019
Name:	St. Mary's WSW
Contact:	KRF@shanwil.com
Ongoing Project?	Yes ☒ No ☐
Sampler:	DHF + SDK

Sample Receipt	
Total No. of Containers:	16
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Temp:	
Delivery Method:	

Notes:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1245	Signature: Time:	Signature: Time:
Printed Name: Sidney Kroeger Date: 8/5/23	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 940	Signature: Time:	Signature: Time:
Printed Name: J Fisher Date: 9/7/23	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

1 of 2

No.

eurofins | Environment Testing

Sacramento
Sample Receiving Notes

Loc 320
104638

Tracking # 5881 5597 9580

Job _____ _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSL / OnTrac / Goldstreak / USPS / Other_____

Use this form to record Sample Custody Seal Cooler Custody Seal Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm ID L10 Corr Factor (+ / -) _____ °C

Ice ~ Wet_____ Gel ~ Other _____

Cooler Custody Seal ~

Cooler ID _____

Temp Observed 1.6 °C Corrected 1.6 °C
From Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Frozen samples show signs of thaw?	☐	☐	☑

Initials JF Date 9/7/23

Unpacking/Labeling The Samples	Yes	No	NA
Containers are not broken or leaking?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
COC is complete w/o discrepancies	☑	☐	☐
Sample custody seal?	☐	☐	☑
Sample containers have legible labels?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Is the Field Sampler's name on COC?	☑	☐	☐
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314 331 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials JF Date 9/7/23

Notes _____

Trizma Lot #(s) _____

Ammonium
Acetate Lot #(s) _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
NCM Filed?	☐	☑	☐
Samples received within hold time?	☑	☐	☐
Log Release checked in TALS?	☑	☐	☐

Initials JF Date 9/7/23

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-104638-1

Login Number: 104638
List Number: 1
Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	REFER TO SSRN
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	N/A	
COC is filled out in ink and legible.	N/A	
COC is filled out with all pertinent information.	N/A	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	N/A	
Samples are received within Holding Time (excluding tests with immediate HTs)	N/A	
Sample containers have legible labels.	N/A	
Containers are not broken or leaking.	N/A	
Sample collection date/times are provided.	N/A	
Appropriate sample containers are used.	N/A	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Kristen Freiburger	**CS Site Name:**	N/A	**Lab Name:**	Eurofins Environment Testing
Title:	Associate	**ADEC File No.:**	N/A	**Lab Report No.:**	320-104638-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	N/A	**Lab Report Date:**	9/21/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: The samples were submitted to the DEC certified Eurofins Environment Testing laboratory in West Sacramento for the analysis of PFAS. These compounds were included in the DEC's contaminated sites laboratory approval 17-020.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Sample analyses were not subcontracted or transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories version 5.3 Table B-15.
   Comments:

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): The cooler temperature was reported 1.6° C.
Sample temperature(s): A temperature blank was included with the samples in the cooler however, a temperature was not recorded.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: PFAS does not require any additional preservation beyond temperature control.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory noted that the samples arrived in good condition within the case narrative.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory did not note any discrepancies.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:

Method EPA 537(Mod): The low level continuing calibration verification (CCVL) associated with batch 320-705641 recovered above the upper control limit for Perfluorooctanoic acid (PFOA). The field samples associated with this CCVL were either non-detect or had detections below the reporting limit (RL) for the affected analyte. The continuing calibration verifications (CCV) bracketing the

associated samples were in control for this analyte; therefore, the data have been reported. The associated samples are impacted: *KSM-005* (320-104638-5) and (CCVL 320-705641/5).

Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-704981 and analytical batch 320-705649 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method EPA 537(Mod): Due to the high concentration of Perfluorohexanesulfonic acid (PFHxS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-704981 and analytical batch 320-706021 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Method EPA 537(Mod): Results for samples (570-150649-A-1-A), (570-150649-A-1-B MS) and (570-150649-A-1-C MSD) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method EPA 537(Mod): Results for sample *SM-MW22-2* (320-104638-8) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: *SM-TWP23-1* (320-104638-7). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

Method 3535: The following sample in preparation batch 320-704981 was observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. *SM-TWP23-1* (320-104638-7).

Method 3535: During the solid phase extraction process, the following sample contain non-settleable particulates which clogged the solid phase extraction column: *SM-TWP23-1* (320-104638-7) for preparation batch 320-704981.

Method 3535: The following samples in preparation batch 320-704981 were yellow in color prior to extraction. *SM-TWP23-1* (320-104638-7) for preparation batch 320-704981.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-705341.

Method 3535: The following samples in preparation batch 320-705341 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. *SM-MW23-13* (320-104638-2), *SM-MW22-1* (320-104638-3) and *SM-MW23-3* (320-104638-6).

Method 3535: The following sample in preparation batch 320-705341 was light brown in color and observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. *SM-MW23-4* (320-104638-1).

c. Were all the corrective actions documented?
Yes ☐ No ☐ N/A ☒
Comments: See the notes above. We note PFOA was not detected in sample *KSM-005* is not affected by the high recovery of the CCV.

d. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not note an effect on data quality or usability. See the following sections for our assessment.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LOQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: PFAS were not detected in the method blanks associated with this work order.

iii. If above LOQ or RL, what samples are affected?
Comments: N/A; see above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments:

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: N/A; the %R and RPD were within acceptable limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: MS/MSD samples were reported for preparation batches 704981 and 705341.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments:

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☒ N/A ☐
Comments: PFHxA was recovered below limits for the MS and MSD associated with preparation batch 704981. PFHxS was recovered below limits for the MSD associated with preparation batch 705341.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☒ No ☐ N/A ☐
Comments: See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: The spiked MS/MSD samples are not associated with our project sample set and the results are not considered affected. The case narrative refers the reviewer to the LCS information. LCS/LCSD samples were recovered within limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☒ N/A ☐
Comments: Each IDA associated with sample *SM-TWP23-1* was recovered slightly below the acceptable limits.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: PFAS results associated with sample *SM-TWP23-1* are affected by the IDA failures. Results are considered estimated, and detections are flagged “J” and non-detects are flagged “UJ” in the analytical database.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality is affected; however, the results are considered usable with the applied qualifiers.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LOQ or RL, what samples are affected?
Comments: N/A; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Field duplicate sample pairs *SM-MW-23-3 / SM-MW-23-13* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐
Comments: RPD are within project DQOs, where calculable (detectable results above the RL for both samples in the duplicate pair).

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability are not affected.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☒ No ☐ N/A ☐
Comments: Equipment blank *SM-EB* was submitted with the project samples.

ii. Are all results less than LOQ or RL?
Yes ☒ No ☒ N/A ☐
Comments: PFAS were not detected in the equipment blank sample.

iii. If above LOQ or RL, specify what samples are affected.
Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☐ No ☐ N/A ☒
Comments:

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

February 15, 2023

Name
Address
St. Marys, AK 99658

RE: RESULTS OF 2023 PFAS WATER SUPPLY WELL SAMPLING, ST. MARYS AIRPORT

Thank you for participating in our water supply well sampling program to evaluate the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Saint Mary's Airport (KSM). Shannon & Wilson, Inc. collected a water sample from your water supply well at address on date. We have also sent a copy of this letter to your tenant.

The water sample was analyzed for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and several other PFAS compounds. We compare these concentrations to the Alaska Department of Environmental Conservation (DEC) drinking water action level of 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by Eurofins Environment Testing indicate that PFOS was not detected, and PFOA was not detected in the groundwater sample from your well. Based on the laboratory results from this sampling event the sum of PFOS and PFOA for your water sample is XX ppt, which is above/below the DEC drinking water action level. *(Insert other detected PFAS)* were also detected in the sample; however, DEC has not promulgated groundwater or drinking water standards for this/these compounds. The portions of the original laboratory report that apply to your well (sample number *PW-039*) are enclosed for your records.

Shannon & Wilson has conducted this sampling event on behalf of the Alaska Department of Transportation and Public Facilities (DOT&PF). Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website.

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

If you have any questions regarding your results, please feel free to contact us.

Sincerely,

SHANNON & WILSON, INC.

Staff
Title

Enc: Select Pages of Test America Laboratory Report No. 320-97213-1
PFAS Fact Sheet – Sand Point Airport

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF Saint Mary's Airport Sitewide PFAS

File Number: 2444.38.011

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

PFAS has been detected in groundwater at the site, likely as a result of AFFF releases to the ground surface. PFAS affected soil is likely present.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

AFFF releases to the ground surface could cause soil contamination. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

We don't anticipate potentially affected surface bodies in the airport vicinity to be used as a drinking water source.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No surface soil samples have been collected at the KSM. However, AFFF was likely released to the ground surface on the lightly graveled runways that can be dusty in the summertime.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No sediment samples have been collected at the KSM. However, AFFF was likely release to the ground surface in unpaved and/or lightly graveled areas open to DOT&PF employees and the public. Additionally, local residents use subsistence practices (e.g., berry picking and fishing) that may expose them to sediment.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF Saint Mary's Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil									
	☑ Migration to subsurface — check soil									
	☑ Migration to groundwater — check groundwater									
	☐ Volatilization — check air									
	☑ Runoff or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil									
	☑ Migration to groundwater — check groundwater									
	☐ Volatilization — check air									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater — check groundwater									
	☐ Volatilization — check air									
	☐ Flow to surface water body — check surface water									
	☐ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water — check surface water									
	☐ Volatilization — check air									
	☑ Sedimentation — check sediment									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment — check sediment									
	☑ Resuspension, runoff, or erosion — check surface water									
	☑ Uptake by plants or animals — check biota									
	☐ Other (list):									
		☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
			☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
			☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F	C/F	C/F	
		☑ groundwater	☑ Ingestion of Groundwater	C/F	C/F	C/F	C/F	C/F	C/F	
			☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
			☐ Inhalation of Volatile Compounds in Tap Water							
		☐ air	☐ Inhalation of Outdoor Air							
			☐ Inhalation of Indoor Air							
			☐ Inhalation of Fugitive Dust							
		☑ surface water	☐ Ingestion of Surface Water							
			☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
			☐ Inhalation of Volatile Compounds in Tap Water							
		☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
		☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	

Revised, 10/01/2010

APPENDIX I: ST. PAUL AIRPORT SUPPORTING DOCUMENTS

Appendix I

St. Paul Airport Supporting Documents

CONTENTS

N

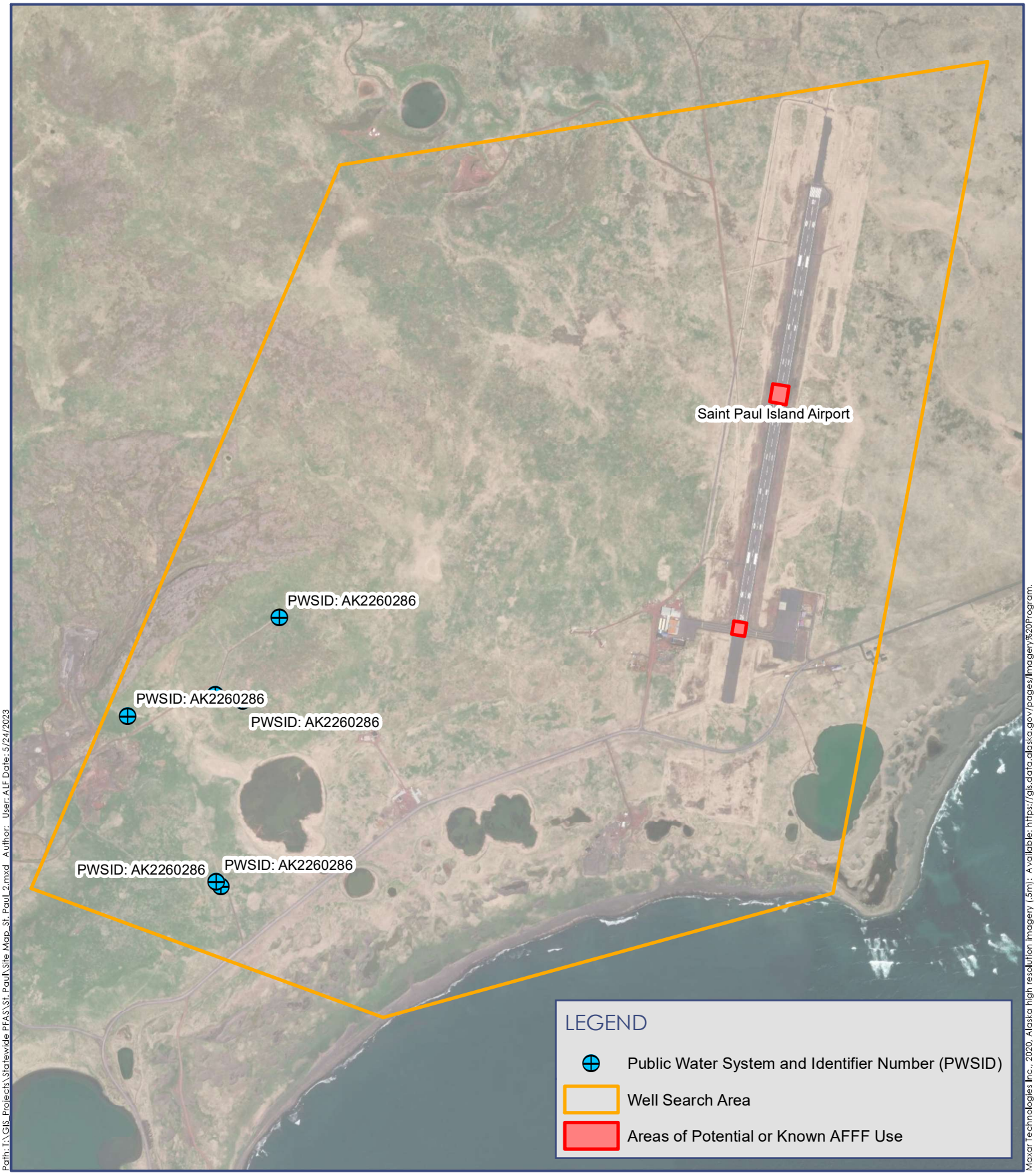
0 2

Miles

January 2023

VICINITY MAP

Figure 11



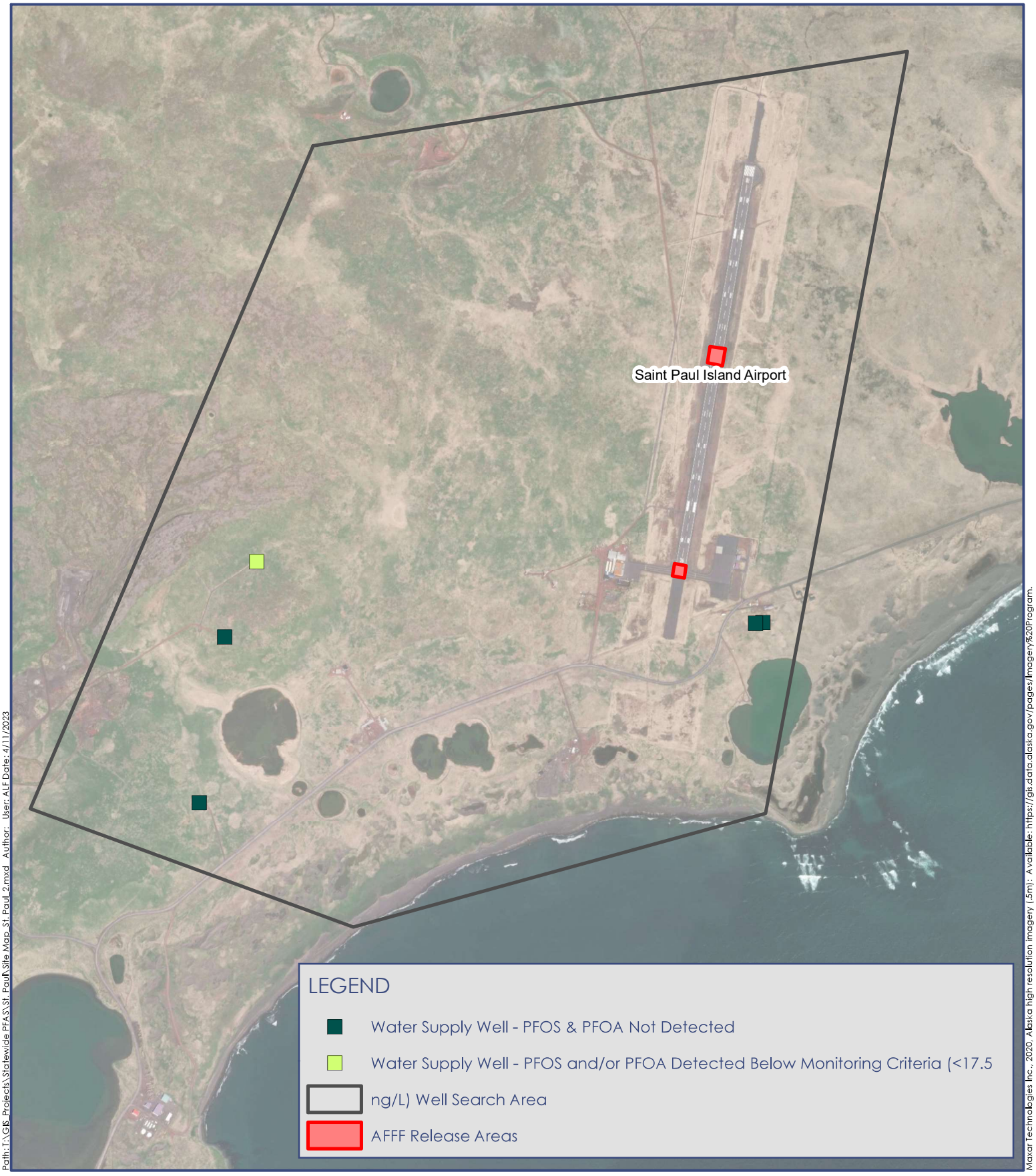
Path: I:\GIS_Projects\Statewide PFAS\St. Paul\Site Map_St. Paul_2.mxd Author: User: ALF Date: 5/24/2023

Maxar Technologies Inc., 2020, Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/Imagery%20Program.

January 2024

SITE MAP

Figure I2



Notes:
1. AFFF: Aqueous Film Foaming Foam
2. Locations are approximate
3. Samples collected in January 2023

ng/L = nanograms per liter, equivalent to parts per trillion (ppt)

January 2024

NOVEMBER 2022 ANALYTICAL RESULTS SUMMARY

Figure I3

Table I1 — St. Paul Island Water Supply Well Analytical Results - January 2023

Analytical Method	Analyte	Regulatory Limit	Units	SNP-NWell 1/17/2023	SNP-WellF2 1/17/2023	SNP-WellF2 Duplicate	SNP-WellF5 1/17/2023
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.9	1.2 J	<1.9	0.83 J
	Perfluorooctanoic acid (PFOA)		ng/L	<1.9	<1.9	<1.9	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.9	<3.7	<3.7	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.9	<1.9	<1.9	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.9	<4.6	<4.6	<4.6
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.9	<4.6	<4.6	<4.6

Notes:
Results reported from Eurofins TestAmerica work order 320-96242-1.
† Final EPA PFAS LHAs (HFPO/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of quanittation (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.

Table I2 - St. Paul Island Monitoring Well Analytical Results - January 2023

Analytical Method	Analyte	Regulatory Limit	Units	SNP-MWNW512 1/18/2023	SNP-MWNW513 1/18/2023
EPA 537(Mod) QSM 5.3, Table B-15	Perfluorooctanesulfonic acid (PFOS)	70‡	ng/L	<1.90	<1.80
	Perfluorooctanoic acid (PFOA)		ng/L	<1.90	<1.80
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.70	<3.70
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.90	<1.80
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.90	<1.80
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.90	<1.80
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	0.28 J	<1.80
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.90	<1.80
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.90	<1.80
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.90	<1.80
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.90	<1.80
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.90	<1.80
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.90	<1.80
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.90	<1.80
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.90	<1.80
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.90	<1.80
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.60	<4.60
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.60	<4.60

Notes:
Results reported from Eurofins TestAmerica work order 320-96242-1.
† Final EPA PFAS LHAs (HFPO/PFBS)
‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
DEC Alaska Department of Environmental Conservation
EPA United States Environmental Protection Agency
LHA Lifetime Health Advisory
PFAS per- and poly-fluoroalkyl substances
QSM Quality Systems Manual
ng/L nanograms per liter
N/A No applicable regulatory limit exists for the associated analyte.
< Analyte not detected; listed as less than the limit of quanittation (LOQ) unless otherwise flagged due to quality-control failures.
J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
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Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet –St. Paul Island Airport

December 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging and firefighting foams.

A potential source of PFAS in groundwater near the airport is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to identify and test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's (EPA's) former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise well users with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

F-1 S, F-2 – 58' 6' surface 86' bottom

Saint Paul Alaska
Water Utility

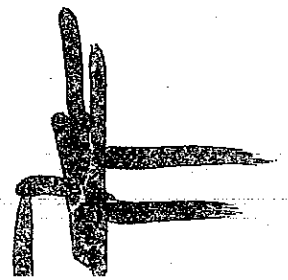
Water Well Data

12/9/2020

Well	North Well	South Well	Fredreka Well 1	Fredreka Well 2	Fredreka Well 3	Fredreka Well 4	Fredreka Well 5	Eureka Monitoring
Latitude	57d08'51.8"	57d08'51.1"	57d09'17.4"	57d09'16.3"	57d09'14.2"	57d09'26.9"	57d09'27.8"	57d09'16.5"
Longitude	170d15'46.9"	170d15'45.7"	170d15'45.8"	170d15'39.0"	170d16'09.1"	170d15'48.2"	170d15'29.5"	170d15'43.8"
Surface Elevation					39.98	42.2	83.2	
Date Developed	Pre 1955	Pre 1955	1987	1987	1994	1994	1994	1987
Casing Length (ft)	91.75	86.00	71	80	69	72	111.4	72
Casing Diameter (inch)	6" Steel	6" Steel	8" Steel	8" Steel	8" Steel	8" Steel	8" Steel	6" PVC
Well Screen Length (ft)			18	17.9	19.3	18.45	19	20
Well Screen Diameter			8" SS	8" SS	8" SS	8" SS	8" SS	6" PVC
Well Screen Size			.030" slot	.060" slot	.060" slot	.060" slot	.060" slot	.060" slot
Pump Piping Size (inch)	3	3	4	3	4	3	4	N/A
Pump Piping Length (ft)	94	88	55	64	52	56	94	N/A
Date Pump Installed	1993	1993	1993	1993	1993	Out of Svc	1993	N/A
Pump Manufacturer	Red Jacket	Red Jacket	Red Jacket	Red Jacket	Red Jacket	Red Jacket	Red Jacket	N/A
Pump Model	10EC	10EC	6D250 40	10EC	6D250 40	10EC	6D250 40	N/A
Nominal Flow Rate (gpm)	80	80	200	80	200	80	200	N/A
Pump Head (feet)	100-150 ft	100-150 ft	100-150 ft	100-150 ft	100-150 ft	100-150 ft	100-150 ft	N/A
Motor Manufacturer	Franklin Elec	Franklin Elec	Franklin Elec	Franklin Elec	Franklin Elec	Franklin Elec	Franklin Elec	N/A
Motor Model	2343175202	2343175202	2366129020	2343175202	2366129020	2343175202	2366129020	N/A
Power	230v 3 ph	230v 3 ph	480v 3 ph	230v 3 ph	480v 3 ph	230v 3 ph	480v 3 ph	N/A
Horsepower	5	5	10	5	10	5	10	N/A

Notes:

North and South Wells, and Fredreka 1 and 2 Wells may not be operated at the same time.
Original well insatallation dates shown. Replacement well installation dates not current.
Fredreka 3 Well currently out of service.



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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristen Freiburger
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 2/24/2023 10:23:51 AM

JOB DESCRIPTION

Sait Paul PFAS

JOB NUMBER

320-96242-1

Eurofins Sacramento
880 Riverside Parkway
West Sacramento CA 95605

See page two for job notes and contact information.

Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization

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2/24/2023 10:23:51 AM

Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Qualifiers

LCMS

Qualifier	Qualifier Description
	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job ID: 320-96242-1

Laboratory: Eurofins Sacramento

Narrative

Job Narrative
320-96242-1

Receipt
The samples were received on 1/24/2023 4:25 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3º C.

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-649399.

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-NWELL — Lab Sample ID: 320-96242-1

No Detections.

Client Sample ID: SNP-WELLF2 — Lab Sample ID: 320-96242-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	1.2		1.9	0.50	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SNP-WELLF102 — Lab Sample ID: 320-96242-3

No Detections.

Client Sample ID: SNP-WELLF5 — Lab Sample ID: 320-96242-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.83		1.8	0.49	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SNP-MWNWS12 — Lab Sample ID: 320-96242-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.28		1.9	0.23	ng/L	1	EPA 537(Mod)	Total/NA

Client Sample ID: SNP-MWNWS13 — Lab Sample ID: 320-96242-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-NWELL
Date Collected: 01/17/23 11:28
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-1
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.57	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.83	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.56	ng/L		01/26/23 05:58	02/21/23 16:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.53	ng/L		01/26/23 05:58	02/21/23 16:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		01/26/23 05:58	02/21/23 16:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		01/26/23 05:58	02/21/23 16:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		01/26/23 05:58	02/21/23 16:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		01/26/23 05:58	02/21/23 16:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		01/26/23 05:58	02/21/23 16:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		01/26/23 05:58	02/21/23 16:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*10*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C4 PFHpA	*108*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C4 PFOA	*108*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C5 PFNA	*106*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C2 PFDA	*101*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C2 PFUnA	*93*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C2 PFDoA	*92*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C2 PFTeDA	*81*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C3 PFBS	*94*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
18O2 PFHxS	*94*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C4 PFOS	*86*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
d3-NMeFOSAA	*73*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
d5-NEtFOSAA	*76*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	
13C3 HFPO-DA	*125*		*50 - 150*	*01/26/23 05:58*	*02/21/23 16:17*	

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-WELL-2
Date Collected: 01/17/23 12:05
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-2
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/26/23 05:58	01/27/23 12:43	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J**	1.9	0.50	ng/L		01/26/23 05:58	01/27/23 12:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/26/23 05:58	01/27/23 12:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/26/23 05:58	01/27/23 12:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/26/23 05:58	01/27/23 12:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/26/23 05:58	01/27/23 12:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/26/23 05:58	01/27/23 12:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/26/23 05:58	01/27/23 12:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C4 PFHpA	*103*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C4 PFOA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C5 PFNA	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C2 PFDA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C2 PFUnA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C2 PFDoA	*87*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C2 PFTeDA	*92*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C3 PFBS	*92*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
18O2 PFHxS	*103*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C4 PFOS	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
d3-NMeFOSAA	*97*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
d5-NEtFOSAA	*102*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*
13C3 HFPO-DA	*108*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:43*	*1*

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-WELLP102
Date Collected: 01/ 17/ 23 12:35
Date Received: 01/ 24/ 23 16:25

Lab Sample ID: 320-96242-3
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/26/23 05:58	01/27/23 12:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		01/26/23 05:58	01/27/23 12:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/26/23 05:58	01/27/23 12:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/26/23 05:58	01/27/23 12:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/26/23 05:58	01/27/23 12:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/26/23 05:58	01/27/23 12:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/26/23 05:58	01/27/23 12:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/26/23 05:58	01/27/23 12:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C4 PFHpA			*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C4 PFOA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C5 PFNA	*108*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C2 PFDA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C2 PFUnA	*98*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C2 PFDoA	*95*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C2 PFTeDA	*92*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C3 PFBS	*105*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
18O2 PFHxS	*10*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C4 PFOS	*103*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
d3-NMeFOSAA	*100*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
d5-NEtFOSAA	*107*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	
13C3 HFPO-DA	*15*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:53*	

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-WELL5
Date Collected: 01/17/23 12:38
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-4
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		01/26/23 05:58	01/27/23 13:04	1
Perfluorooctanesulfonic acid (PFOS)	**0.83**	**J**	1.8	0.49	ng/L		01/26/23 05:58	01/27/23 13:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/26/23 05:58	01/27/23 13:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/26/23 05:58	01/27/23 13:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/26/23 05:58	01/27/23 13:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/26/23 05:58	01/27/23 13:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		01/26/23 05:58	01/27/23 13:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/26/23 05:58	01/27/23 13:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C4 PFHpA	*107*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C4 PFOA	*99*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C5 PFNA	*97*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C2 PFDA	*96*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C2 PFUnA	*97*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C2 PFDoA	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C2 PFTeDA	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C3 PFBS	*90*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
18O2 PFHxS	*99*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C4 PFOS	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
d3-NMeFOSAA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
d5-NEtFOSAA	*105*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	
13C3 HFPO-DA	*109*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:04*	

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-MWNW312
Date Collected: 01/ 18/ 23 12:33
Date Received: 01/ 24/ 23 16:25

Lab Sample ID: 320-96242-5
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluoroheptanoic acid (PFHpA)	0.28	J	1.9	0.23	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/26/23 05:58	01/27/23 13:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		01/26/23 05:58	01/27/23 13:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/26/23 05:58	01/27/23 13:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/26/23 05:58	01/27/23 13:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/26/23 05:58	01/27/23 13:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/26/23 05:58	01/27/23 13:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/26/23 05:58	01/27/23 13:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/26/23 05:58	01/27/23 13:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C4 PFHpA	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C4 PFOA	*100*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C5 PFNA	*95*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C2 PFDA	*100*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C2 PFUnA	*94*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C2 PFDoA	*89*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C2 PFTeDA	*87*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C3 PFBS	*92*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
18O2 PFHxS	*98*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C4 PFOS	*97*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
d3-NMeFOSAA	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
d5-NEtFOSAA	*95*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	
13C3 HFPO-DA			*50 - 150*	*01/26/23 05:58*	*01/27/23 13:14*	

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-MWNW313
Date Collected: 01/18/23 14:08
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-6
Matrix: Water

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.79	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		01/26/23 05:58	01/27/23 13:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		01/26/23 05:58	01/27/23 13:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/26/23 05:58	01/27/23 13:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/26/23 05:58	01/27/23 13:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/26/23 05:58	01/27/23 13:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/26/23 05:58	01/27/23 13:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		01/26/23 05:58	01/27/23 13:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/26/23 05:58	01/27/23 13:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*109*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C4 PFHpA	*91*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C4 PFOA	*102*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C5 PFNA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C2 PFDA	*105*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C2 PFUnA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C2 PFDoA	*90*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C2 PFTeDA	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C3 PFBS	*102*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
18O2 PFHxS	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C4 PFOS	*94*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
d3-NMeFOSAA	*90*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
d5-NEtFOSAA	*106*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*
13C3 HFPO-DA	*115*		*50 - 150*	*01/26/23 05:58*	*01/27/23 13:24*	*1*

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-96242-1	SNP-NWELL	110	108	108	106	101	93	92	81
320-96242-2	SNP-WELLF2	103	103	101	93	101	101	87	92
320-96242-3	SNP-WELLF102	103	111	101	108	101	98	95	92
320-96242-4	SNP-WELLF5	106	107	99	97	96	97	93	93
320-96242-5	SNP-MWNWS12	92	93	100	95	100	94	89	87
320-96242-6	SNP-MWNWS13	109	91	102	101	105	101	90	93
LCS 320-649399/2-A	Lab Control Sample	94	97	95	101	94	90	85	85
LCSD 320-649399/3-A	Lab Control Sample Dup	98	94	95	92	98	96	85	88
MB 320-649399/1-A	Method Blank	105	112	92	101	98	101	92	100

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)		
320-96242-1	SNP-NWELL	94	94	86	73	76	125		
320-96242-2	SNP-WELLF2	92	103	101	97	102	108		
320-96242-3	SNP-WELLF102	105	110	103	100	107	115		
320-96242-4	SNP-WELLF5	90	99	93	101	105	109		
320-96242-5	SNP-MWNWS12	92	98	97	93	95	111		
320-96242-6	SNP-MWNWS13	102	101	94	90	106	115		
LCS 320-649399/2-A	Lab Control Sample	97	96	90	96	101	102		
LCSD 320-649399/3-A	Lab Control Sample Dup	93	99	89	91	99	100		
MB 320-649399/1-A	Method Blank	104	90	98	93	115	110		

Surrogate Legend

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-649399/1-A
Matrix: Water
Analysis Batch: 650561

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 649399

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/26/23 05:58	01/27/23 12:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/26/23 05:58	01/27/23 12:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/26/23 05:58	01/27/23 12:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/26/23 05:58	01/27/23 12:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/26/23 05:58	01/27/23 12:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/26/23 05:58	01/27/23 12:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/26/23 05:58	01/27/23 12:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/26/23 05:58	01/27/23 12:02	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*105*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C4 PFHpA	*12*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C4 PFOA	*92*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C5 PFNA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C2 PFDA	*98*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C2 PFUnA	*101*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C2 PFDoA	*92*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C2 PFTeDA	*100*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C3 PFBS	*104*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
18O2 PFHxS	*90*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C4 PFOS	*98*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
d3-NMeFOSAA	*93*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
d5-NEtFOSAA	*15*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	
13C3 HFPO-DA	*10*		*50 - 150*	*01/26/23 05:58*	*01/27/23 12:02*	

Lab Sample ID: LCS 320-649399/2-A
Matrix: Water
Analysis Batch: 650561

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 649399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	45.2		ng/L		113	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	45.5		ng/L		114	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.7		ng/L		107	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.2		ng/L		108	69 - 130

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-649399/2-A
Matrix: Water
Analysis Batch: 650561

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 649399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	43.0		ng/L		108	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.7		ng/L		112	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.7		ng/L		114	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	42.5		ng/L		106	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.7		ng/L		104	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.9		ng/L		101	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	39.1		ng/L		107	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	41.0		ng/L		110	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.2		ng/L		108	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.9		ng/L		110	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	42.3		ng/L		113	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.5		ng/L		106	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	41.9		ng/L		111	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	49.5		ng/L		131	81 - 141

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*94*		*50 - 150*
13C4 PFHpA	*97*		*50 - 150*
13C4 PFOA	*95*		*50 - 150*
13C5 PFNA	*101*		*50 - 150*
13C2 PFDA	*94*		*50 - 150*
13C2 PFUnA	*90*		*50 - 150*
13C2 PFDoA	*85*		*50 - 150*
13C2 PFTeDA	*85*		*50 - 150*
13C3 PFBS	*97*		*50 - 150*
18O2 PFHxS	*96*		*50 - 150*
13C4 PFOS	*90*		*50 - 150*
d3-NMeFOSAA	*96*		*50 - 150*
d5-NEtFOSAA	*101*		*50 - 150*
13C3 HFPO-DA	*102*		*50 - 150*

Lab Sample ID: LCSD 320-649399/3-A
Matrix: Water
Analysis Batch: 650561

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 649399

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.8		ng/L		102	72 - 129	10	30
Perfluoroheptanoic acid (PFHpA)	40.0	47.6		ng/L		119	72 - 130	5	30
Perfluorooctanoic acid (PFOA)	40.0	44.7		ng/L		112	71 - 133	4	30

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCSD 320-649399/3-A
Matrix: Water
Analysis Batch: 650561

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 649399

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	45.6		ng/L		114	69 - 130	5	30
Perfluorodecanoic acid (PFDA)			40.0	44.1		ng/L		110	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)			40.0	44.2		ng/L		110	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)			40.0	46.0		ng/L		115	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)			40.0	44.6		ng/L		112	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)			40.0	41.7		ng/L		104	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)			35.5	36.5		ng/L		103	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	38.4		ng/L		105	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)			37.2	40.4		ng/L		109	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	46.8		ng/L		117	65 - 136	8	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.9		ng/L		107	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid			37.4	43.9		ng/L		117	77 - 137	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.4		ng/L		104	72 - 132	3	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid			37.8	42.4		ng/L		112	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.8	46.4		ng/L		123	81 - 141	7	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*98*		*50 - 150*
13C4 PFHpA	*94*		*50 - 150*
13C4 PFOA	*95*		*50 - 150*
13C5 PFNA	*92*		*50 - 150*
13C2 PFDA	*98*		*50 - 150*
13C2 PFUnA	*96*		*50 - 150*
13C2 PFDoA	*85*		*50 - 150*
13C2 PFTeDA	*88*		*50 - 150*
13C3 PFBS	*93*		*50 - 150*
18O2 PFHxS	*99*		*50 - 150*
13C4 PFOS	*89*		*50 - 150*
d3-NMeFOSAA	*91*		*50 - 150*
d5-NEtFOSAA	*99*		*50 - 150*
13C3 HFPO-DA	*100*		*50 - 150*

LCMS

Prep Batch: 649399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96242-1	SNP-NWELL	Total/NA	Water	3535	
320-96242-2	SNP-WELLF2	Total/NA	Water	3535	
320-96242-3	SNP-WELLF102	Total/NA	Water	3535	
320-96242-4	SNP-WELLF5	Total/NA	Water	3535	
320-96242-5	SNP-MWNWS12	Total/NA	Water	3535	
320-96242-6	SNP-MWNWS13	Total/NA	Water	3535	
MB 320-649399/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-649399/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-649399/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 650561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96242-2	SNP-WELLF2	Total/NA	Water	EPA 537(Mod)	649399
320-96242-3	SNP-WELLF102	Total/NA	Water	EPA 537(Mod)	649399
320-96242-4	SNP-WELLF5	Total/NA	Water	EPA 537(Mod)	649399
320-96242-5	SNP-MWNWS12	Total/NA	Water	EPA 537(Mod)	649399
320-96242-6	SNP-MWNWS13	Total/NA	Water	EPA 537(Mod)	649399
MB 320-649399/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	649399
LCS 320-649399/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	649399
LCSD 320-649399/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	649399

Analysis Batch: 655426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96242-1	SNP-NWELL	Total/NA	Water	EPA 537(Mod)	649399

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Client Sample ID: SNP-NWEL
Date Collected: 01/17/23 11:28
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.5 mL	10.0 mL	649399	01/26/23 05:58	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655426	02/21/23 16:17	S1M	EET SAC

Client Sample ID: SNP-WELLF2
Date Collected: 01/17/23 12:05
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.1 mL	10.0 mL	649399	01/26/23 05:58	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	650561	01/27/23 12:43	RS1	EET SAC

Client Sample ID: SNP-WELLF102
Date Collected: 01/17/23 12:35
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.1 mL	10.0 mL	649399	01/26/23 05:58	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	650561	01/27/23 12:53	RS1	EET SAC

Client Sample ID: SNP-WELLF5
Date Collected: 01/17/23 12:38
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.5 mL	10.0 mL	649399	01/26/23 05:58	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	650561	01/27/23 13:04	RS1	EET SAC

Client Sample ID: SNP-MWNWS12
Date Collected: 01/18/23 12:33
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.1 mL	10.0 mL	649399	01/26/23 05:58	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	650561	01/27/23 13:14	RS1	EET SAC

Client Sample ID: SNP-MWNWS13
Date Collected: 01/18/23 14:08
Date Received: 01/24/23 16:25

Lab Sample ID: 320-96242-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.4 mL	10.0 mL	649399	01/26/23 05:58	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	650561	01/27/23 13:24	RS1	EET SAC

Laboratory References:
EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: Sait Paul PFAS

Job ID: 320-96242-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-96242-1	SNP-NWELL	Water	01/17/23 11:28	01/24/23 16:25
320-96242-2	SNP-WELLF2	Water	01/17/23 12:05	01/24/23 16:25
320-96242-3	SNP-WELLF102	Water	01/17/23 12:35	01/24/23 16:25
320-96242-4	SNP-WELLF5	Water	01/17/23 12:38	01/24/23 16:25
320-96242-5	SNP-MWNWS12	Water	01/18/23 12:33	01/24/23 16:25
320-96242-6	SNP-MWNWS13	Water	01/18/23 14:08	01/24/23 16:25

#204047

Eurofins Environment Testing Northern California
880 Riverside Parkway
West Sacramento, CA 95605
Phone: 916.373.5600

Chain of Custody Record

eurofins | Environment Testing America

Client Contact	Report To: Kristen Freiburger	Site Contact:	Date: 1/23/2023	COC No: 1
Shannon & Wilson Inc.	Tel/Fax: 907-458-3146	Lab Contact: David Alltucker	Carrier: Goldstreak	1 of 1 COCs
5430 Fairbanks Street, Suite 3	Analysis Turnaround Time			Job No. 102219-020
Anchorage, Alaska 99518	Calendar (C) or Work Days (W)			SDG No.
Phone: 907-561-2120	TAT if different from Below			
FAX:	☒ 2 weeks			
Project Name: Saint Paul PFAS	☐ 1 week			
Site:	☐ 2 days			
P O # 102219-020	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	PFAS QSM 5.3, Tab. B-15	Sample Specific Notes:
SNP-NWell	1/17/23	1128	G	W	2		x	
SNP-WellF2	1/17/23	1205	G	W	2		x	
SNP-WellF102	1/17/23	1235	G	W	2		x	
SNP-WellF5	1/17/23	1238	G	W	2		x	
SNP-MWNWS12	1/18/23	1233	G	W	2		x	
SNP-MWNWS13	1/18/23	1408	G	W	2		x	

320-96242 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant Poison B Unknown ☒ ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Shannon + Wilson	1/23/23 900	Jesse Aceves	SJ	1/24/23 10:24
[signature]	SJ	1/24/23 1920	[signature]	ETCA	1-24-23 1920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

3.0 C° 1.3C

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2/24/2023

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-96242-1

Login Number: 96242
List Number: 1
Creator: Pratali, Sandra A

List Source: Eurofins Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Amber Masters	**CS Site Name:**	N/A	**Lab Name:**	Eurofins Environment Testing
Title:	Environmental Scientist	**ADEC File No.:**	N/A	**Lab Report No.:**	320-96242-1
Consulting Firm:	Shannon & Wilson, Inc.	**Hazard ID No.:**	N/A	**Lab Report Date:**	February 24, 2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: The ADEC certified Eurofins Environment Testing, West Sacramento for the analysis of PFAS. These compounds were included in the ADEC's Contaminated Sites Laboratory Approval 17-020.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Sample analyses were not subcontracted or transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments:

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Per- and polyfluorinated substances (PFAS) compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories version 5.3 Table B-15.
   Comments:

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☐ No ☐ N/A ☒
Comments: PFAS does not require any additional preservation beyond temperature control.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: The laboratory notes that the samples arrived in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☒ No ☐ N/A ☐
Comments: Custody seals were not noted. The cooler was taped and we do not consider the data to be affected by this discrepancy.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments:
Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-649399.

Were all the corrective actions documented?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory did not note corrective actions.

c. What is the effect on data quality/usability according to the case narrative?
Comments: The case narrative does not indicate an effect on data quality or usability. See the following sections for our assessment.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments:

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments:

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soils were not submitted with this work order.

d. Are the reported limits of quantitation (LOQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments:

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments:

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments:

iii. If above LOQ or RL, what samples are affected?
Comments: There were no detections in the method blank associated with the project samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒
Comments: See above.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments:

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: N/A. See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐

Comments: See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐
Comments: MS/MSD samples were not analyzed as a part of this work order. The laboratory analyzed LCS/LCSD samples to assess laboratory accuracy and precision.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Metals/Inorganics were not requested as a part of this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: See above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

vii. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes ☒ No ☐ N/A ☐
Comments:

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐
Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments:

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: A trip blank is not required.

iii. If above LOQ or RL, what samples are affected?
Comments: None; a trip blank is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments:

Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐

Comments: Field duplicate pair *SNP-WellF2 / SNP-WellF102* was submitted with this work order.

ii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☐ No ☐ N/A ☒
Comments: RPD were not calculable, as analytes were not detected in both samples for the field-duplicate pair.

iii. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: See above.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Reusable equipment was not used; therefore, an equipment blank is not required.

ii. Are all results less than LOQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: See above.

iii. If above LOQ or RL, specify what samples are affected.
Comments: N/A; see above.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: See above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?
Yes ☐ No ☐ N/A ☒
Comments:

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

February 15, 2023

Name
Address
Saint Paul, AK 99660

RE: RESULTS OF 2023 PFAS WATER SUPPLY WELL SAMPLING, SAINT PAUL AIRPORT

Thank you for participating in our water supply well sampling program to evaluate the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Saint Paul Airport (SNP). Shannon & Wilson, Inc. collected a water sample from your water supply well at address on date. We have also sent a copy of this letter to your tenant.

The water sample was analyzed for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and several other PFAS compounds. We compare these concentrations to the Alaska Department of Environmental Conservation (DEC) drinking water action level of 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by Eurofins Environment Testing indicate that PFOS was not detected, and PFOA was not detected in the groundwater sample from your well. Based on the laboratory results from this sampling event the sum of PFOS and PFOA for your water sample is XX ppt, which is above/below the DEC drinking water action level. *(Insert other detected PFAS)* were also detected in the sample; however, DEC has not promulgated groundwater or drinking water standards for this/these compounds. The portions of the original laboratory report that apply to your well (sample number *PW-039*) are enclosed for your records.

Shannon & Wilson has conducted this sampling event on behalf of the Alaska Department of Transportation and Public Facilities (DOT&PF). Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website.

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

If you have any questions regarding your results, please feel free to contact us.

Sincerely,

SHANNON & WILSON, INC.

Staff
Title

Enc: Select Pages of Test America Laboratory Report No. 320-96242-1
PFAS Fact Sheet – Saint Paul Airport

2355 HILL ROAD
FAIRBANKS, ALASKA 99709-5326
907-479-0600 • FAX 907-479-5691

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Saint Paul Airport Sitewide PFAS

File Number: 2644.38.046

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

To our knowledge, no surface soil samples have been collected at the site for PFAS analysis. However, AFFF releases to the ground surface could cause soil contamination.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

AFFF releases to the ground surface could cause soil contamination. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

PFAS were detected in groundwater at the site, including the community's water supply wells.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

It is unlikely the surface water near SNP would be used as a drinking water source. If our investigative efforts determine this to be false, we will update this CSM.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No surface soil samples have been collected at the SNP. However, AFFF was likely released to the ground surface on the lightly graveled runways that can be dusty in the summertime.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No sediment samples have been collected at the SNP. Due to the potential for residents to access potentially contaminated surface water bodies, this has been marked as a pathway in need of further evaluation.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Saint Paul Island Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)
Check all exposure media identified in (2).

(4)
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil → check soil	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to subsurface → check soil		☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Migration to groundwater → check groundwater		☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F			
	☐ Volatilization → check air									
	☑ Runoff or erosion → check surface water									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil → check soil	☑ groundwater	☑ Ingestion of Groundwater	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to groundwater → check groundwater		☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☐ Volatilization → check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater → check groundwater	☐ air	☐ Inhalation of Outdoor Air							
	☐ Volatilization → check air		☐ Inhalation of Indoor Air							
	☐ Flow to surface water body → check surface water		☐ Inhalation of Fugitive Dust							
	☐ Flow to sediment → check sediment									
	☐ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water → check surface water	☑ surface water	☐ Ingestion of Surface Water							
	☐ Volatilization → check air		☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☑ Sedimentation → check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment → check sediment	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Resuspension, runoff, or erosion → check surface water									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
		☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	

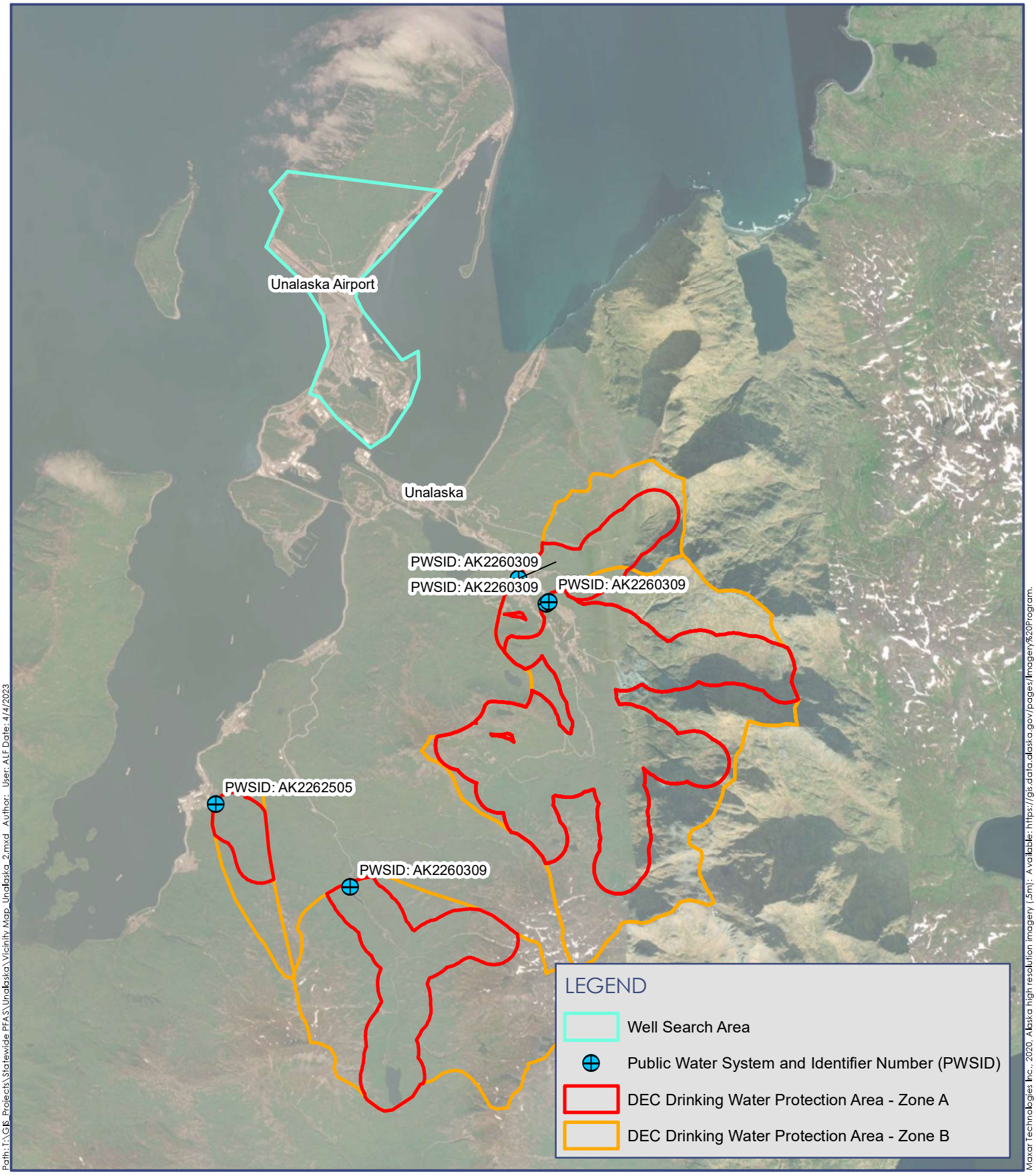
Revised, 10/01/2010

APPENDIX J: UNALASKA AIRPORT SUPPORTING DOCUMENTS

Appendix J

Unalaska Airport Supporting Documents

CONTENTS



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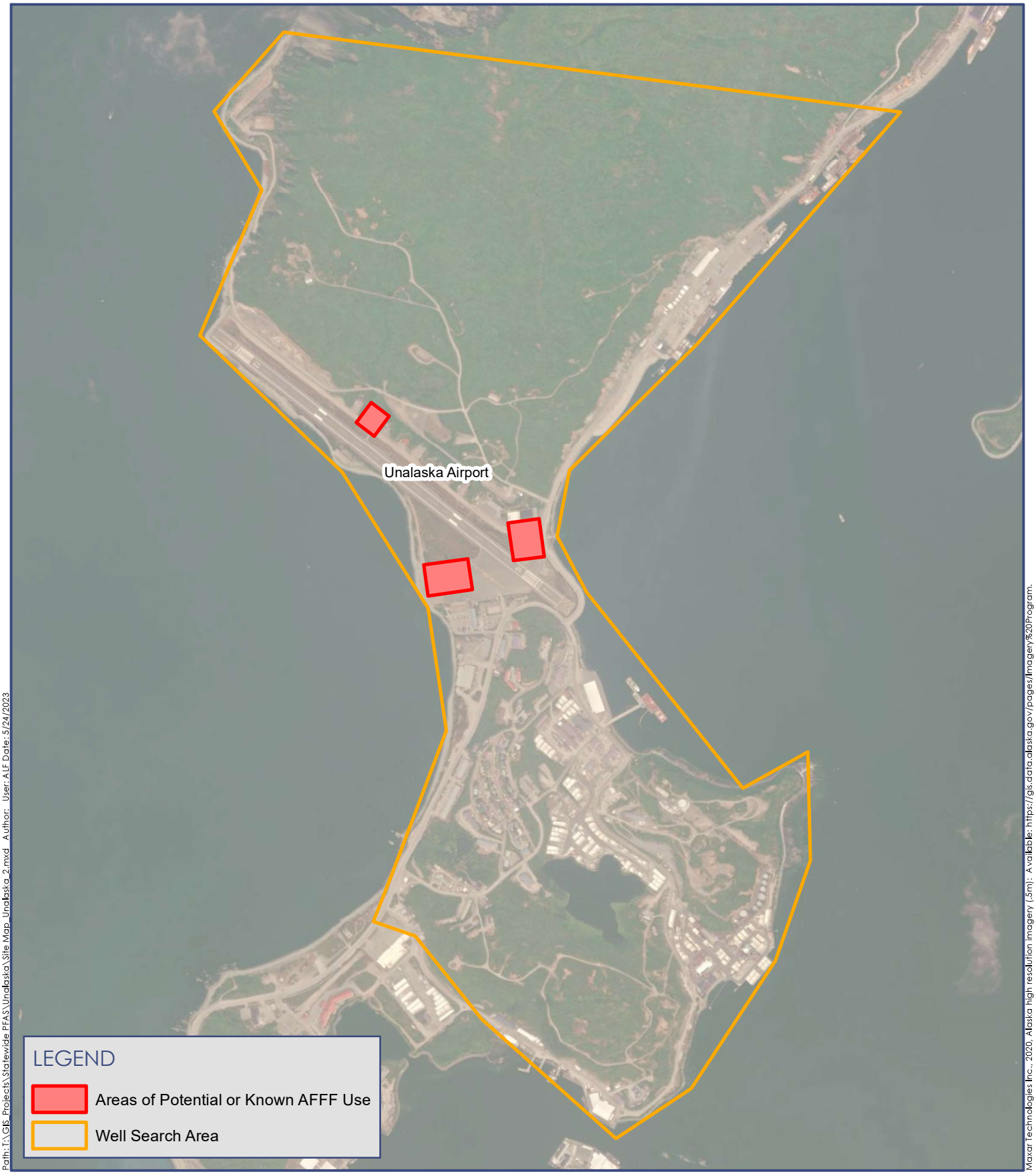
Miles

January 2024

VICINITY MAP

Figure J1



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Miles

January 2024

SITE MAP

Figure J2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

December 2022

Dear Property Owner or Occupant:

The Department of Transportation and Public Facilities (DOT&PF) is conducting a comprehensive evaluation of per- and polyfluoroalkyl substances (PFAS) contamination at state owned airports across the state. Firefighters at the Unalaska Airport have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, to extinguish hydrocarbon fires during training exercises and emergency events.

The DOT&PF has contracted with environmental consulting firm, Shannon & Wilson, Inc., to collect groundwater samples from water supply wells near the airport in Unalaska. Prior to the sampling event, DOT&PF and their representatives will also reach out to the community leadership to discuss the project and address questions.

If you have an active well within the search areas (see attached map), please complete the enclosed water supply well survey and return to the address below, or call (907) 458-3146.

Shannon & Wilson
2355 Hill Road
Fairbanks, AK 99709

Water supply well sample results will be compared to the Alaska Department of Conservation (DEC) drinking water action level of 70 parts per trillion for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two compounds within the PFAS family. PFAS are emerging contaminants, and the research into the health effects of exposure to PFAS is ongoing. Results for the water samples will be shared with property owners and residents. If your drinking-water well is found to have PFAS above the action level, DOT&PF will assist with access to alternative drinking water.

If you have any questions, please contact me, or see the enclosed contact list to identify the most appropriate person or agency for your inquiry. We appreciate your patience as we work through this process.

Sincerely,

Sammy Cummings

Sammy Cummings
PFAS Program Manager, DOT&PF Statewide Aviation

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Water Supply Well Inventory Survey Form

Date: _____

Parcel: _____

Name (Owner): _____

Name (Occupant): _____

Physical Address: _____

Mailing Address: _____

Email Address (optional): _____

Contact Phone Number: (owner) _____ (occupant) _____

Number of persons residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: _____ Full-Time ☐ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) Water Supply Utility ☐ b) Well Water ☐
   c) Water Delivery ☐ d) Other ☐

2) If you have a water well, please answer the following questions:
   a) Where is the well located on the property? _____
   b) Is the well in use? Yes ☐ No ☐
   c) If yes, please check all that apply regarding the usage of your well water:
      Drinking ☐ Cooking ☐ Gardening ☐ Pets ☐ Other _____
   d) If no, is the well usable, unusable, or properly abandoned?
      Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   e) When was the well installed? _____
   f) What is the well depth? _____ Do you have the well log? ☐ Yes ☐ No
   g) What is the well diameter? _____
   h) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   i) Do you have any treatment on your well (e.g. water softener)? Please describe. _____
      _____

3) Sample Permission
   Does the Alaska Department of Transportation & Public Facilities (DOT&PF) have permission to sample your private water well? ☐ Yes ☐ No

_____ _____
Signature Date

N

0 0.5

Miles

Notes:
1. AFFF: Aqueous Film Foarming Foam
2. Search area is approximate

December 2022

SITE MAP

Figure 2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet – Unalaska Airport

December 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF Unalaska Airport Sitewide PFAS

File Number: 2661.38.019

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

To our knowledge, no surface soil samples have been collected at the site for PFAS analysis. However, AFFF releases to the ground surface could cause soil contamination.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

AFFF releases to the ground surface could cause soil contamination. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

To our knowledge, groundwater is not used as a drinking water source at or near the airport.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

It is unlikely the surface water near DUT would be used as a drinking water source. If our investigative efforts determine this to be false, we will update this CSM.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PFAS are not included in Appendix D.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No surface soil samples have been collected at the DUT. However, AFFF was likely released to the ground surface on the runways that can be dusty in the summertime.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

No sediment samples have been collected at the DUT. However, AFFF was likely release to the ground surface and runoff could occur to surface water bodies. Additionally, local residents may use subsistence practices (e.g., berry picking and fishing) that may expose them to sediment.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF Unalaska Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil → check soil	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
	☑ Migration to subsurface → check soil		☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
	☑ Migration to groundwater → check groundwater		☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F			
	☐ Volatilization → check air	☑ groundwater	☐ Ingestion of Groundwater							
	☑ Runoff or erosion → check surface water		☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
	☑ Uptake by plants or animals → check biota		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Other (list):	☐ air	☐ Inhalation of Outdoor Air							
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil → check soil		☐ Inhalation of Indoor Air							
	☑ Migration to groundwater → check groundwater		☐ Inhalation of Fugitive Dust							
	☐ Volatilization → check air	☑ surface water	☐ Ingestion of Surface Water							
	☑ Uptake by plants or animals → check biota		☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
	☐ Other (list):		☐ Inhalation of Volatile Compounds in Tap Water							
☑ Ground-water	☑ Direct release to groundwater → check groundwater	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Volatilization → check air	☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	
	☐ Flow to surface water body → check surface water									
	☐ Flow to sediment → check sediment									
	☐ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water → check surface water									
	☐ Volatilization → check air									
	☑ Sedimentation → check sediment									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment → check sediment									
	☑ Resuspension, runoff, or erosion → check surface water									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									

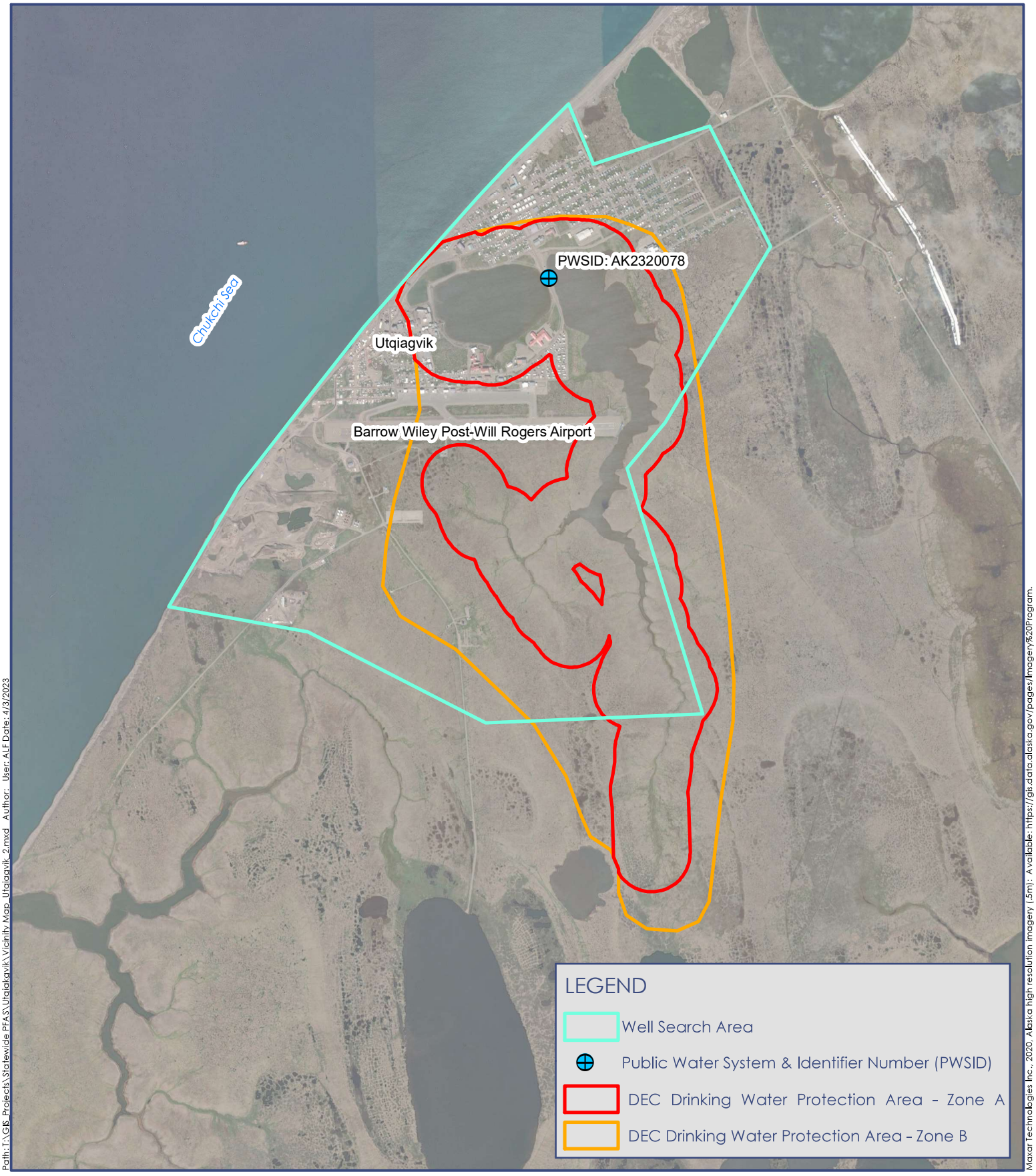
Revised, 10/01/2010

APPENDIX K: UTQIAĠVIK AIRPORT SUPPORTING DOCUMENTS

Appendix K

Utqiaġvik Airport Supporting Documents

CONTENTS



Path: I:\GIS_Projects\Statewide PFAS\Utqiagvik\Vicinity Map_Utqiagvik_2.mxd Author: User: ALF Date: 4/3/2023

Maxar Technologies Inc., 2020. Alaska high resolution imagery (.5m): Available: https://gis.data.alaska.gov/pages/Imagery%20Program.

January 2024

VICINITY MAP

Figure K1

N

0 1

Miles

January 2024

SITE MAP

Figure K2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

January 2023

Dear Property Owner or Occupant:

The Department of Transportation and Public Facilities (DOT&PF) is conducting a comprehensive evaluation of per- and polyfluoroalkyl substances (PFAS) contamination at state owned airports across the state. Firefighters at the Wiley Post-Will Rogers Memorial Airport have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, to extinguish hydrocarbon fires during training exercises and emergency events.

The DOT&PF has contracted with environmental consulting firm, Shannon & Wilson, Inc., to collect groundwater samples from water supply wells near the airport in Utqiagvik. Prior to the sampling event, DOT&PF and their representatives will also reach out to the community leadership to discuss the project and address questions.

This is an Issue Notice that only applies to the Well Search Area on the attached map. If you received this notice and do NOT reside in the well search area, disregard this notice.

If you have an active well within the search area (see attached map), please complete the enclosed water supply well survey and return to the address below, or call (907) 458-3146.

Shannon & Wilson
2355 Hill Road
Fairbanks, AK 99709

Water supply well sample results will be compared to the Alaska Department of Conservation (DEC) drinking water action level of 70 parts per trillion for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two compounds within the PFAS family. PFAS are emerging contaminants, and the research into the health effects of exposure to PFAS is ongoing. Results for the water samples will be shared with property owners and residents. If your drinking-water well is found to have PFAS above the action level, DOT&PF will assist with access to alternative drinking water.

If you have any questions, please contact me, or see the enclosed contact list to identify the most appropriate person or agency for your inquiry. We appreciate your patience as we work through this process.

Sincerely,

Sammy Cummings
PFAS Program Manager, DOT&PF Statewide Aviation

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Private Well Inventory Survey Form

Date: _____

Parcel: _____

Name (Owner): _____

Name (Occupant): _____

Physical Address: _____

Mailing Address: _____

Email Address (optional): _____

Contact Phone Number: (owner) _____ (occupant) _____

Number of persons residing at this location:
Adults (18 and over) _____
Teenagers (13 to 17) _____
Children (12 and under) _____

Years at this residence: _____ Full-Time ☐ Seasonal ☐

---

1) From where do you obtain your drinking water?
   a) College Utilities Water Supply ☐ b) Well Water ☐
   c) Water Delivery ☐ d) Other ☐

2) If you have a water well, please answer the following questions:
   a) Where is the well located on the property? _____
   b) Is the well in use? Yes ☐ No ☐
   c) If yes, please check all that apply regarding the usage of your well water:
      Drinking ☐ Cooking ☐ Gardening ☐ Pets ☐ Other _____
   d) If no, is the well usable, unusable, or properly abandoned?
      Usable ☐ Unusable ☐ Abandoned ☐ Method _____
   e) When was the well installed? _____
   f) What is the well depth? _____
   g) What is the well diameter? _____
   h) What is the well type? ☐ Dug Well ☐ Driven ☐ Drilled ☐ Unknown
   i) Do you have any treatment on your well (e.g. water softener)? Please describe. _____
      _____

3) Sample Permission
   Does the Fairbanks International Airport have permission to sample your private water well?
   ☐ Yes ☐ No

_____ _____
Signature Date

Notes:
1. AFFF: Aqueous Film Foarming Foam
2. Search area is approximate

January 2023

SITE MAP

Figure 2

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

DIVISION OF STATEWIDE AVIATION

P.O. Box 196900, 99519-6900
4111 Aviation Avenue, 99502
Anchorage, AK
Main: 907.269.0730
Fax: 907.269.0489
dot.state.ak.us

PFAS Fact Sheet – Utqiagvik Airport

January 2023

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging, and firefighting foams.

The presumed source of potential PFAS in groundwater in your community is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

Website: www.dot.alaska.gov/airportwater/

For questions about well testing:
Shannon & Wilson, Inc.
Kristen Freiburger, Project Manager
Office Phone: 907-458-3146
Email: kristen.freiburger@shanwil.com

For regulatory questions:
Alaska Dept. of Environmental Conservation
Bill O'Connell, Contaminated Sites Program
Phone: 907-269-3057
Email: bill.oconnell@alaska.gov

For questions about PFAS and health effects:
Alaska Department of Health
Sarah Yoder, Env. Public Health Manager
Phone: 907-269-8054
Email: sarah.yoder@alaska.gov

For questions about fire training & other inquiries:
DOT&PF – Statewide Aviation
Sammy Cummings, PFAS Program Manager
Phone: 907-888-5671
Email: airportwater@alaska.gov

We advise residents with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	2021-020
Sampled By: Tom Drake II	

Requested Analysis — Preservative Added: Trizma Mixture

Page 1 of 1

☒ Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
Raw Water Tap	SPIN001	1/5/21	14:15	W	PEF64218		2	X	
MG Tank	SPTP001	1/5/21	14:20	W	PEF64219		2	X	

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 2.0 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Sub Lab Temperature on arrival: _____ °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II		BUECI	1/5/21 1500	Jerry Pollen	Pollen Env.	1-7-21 @ 1020am
Relinquished by: Jerry Pollen		Company: Pollen Env	Date & Time: 1-7-21 @ 1100am	Received by:	Company:	Date & Time:
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 1/15/2021
Receipt Date: 1/7/2021
Sampled By: Tom Drake II

Project Name: PFC Monitoring
Sampled By: Tom Drake II
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Tap	PEF64218	4810166	1/5/2021	2:15 PM
MG Tank	PEF64219	4810167	1/5/2021	2:20 PM

Jerry Pollen
Pollen Environmental, LLC - Fairbanks

eurofins | Eaton Analytical

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 507668
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4810166	PEF64218-Raw Water Tap	537.1	01/05/21 14:15	Client	01/08/21 09:00
4810167	PEF64219-MG Tank	537.1	01/05/21 14:20	Client	01/08/21 09:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Traci Chlebowski ASM — 01/13/2021

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 507668

Client Name: Pollen Environmental LLC Report #: 507668

Sampling Point: PEF64218-Raw Water Tap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**4.3**	ng/L	01/11/21 07:47	01/12/21 09:30	4810166
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**44**	ng/L	01/11/21 07:47	01/12/21 09:30	4810166

Sampling Point: PEF64219-MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	01/11/21 07:47	01/12/21 04:16	4810167
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	01/11/21 07:47	01/12/21 04:16	4810167

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

CHAIN OF CUSTODY/WORKORDER FORM

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

COC# BUECI PFC
416112 5076668

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	2021-020
Sampled By: Tom Drake II	

Requested Analysis — Page 1 of 1

☒ Normal Turnaround
☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS (Perservative Added: Trizma Mixture)	Sample Comments
Raw Water Tap	SPIN001	1/5/21	14:15	W	PEF64218	48101166	2	X	
MG Tank	SPTP001	1/5/21	14:20	W	PEF64219	48101167	2	X	

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 2.0 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
Sub Lab Temperature on arrival: 1.2 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	1/5/21 1500	Jerry Pollen	Pollen Env.	1-7-21 @ 1020am
Jerry Pollen	Pollen Env	1-7-21 @ 1100am	Hilary Pehlig Wright	EEA	01/08/2021 0900
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Eurofins Eaton Analytical
Run Log

Run ID: **284199** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4810589		OS	FL	01/11/2021 19:09	011121M537_1a-FL.mdb
LRB	4810569		RW	FL	01/11/2021 19:35	011121M537_1a-FL.mdb
FBL	4810570		RW	FL	01/11/2021 19:48	011121M537_1a-FL.mdb
FBH	4810571		RW	FL	01/11/2021 20:14	011121M537_1a-FL.mdb
CCM	4810590		OS	FL	01/12/2021 02:06	011121M537_1a-FL.mdb
FS	4810167	PEF64219-MG Tank	DW	FL	01/12/2021 04:16	011121M537_1a-FL.mdb
CCH	4810591		OS	FL	01/12/2021 04:29	011121M537_1a-FL.mdb
CCM	4810893		OS	FL	01/12/2021 09:16	011121M537_1a-FL.mdb
FS	4810166	PEF64218-Raw Water Tap	DW	FL	01/12/2021 09:30	011121M537_1a-FL.mdb
CCH	4810894		OS	FL	01/12/2021 10:08	011121M537_1a-FL.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.7595	2.0	ng/L	88	50 - 150	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.9010	2.0	ng/L	95	50 - 150	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		215993	215993	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	IS-PFOA-13C2	537.1	N/A	---		525134	525134	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	IS-PFOS-13C4	537.1	N/A	---		289380	289380	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		159.5610	160	ng/L	100	70 - 130	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	SS-PFDA-13C2	537.1	N/A	---		40.0427	40.0	ng/L	100	70 - 130	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	SS-PFHxA-13C2	537.1	N/A	---		40.8439	40.0	ng/L	102	70 - 130	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		40.2450	40.0	ng/L	101	70 - 130	---	---	1.0	01/08/2021 09:40	01/11/2021 19:09	4810589
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		228444	215993	ng/L	106	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	IS-PFOA-13C2	537.1	N/A	---		585070	525134	ng/L	111	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	IS-PFOS-13C4	537.1	N/A	---		302177	289380	ng/L	104	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		146.3810	160	ng/L	91	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	SS-PFDA-13C2	537.1	N/A	---		36.9601	40.0	ng/L	92	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	SS-PFHxA-13C2	537.1	N/A	---		36.8862	40.0	ng/L	92	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		36.6324	40.0	ng/L	92	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:35	4810569
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.7056	2.0	ng/L	85	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.8083	2.0	ng/L	90	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		226448	215993	ng/L	105	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	IS-PFOA-13C2	537.1	N/A	---		594431	525134	ng/L	113	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	IS-PFOS-13C4	537.1	N/A	---		295989	289380	ng/L	102	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		144.9880	160	ng/L	91	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	SS-PFDA-13C2	537.1	N/A	---		36.5646	40.0	ng/L	91	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	SS-PFHxA-13C2	537.1	N/A	---		35.9373	40.0	ng/L	90	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		35.2641	40.0	ng/L	88	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 19:48	4810570
FBH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		193.2770	200	ng/L	97	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		198.1230	200	ng/L	99	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	IS-NMeFOSAA-d3	537.1	N/A	---		225449	215993	ng/L	104	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	IS-PFOA-13C2	537.1	N/A	---		604866	525134	ng/L	115	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	IS-PFOS-13C4	537.1	N/A	---		312879	289380	ng/L	108	50 - 150	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	SS-NEtFOSAA-d5	537.1	N/A	---		152.1000	160	ng/L	95	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	SS-PFDA-13C2	537.1	N/A	---		39.1923	40.0	ng/L	98	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	SS-PFHxA-13C2	537.1	N/A	---		36.0804	40.0	ng/L	90	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
FBH	SS-HFPO-DA-13C3	537.1	N/A	---		35.2731	40.0	ng/L	88	70 - 130	---	---	1.0	01/11/2021 07:47	01/11/2021 20:14	4810571
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		102.5410	100	ng/L	103	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		102.4090	100	ng/L	102	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		205357	205357	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
CCM	IS-PFOA-13C2	537.1	N/A	---		513600	513600	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOS-13C4	537.1	N/A	---		283397	283397	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		160.7580	160	ng/L	100	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
CCM	SS-PFDA-13C2	537.1	N/A	---		43.1229	40.0	ng/L	108	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
CCM	SS-PFHxA-13C2	537.1	N/A	---		40.7543	40.0	ng/L	102	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		41.2892	40.0	ng/L	103	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 02:06	4810590
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF64219-MG Tank	<	2.0		ng/L	---	---	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF64219-MG Tank	<	2.0		ng/L	---	---	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF64219-MG Tank		227276	205357	ng/L	111	50 - 150	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	IS-PFOA-13C2	537.1	N/A	PEF64219-MG Tank		586540	513600	ng/L	114	50 - 150	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	IS-PFOS-13C4	537.1	N/A	PEF64219-MG Tank		300647	283397	ng/L	106	50 - 150	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF64219-MG Tank		125.5080	160	ng/L	89	70 - 130	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	SS-PFDA-13C2	537.1	N/A	PEF64219-MG Tank		33.1193	40.0	ng/L	94	70 - 130	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	SS-PFHxA-13C2	537.1	N/A	PEF64219-MG Tank		30.9836	40.0	ng/L	88	70 - 130	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF64219-MG Tank		31.2242	40.0	ng/L	89	70 - 130	---	---	0.88	01/11/2021 07:47	01/12/2021 04:16	4810167
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		197.1280	200	ng/L	99	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		197.4130	200	ng/L	99	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		206995	206995	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	IS-PFOA-13C2	537.1	N/A	---		519926	519926	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	IS-PFOS-13C4	537.1	N/A	---		285218	285218	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		160.1570	160	ng/L	100	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	SS-PFDA-13C2	537.1	N/A	---		42.9040	40.0	ng/L	107	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	SS-PFHxA-13C2	537.1	N/A	---		39.3339	40.0	ng/L	98	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		39.6649	40.0	ng/L	99	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 04:29	4810591
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		100.0450	100	ng/L	100	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		100.2530	100	ng/L	100	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		211334	211334	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	IS-PFOA-13C2	537.1	N/A	---		531969	531969	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	IS-PFOS-13C4	537.1	N/A	---		296812	296812	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		154.8980	160	ng/L	97	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	SS-PFDA-13C2	537.1	N/A	---		41.1073	40.0	ng/L	103	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	SS-PFHxA-13C2	537.1	N/A	---		40.2960	40.0	ng/L	101	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		41.2397	40.0	ng/L	103	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 09:16	4810893
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF64218-Raw Water Ta		4.3		ng/L	---	---	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF64218-Raw Water Ta		44		ng/L	---	---	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF64218-Raw Water Ta		247116	211334	ng/L	117	50 - 150	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	IS-PFOA-13C2	537.1	N/A	PEF64218-Raw Water Ta		719848	531969	ng/L	135	50 - 150	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	IS-PFOS-13C4	537.1	N/A	PEF64218-Raw Water Ta		341258	296812	ng/L	115	50 - 150	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF64218-Raw Water Ta		127.7760	160	ng/L	84	70 - 130	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	SS-PFDA-13C2	537.1	N/A	PEF64218-Raw Water Ta		31.9272	40.0	ng/L	84	70 - 130	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	SS-PFHxA-13C2	537.1	N/A	PEF64218-Raw Water Ta		32.2679	40.0	ng/L	85	70 - 130	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF64218-Raw Water Ta		30.3105	40.0	ng/L	80	70 - 130	---	---	0.95	01/11/2021 07:47	01/12/2021 09:30	4810166

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		196.8800	200	ng/L	98	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		197.6140	200	ng/L	99	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		223453	223453	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	IS-PFOA-13C2	537.1	N/A	---		578425	578425	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	IS-PFOS-13C4	537.1	N/A	---		304015	304015	ng/L	100	50 - 150	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		158.1400	160	ng/L	99	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	SS-PFDA-13C2	537.1	N/A	---		40.1048	40.0	ng/L	100	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	SS-PFHxA-13C2	537.1	N/A	---		36.9775	40.0	ng/L	92	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		38.0841	40.0	ng/L	95	70 - 130	---	---	1.0	01/08/2021 09:40	01/12/2021 10:08	4810894

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	PO#2021-089
Sampled By: Tom Drake II	

Requested Analysis — Perservative Added: Trizma Mixture

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
Raw Water Tap	SPIN001	2/1/21	14:40	W	PEFG4724		2	X	
MG Tank	SPTP001	2/1/21	14:35	W	PEFG4725		2	X	

Page 1 of 1

☒ Normal Turnaround

☐ RUSH ____ day(s)

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 2.0 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Sub Lab Temperature on arrival: ____ °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II		BUECI	2/1/21 15:01		Pollen Env.	2/3/21 @0945
		Pollen Env	2/3/21 @1130		Company:	Date & Time:
		Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 2/11/2021
Receipt Date: 2/3/2021
Sampled By: Tom Drake II

Project Name: PFC Monitoring
Sampled By: Tom Drake II
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Tap	PEF64724	4826872	2/1/2021	2:40 PM
MG Tank	PEF64725	4826873	2/1/2021	2:35 PM

Jerry Pollen
Pollen Environmental, LLC - Fairbanks

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 509612
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4826872	PEF64724/Raw Water Tap	537.1	02/01/21 14:40	Client	02/04/21 09:00
4826873	PEF64725/MG Tank	537.1	02/01/21 14:35	Client	02/04/21 09:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Traci Chlebowski ASM — 02/09/2021

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 509612

Client Name: Pollen Environmental LLC Report #: 509612

Sampling Point: PEF64724/Raw Water Tap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**5.6**	ng/L	02/05/21 08:00	02/06/21 02:33	4826872
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**50**	ng/L	02/05/21 08:00	02/06/21 02:33	4826872

Sampling Point: PEF64725/MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	02/05/21 08:00	02/06/21 02:44	4826873
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	02/05/21 08:00	02/06/21 02:44	4826873

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

CHAIN OF CUSTODY/WORKORDER FORM

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

COC# BUECI PFC
418528

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	PO#2021-089
Sampled By: Tom Drake II	

Requested Analysis: 509612

Page 1 of 1

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Perservative Added: Trizma Mixture								Sample Comments
Raw Water Tap	SPIN001	2/1/21	14:40	W	PEFG4724		2	X									487687 2
MG Tank	SPTP001	2/1/21	14:35	W	PEFG4725		2	X									↓ 873

☐ Normal Turnaround
☐ RUSH ____ day(s)

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 2.0 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
Sub Lab Temperature on arrival: 1.2 °C *COC Seal:* ☑ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II		BUECI	2/1/21 15:20		Pollen Env.	2/3/21 @0945
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
		Pollen Env	2/3/21 @1130			
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
						2-4-2021 0900

Eurofins Eaton Analytical
Run Log

Run ID: **285186** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4828164		OS	GA	02/05/2021 22:29	020521M537.1b.wiff
LRB	4828167		RW	GA	02/05/2021 22:50	020521M537.1b.wiff
FBL	4828168		RW	GA	02/05/2021 23:01	020521M537.1b.wiff
FBH	4828169		RW	GA	02/05/2021 23:12	020521M537.1b.wiff
CCM	4828165		OS	GA	02/06/2021 01:51	020521M537.1b.wiff
FS	4826872	PEF64724/Raw Water Tap	DW	GA	02/06/2021 02:33	020521M537.1b.wiff
FS	4826873	PEF64725/MG Tank	DW	GA	02/06/2021 02:44	020521M537.1b.wiff
CCH	4828166		OS	GA	02/06/2021 03:48	020521M537.1b.wiff

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8902	2.0	ng/L	95	50 - 150	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.8850	2.0	ng/L	94	50 - 150	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		1024353	1024352.61	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	IS-PFOA-13C2	537.1	N/A	---		1250165	1250165.03	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	IS-PFOS-13C4	537.1	N/A	---		5594872	5594871.73	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		157.6918	160	ng/L	99	70 - 130	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	SS-PFDA-13C2	537.1	N/A	---		40.0951	40.0	ng/L	100	70 - 130	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	SS-PFHxA-13C2	537.1	N/A	---		39.4107	40.0	ng/L	99	70 - 130	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		40.0777	40.0	ng/L	100	70 - 130	---	---	1.0	02/05/2021 10:10	02/05/2021 22:29	4828164
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		975626	1024352.61	ng/L	95	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	IS-PFOA-13C2	537.1	N/A	---		1230597	1250165.03	ng/L	98	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	IS-PFOS-13C4	537.1	N/A	---		5645802	5594871.73	ng/L	101	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		134.3477	160	ng/L	84	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	SS-PFDA-13C2	537.1	N/A	---		35.7517	40.0	ng/L	89	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	SS-PFHxA-13C2	537.1	N/A	---		39.2426	40.0	ng/L	98	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		36.1234	40.0	ng/L	90	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 22:50	4828167
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8630	2.0	ng/L	93	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.7637	2.0	ng/L	88	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		997005	1024352.61	ng/L	97	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	IS-PFOA-13C2	537.1	N/A	---		1259026	1250165.03	ng/L	101	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	IS-PFOS-13C4	537.1	N/A	---		5721287	5594871.73	ng/L	102	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		142.0251	160	ng/L	89	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	SS-PFDA-13C2	537.1	N/A	---		37.3896	40.0	ng/L	93	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	SS-PFHxA-13C2	537.1	N/A	---		36.8363	40.0	ng/L	92	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		35.8016	40.0	ng/L	90	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:01	4828168
FBH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		193.5533	200	ng/L	97	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		189.2889	200	ng/L	95	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	IS-NMeFOSAA-d3	537.1	N/A	---		1034864	1024352.61	ng/L	101	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	IS-PFOA-13C2	537.1	N/A	---		1283366	1250165.03	ng/L	103	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	IS-PFOS-13C4	537.1	N/A	---		5627339	5594871.73	ng/L	101	50 - 150	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	SS-NEtFOSAA-d5	537.1	N/A	---		142.0649	160	ng/L	89	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	SS-PFDA-13C2	537.1	N/A	---		37.9330	40.0	ng/L	95	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	SS-PFHxA-13C2	537.1	N/A	---		37.8494	40.0	ng/L	95	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
FBH	SS-HFPO-DA-13C3	537.1	N/A	---		37.5457	40.0	ng/L	94	70 - 130	---	---	1.0	02/05/2021 08:00	02/05/2021 23:12	4828169
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		100.5946	100	ng/L	101	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		95.7068	100	ng/L	96	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		980775	980774.59	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
CCM	IS-PFOA-13C2	537.1	N/A	---		1224504	1224504.49	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOS-13C4	537.1	N/A	---		5598527	5598527.49	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		164.0585	160	ng/L	103	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
CCM	SS-PFDA-13C2	537.1	N/A	---		40.2252	40.0	ng/L	101	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
CCM	SS-PFHxA-13C2	537.1	N/A	---		40.6081	40.0	ng/L	102	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		40.1722	40.0	ng/L	100	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 01:51	4828165
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF64724/Raw Water Tap		5.6		ng/L	---	---	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF64724/Raw Water Tap		50		ng/L	---	---	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF64724/Raw Water Tap		1021162	980774.59	ng/L	104	50 - 150	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	IS-PFOA-13C2	537.1	N/A	PEF64724/Raw Water Tap		1329230	1224504.49	ng/L	109	50 - 150	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	IS-PFOS-13C4	537.1	N/A	PEF64724/Raw Water Tap		6001057	5598527.49	ng/L	107	50 - 150	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF64724/Raw Water Tap		115.8243	160	ng/L	81	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	SS-PFDA-13C2	537.1	N/A	PEF64724/Raw Water Tap		31.3096	40.0	ng/L	88	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	SS-PFHxA-13C2	537.1	N/A	PEF64724/Raw Water Tap		33.6077	40.0	ng/L	94	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF64724/Raw Water Tap		31.0049	40.0	ng/L	87	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:33	4826872
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF64725/MG Tank	<	2.0		ng/L	---	---	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF64725/MG Tank	<	2.0		ng/L	---	---	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF64725/MG Tank		995852	980774.59	ng/L	102	50 - 150	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	IS-PFOA-13C2	537.1	N/A	PEF64725/MG Tank		1248680	1224504.49	ng/L	102	50 - 150	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	IS-PFOS-13C4	537.1	N/A	PEF64725/MG Tank		5525402	5598527.49	ng/L	99	50 - 150	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF64725/MG Tank		123.1920	160	ng/L	87	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	SS-PFDA-13C2	537.1	N/A	PEF64725/MG Tank		31.9231	40.0	ng/L	90	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	SS-PFHxA-13C2	537.1	N/A	PEF64725/MG Tank		33.2023	40.0	ng/L	93	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF64725/MG Tank		32.1213	40.0	ng/L	90	70 - 130	---	---	0.89	02/05/2021 08:00	02/06/2021 02:44	4826873
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		198.5878	200	ng/L	99	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		199.5630	200	ng/L	100	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		949853	949852.81	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	IS-PFOA-13C2	537.1	N/A	---		1200110	1200110.18	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	IS-PFOS-13C4	537.1	N/A	---		5352724	5352723.74	ng/L	100	50 - 150	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		162.6925	160	ng/L	102	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	SS-PFDA-13C2	537.1	N/A	---		39.7109	40.0	ng/L	99	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	SS-PFHxA-13C2	537.1	N/A	---		39.7908	40.0	ng/L	99	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		40.9102	40.0	ng/L	102	70 - 130	---	---	1.0	02/05/2021 10:10	02/06/2021 03:48	4828166

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	2021-156
Sampled By: Tom Drake II	

Requested Analysis — Perservative Added: Trizma Mixture

Number of Containers: PFOA & PFOS

Page 1 of 1

☒ Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
Raw Water Tap	SPIN001	3/2/21	14:10	W	PEF65271		2	X	
MG Tank	SPTP001	3/2/21	14:15	W	PEF65272		2	X	

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 4.9 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Sub Lab Temperature on arrival: ____ °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II		BUECI	3/2/21 15:00	Jerry Pollen	Pollen Env.	3-4-21 0930
Jerry Pollen		Pollen Env	3-4-21 @ 1100am		Company:	Date & Time:
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 (907)659-2324 Phone (907)659-2325 Fax
pollenenv@astacalaska.com
3536 International Street Fairbanks, AK. 99701 (907)479-8368 Phone (907)452-6853 Fax
pollenenv@gmail.com

SAMPLE RECEIPT CHECKLIST

Date & Time Received 3-4-21 @ 0930 Initials JEP

Laboratory Identification PEF65259-65273

N/A	YES	NO	
☐	☑	☐	Custody Seals intact? (N/A if hand delivered)
☐	☑	☐	Chain of Custody (COC) present and properly filled out?
☐	☑	☐	Samples received in hold time?
☐	☑	☐	Proper container and preservatives used?
☐	☑	☐	Bottles received intact and properly labeled
☐	☑	☐	Do sample labels match the COC?
☐	☑	☐	Sufficient volume of sample for all analysis?
☐	☑	☐	Temperature Blank received in cooler?
☐	☑	☐	Were samples chilled before delivery to lab?
☐	☑	☐	Did samples have sufficient time to cool before delivery to lab? If not, mark **ITTC** (Insufficient Time To Cool) on COC form.
☐	☐	☑	Are air bubbles present in VOA vials?

Notes: _____

*Temperature upon receipt at the laboratory 4.9 °C

☑ internal sample kit thermometer ☐ infra-red thermometer

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 3/23/2021
Receipt Date: 3/4/2021
Sampled By: Tom Drake II

Project Name: PFC Monitoring
Sampled By: Tom Drake II
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Tap	PEF65271	4848559	3/2/2021	2:10 PM
MG Tank	PEF65272	4848560	3/2/2021	2:15 PM

Jerry Pollen
Pollen Environmental, LLC - Fairbanks

eurofins | Eaton Analytical

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 512160
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4848559	PEF65271 Raw Water Tap	537.1	03/02/21 14:10	Client	03/05/21 10:00
4848560	PEF65272 MG Tank	537.1	03/02/21 14:15	Client	03/05/21 10:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Authorized Signature | Title | 03/16/2021 Date

Client Name: Pollen Environmental LLC
Report #: 512160

Client Name: Pollen Environmental LLC Report #: 512160

Sampling Point: PEF65271 Raw Water Tap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**5.4**	ng/L	03/09/21 07:40	03/10/21 08:56	4848559
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**54**	ng/L	03/09/21 07:40	03/10/21 08:56	4848559

Sampling Point: PEF65272 MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	03/09/21 08:11	03/10/21 00:43	4848560
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	03/09/21 08:11	03/10/21 00:43	4848560

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

CHAIN OF CUSTODY/WORKORDER FORM

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

COC# 420869 BUECI PFC 512160

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	v Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	2021-156
Sampled By: Tom Drake II	

Requested Analysis — Page 1 of 1

Perservative Added

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Trizma Mixture	Sample Comments
Raw Water Tap	SPIN001	3/2/21	14:10	W	PEF65271	1 ~~2~~	X	4848559		
MG Tank	SPTP001	3/2/21	14:15	W	PEF65272	1 ~~2~~	X	560		
						PNW 03/05/21				

☐ Normal Turnaround
☐ RUSH ____ day(s)

Possible Hazard Identification:
☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Unknown

Sample Condition:
Pollen Env Temperature on arrival: 4.9 °C COC Seal: ☐ Intact ☐ Broken ☐ Absent
Sub Lab Temperature on arrival: _____ °C COC Seal: ☐ Intact ☐ Broken ☐ Absent

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	3/2/21 15:00	Jerry Pollen	Pollen Env.	3-4-21 @0930
Jerry Pollen	Pollen Env	3-4-21 @1100am	Penny Pehlke Wright	EEA	03/05/21 1000 0.6°C
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Eurofins Eaton Analytical
Run Log

Run ID: **286431** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4849921		OS	DQ	03/09/2021 19:20	030921M537_1a-DQ.mdb
LRB	4849927		RW	DQ	03/09/2021 19:46	030921M537_1a-DQ.mdb
FBL	4849929		RW	DQ	03/09/2021 19:59	030921M537_1a-DQ.mdb
CCM	4849923		OS	DQ	03/09/2021 22:47	030921M537_1a-DQ.mdb
FS	4848560	PEF65272 MG Tank	DW	DQ	03/10/2021 00:43	030921M537_1a-DQ.mdb
CCH	4849925		OS	DQ	03/10/2021 00:56	030921M537_1a-DQ.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.7524	2.0	ng/L	88	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.6599	2.0	ng/L	83	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		180091	180091	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	IS-PFOA-13C2	537.1	N/A	---		360101	360101	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	IS-PFOS-13C4	537.1	N/A	---		226007	226007	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		164.6190	160	ng/L	103	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	SS-PFDA-13C2	537.1	N/A	---		39.6976	40.0	ng/L	99	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	SS-PFHxA-13C2	537.1	N/A	---		39.1858	40.0	ng/L	98	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		39.1530	40.0	ng/L	98	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 19:20	4849921
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		171541	180091	ng/L	95	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	IS-PFOA-13C2	537.1	N/A	---		340042	360101	ng/L	94	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	IS-PFOS-13C4	537.1	N/A	---		197255	226007	ng/L	87	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		134.5880	160	ng/L	84	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	SS-PFDA-13C2	537.1	N/A	---		34.8036	40.0	ng/L	87	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	SS-PFHxA-13C2	537.1	N/A	---		34.4197	40.0	ng/L	86	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		33.5607	40.0	ng/L	84	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:46	4849927
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8869	2.0	ng/L	94	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.7927	2.0	ng/L	90	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		176758	180091	ng/L	98	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	IS-PFOA-13C2	537.1	N/A	---		356567	360101	ng/L	99	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	IS-PFOS-13C4	537.1	N/A	---		209754	226007	ng/L	93	50 - 150	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		137.1790	160	ng/L	86	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	SS-PFDA-13C2	537.1	N/A	---		34.3886	40.0	ng/L	86	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	SS-PFHxA-13C2	537.1	N/A	---		33.9343	40.0	ng/L	85	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		33.3213	40.0	ng/L	83	70 - 130	---	---	1.0	03/09/2021 08:11	03/09/2021 19:59	4849929
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		94.8659	100	ng/L	95	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		92.2487	100	ng/L	92	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		184981	184981	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	IS-PFOA-13C2	537.1	N/A	---		356665	356665	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	IS-PFOS-13C4	537.1	N/A	---		218988	218988	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		159.9180	160	ng/L	100	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	SS-PFDA-13C2	537.1	N/A	---		40.3873	40.0	ng/L	101	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	SS-PFHxA-13C2	537.1	N/A	---		39.4504	40.0	ng/L	99	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		40.9024	40.0	ng/L	102	70 - 130	---	---	1.0	03/09/2021 13:40	03/09/2021 22:47	4849923
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF65272 MG Tank	<	2.0		ng/L	---	---	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF65272 MG Tank	<	2.0		ng/L	---	---	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF65272 MG Tank		184610	184981	ng/L	100	50 - 150	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
FS	IS-PFOA-13C2	537.1	N/A	PEF65272 MG Tank		364016	356665	ng/L	102	50 - 150	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOS-13C4	537.1	N/A	PEF65272 MG Tank		206015	218988	ng/L	94	50 - 150	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF65272 MG Tank		111.4620	160	ng/L	80	70 - 130	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
FS	SS-PFDA-13C2	537.1	N/A	PEF65272 MG Tank		30.4392	40.0	ng/L	87	70 - 130	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
FS	SS-PFHxA-13C2	537.1	N/A	PEF65272 MG Tank		29.5010	40.0	ng/L	85	70 - 130	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF65272 MG Tank		29.1056	40.0	ng/L	84	70 - 130	---	---	0.87	03/09/2021 08:11	03/10/2021 00:43	4848560
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		204.4370	200	ng/L	102	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		202.6090	200	ng/L	101	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		190655	190655	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	IS-PFOA-13C2	537.1	N/A	---		349487	349487	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	IS-PFOS-13C4	537.1	N/A	---		217922	217922	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		149.5210	160	ng/L	93	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	SS-PFDA-13C2	537.1	N/A	---		41.4285	40.0	ng/L	104	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	SS-PFHxA-13C2	537.1	N/A	---		39.6953	40.0	ng/L	99	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		42.1000	40.0	ng/L	105	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 00:56	4849925

Eurofins Eaton Analytical
Run Log

Run ID: **286446** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4852073		OS	DQ	03/11/2021 20:34	031121M537_1b-DQ.mdb
LRB	4852076		RW	DQ	03/11/2021 20:59	031121M537_1b-DQ.mdb
FBL	4852077		RW	DQ	03/11/2021 21:12	031121M537_1b-DQ.mdb
FBM	4852082		RW	DQ	03/11/2021 21:25	031121M537_1b-DQ.mdb
CCM	4852074		OS	DQ	03/12/2021 04:57	031121M537_1b-DQ.mdb
CCH	4852075		OS	DQ	03/12/2021 07:32	031121M537_1b-DQ.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.7730	2.0	ng/L	89	50 - 150	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.6438	2.0	ng/L	82	50 - 150	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		163891	163891	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	IS-PFOA-13C2	537.1	N/A	---		341249	341249	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	IS-PFOS-13C4	537.1	N/A	---		197194	197194	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		160.4360	160	ng/L	100	70 - 130	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	SS-PFDA-13C2	537.1	N/A	---		40.0163	40.0	ng/L	100	70 - 130	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	SS-PFHxA-13C2	537.1	N/A	---		39.0939	40.0	ng/L	98	70 - 130	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		39.9289	40.0	ng/L	100	70 - 130	---	---	1.0	03/10/2021 10:50	03/11/2021 20:34	4852073
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		161666	163891	ng/L	99	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	IS-PFOA-13C2	537.1	N/A	---		348072	341249	ng/L	102	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	IS-PFOS-13C4	537.1	N/A	---		187234	197194	ng/L	95	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		150.4550	160	ng/L	94	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	SS-PFDA-13C2	537.1	N/A	---		39.7533	40.0	ng/L	99	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	SS-PFHxA-13C2	537.1	N/A	---		39.8615	40.0	ng/L	100	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		41.7688	40.0	ng/L	104	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 20:59	4852076
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.9943	2.0	ng/L	100	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.7667	2.0	ng/L	88	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		155744	163891	ng/L	95	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	IS-PFOA-13C2	537.1	N/A	---		339629	341249	ng/L	100	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	IS-PFOS-13C4	537.1	N/A	---		193728	197194	ng/L	98	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		155.9410	160	ng/L	97	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	SS-PFDA-13C2	537.1	N/A	---		40.8188	40.0	ng/L	102	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	SS-PFHxA-13C2	537.1	N/A	---		38.2568	40.0	ng/L	96	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		39.0038	40.0	ng/L	98	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:12	4852077
FBM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		94.4658	100	ng/L	94	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		95.6109	100	ng/L	96	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	IS-NMeFOSAA-d3	537.1	N/A	---		167118	163891	ng/L	102	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	IS-PFOA-13C2	537.1	N/A	---		348544	341249	ng/L	102	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	IS-PFOS-13C4	537.1	N/A	---		191657	197194	ng/L	97	50 - 150	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	SS-NEtFOSAA-d5	537.1	N/A	---		145.6430	160	ng/L	91	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	SS-PFDA-13C2	537.1	N/A	---		39.6241	40.0	ng/L	99	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	SS-PFHxA-13C2	537.1	N/A	---		37.9701	40.0	ng/L	95	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
FBM	SS-HFPO-DA-13C3	537.1	N/A	---		39.6635	40.0	ng/L	99	70 - 130	---	---	1.0	03/11/2021 07:50	03/11/2021 21:25	4852082
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		98.3660	100	ng/L	98	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		100.6130	100	ng/L	101	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		180070	180070	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCM	IS-PFOA-13C2	537.1	N/A	---		360824	360824	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOS-13C4	537.1	N/A	---		191428	191428	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		151.8140	160	ng/L	95	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCM	SS-PFDA-13C2	537.1	N/A	---		40.4176	40.0	ng/L	101	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCM	SS-PFHxA-13C2	537.1	N/A	---		39.0059	40.0	ng/L	98	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		40.7509	40.0	ng/L	102	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 04:57	4852074
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		206.1440	200	ng/L	103	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		210.4620	200	ng/L	105	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		171191	171191	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	IS-PFOA-13C2	537.1	N/A	---		340161	340161	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	IS-PFOS-13C4	537.1	N/A	---		193452	193452	ng/L	100	50 - 150	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		151.8660	160	ng/L	95	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	SS-PFDA-13C2	537.1	N/A	---		40.8609	40.0	ng/L	102	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	SS-PFHxA-13C2	537.1	N/A	---		39.1147	40.0	ng/L	98	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		41.2819	40.0	ng/L	103	70 - 130	---	---	1.0	03/10/2021 10:50	03/12/2021 07:32	4852075

Eurofins Eaton Analytical
Run Log

Run ID: **286494** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4850450		OS	GA	03/10/2021 04:31	031021M537.1a.wiff
LRB	4850046		RW	GA	03/10/2021 04:52	031021M537.1a.wiff
FBL	4850050		RW	GA	03/10/2021 05:02	031021M537.1a.wiff
FBM	4850063		RW	GA	03/10/2021 05:13	031021M537.1a.wiff
CCM	4850452		OS	GA	03/10/2021 07:31	031021M537.1a.wiff
FS	4848559	PEF65271 Raw Water Tap	DW	GA	03/10/2021 08:56	031021M537.1a.wiff
CCH	4850456		OS	GA	03/10/2021 09:17	031021M537.1a.wiff

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8140	2.0	ng/L	91	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.7639	2.0	ng/L	88	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		630771	630771.24	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	IS-PFOA-13C2	537.1	N/A	---		832973	832973.49	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	IS-PFOS-13C4	537.1	N/A	---		3475546	3475545.7	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		163.8980	160	ng/L	102	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	SS-PFDA-13C2	537.1	N/A	---		38.9396	40.0	ng/L	97	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	SS-PFHxA-13C2	537.1	N/A	---		40.7497	40.0	ng/L	102	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		39.0439	40.0	ng/L	98	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 04:31	4850450
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		618335	630771.24	ng/L	98	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	IS-PFOA-13C2	537.1	N/A	---		808121	832973.49	ng/L	97	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	IS-PFOS-13C4	537.1	N/A	---		3305081	3475545.7	ng/L	95	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		125.6282	160	ng/L	79	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	SS-PFDA-13C2	537.1	N/A	---		32.6510	40.0	ng/L	82	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	SS-PFHxA-13C2	537.1	N/A	---		33.4487	40.0	ng/L	84	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		32.0414	40.0	ng/L	80	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 04:52	4850046
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.9248	2.0	ng/L	96	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.8998	2.0	ng/L	95	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		604466	630771.24	ng/L	96	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	IS-PFOA-13C2	537.1	N/A	---		795027	832973.49	ng/L	95	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	IS-PFOS-13C4	537.1	N/A	---		3328216	3475545.7	ng/L	96	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		128.9107	160	ng/L	81	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	SS-PFDA-13C2	537.1	N/A	---		34.6614	40.0	ng/L	87	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	SS-PFHxA-13C2	537.1	N/A	---		34.8701	40.0	ng/L	87	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		33.0270	40.0	ng/L	83	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:02	4850050
FBM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		93.3469	100	ng/L	93	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		94.1115	100	ng/L	94	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	IS-NMeFOSAA-d3	537.1	N/A	---		660927	630771.24	ng/L	105	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	IS-PFOA-13C2	537.1	N/A	---		831073	832973.49	ng/L	100	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	IS-PFOS-13C4	537.1	N/A	---		3467344	3475545.7	ng/L	100	50 - 150	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	SS-NEtFOSAA-d5	537.1	N/A	---		128.0592	160	ng/L	80	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	SS-PFDA-13C2	537.1	N/A	---		34.9713	40.0	ng/L	87	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	SS-PFHxA-13C2	537.1	N/A	---		34.4823	40.0	ng/L	86	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
FBM	SS-HFPO-DA-13C3	537.1	N/A	---		33.9714	40.0	ng/L	85	70 - 130	---	---	1.0	03/09/2021 07:40	03/10/2021 05:13	4850063
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		92.8025	100	ng/L	93	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		95.1784	100	ng/L	95	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		609711	609711.49	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
CCM	IS-PFOA-13C2	537.1	N/A	---		793140	793139.87	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOS-13C4	537.1	N/A	---		3277119	3277118.84	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		165.7835	160	ng/L	104	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
CCM	SS-PFDA-13C2	537.1	N/A	---		38.7985	40.0	ng/L	97	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
CCM	SS-PFHxA-13C2	537.1	N/A	---		40.4813	40.0	ng/L	101	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		40.5418	40.0	ng/L	101	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 07:31	4850452
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF65271 Raw Water Tap		5.4		ng/L	---	---	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF65271 Raw Water Tap		54		ng/L	---	---	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF65271 Raw Water Tap		634856	609711.49	ng/L	104	50 - 150	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	IS-PFOA-13C2	537.1	N/A	PEF65271 Raw Water Tap		833188	793139.87	ng/L	105	50 - 150	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	IS-PFOS-13C4	537.1	N/A	PEF65271 Raw Water Tap		3531992	3277118.84	ng/L	108	50 - 150	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF65271 Raw Water Tap		103.3371	160	ng/L	**69**	70 - 130	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	SS-PFDA-13C2	537.1	N/A	PEF65271 Raw Water Tap		30.1714	40.0	ng/L	80	70 - 130	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	SS-PFHxA-13C2	537.1	N/A	PEF65271 Raw Water Tap		32.1013	40.0	ng/L	85	70 - 130	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF65271 Raw Water Tap		30.2643	40.0	ng/L	80	70 - 130	---	---	0.94	03/09/2021 07:40	03/10/2021 08:56	4848559
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		196.1553	200	ng/L	98	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		205.5041	200	ng/L	103	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		617325	617324.78	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	IS-PFOA-13C2	537.1	N/A	---		831632	831631.76	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	IS-PFOS-13C4	537.1	N/A	---		3337980	3337979.81	ng/L	100	50 - 150	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		162.0112	160	ng/L	101	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	SS-PFDA-13C2	537.1	N/A	---		38.7149	40.0	ng/L	97	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	SS-PFHxA-13C2	537.1	N/A	---		39.8629	40.0	ng/L	100	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		38.8140	40.0	ng/L	97	70 - 130	---	---	1.0	03/09/2021 13:40	03/10/2021 09:17	4850456

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBL	Fortified Blank Low		
FBM	Fortified Blank Mid		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	PO# 2021-236
Sampled By: Tom Drake II	

Requested Analysis — Perservative Added: Trizma Mixture

Number of Containers: PFOA & PFOS

Page 1 of 1

☒ Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
Raw Water Tap	SPIN001	4/7/21	0810	W	PEF65907		2	X	
MG Tank	SPTP001	4/7/21	0815	W	PEF65908		2	X	

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 2.6 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Sub Lab Temperature on arrival: _____ °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II		B.W.E.C.I.	4/7/21 0905	Carl D. Pollen	Pollen Env.	4-8-21 @1000
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
		Pollen Env	4/13/21 @1130			
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

Pollen Environmental, LLC.
Pouch 340135 Prudhoe Bay, AK. 99734 3536 International Street Fairbanks, AK. 99701
(907)659-2324 Phone (907)659-2325 Fax (907)479-8368 Phone (907)452-6853 Fax
www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 4/20/2021
Receipt Date: 4/8/2021
Sampled By: Tom Drake II

Project Name: PFC Monitoring
Sampled By: Tom Drake II
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Tap	PEF65907	4876238	4/7/2021	8:10 AM
MG Tank	PEF65908	4876239	4/7/2021	8:15 AM

Jerry Pollen
Pollen Environmental, LLC - Fairbanks

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

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110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 515206
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4876238	PEF35907/Raw Water Tap	537.1	04/07/21 08:10	Client	04/14/21 09:00
4876239	PEF35908/MG Tank	537.1	04/07/21 08:15	Client	04/14/21 09:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Traci Chlebowski ASM — 04/19/2021

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 515206

Client Name: Pollen Environmental LLC Report #: 515206

Sampling Point: PEF35907/Raw Water Tap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**6.0**	ng/L	04/16/21 07:15	04/16/21 23:57	4876238
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**62**	ng/L	04/16/21 07:15	04/16/21 23:57	4876238

Sampling Point: PEF35908/MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	04/16/21 07:15	04/17/21 00:10	4876239
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	04/16/21 07:15	04/17/21 00:10	4876239

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

CHAIN OF CUSTODY/WORKORDER FORM

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

COC# BUECI PFC 423589 515206

CLIENT INFORMATION	
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	PO#2021-236
Sampled By: Tom Drake II	

Requested Analysis — Perservative Added: Trizma Mixture — PFOA & PFOS (KB 4/14/2021)

Page 1 of 1

☒ Normal Turnaround
☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
Raw Water Tap	SPIN001	4/8/21	0810	W	PEF65907	4876238 1	2	X	
MG Tank	SPTP001	4/8/21	0815	W	PEF65908	↓ 39 1	2	X	

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 2.6 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
Sub Lab Temperature on arrival: 1.0 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	B.U.E.C.I.	4/8/21 0905	[signature]	Pollen Env.	4-8-21 @1000
[signature]	Pollen Env	4/13/21 @1130			
			[signature]	EEA	4/14/2021 0900

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **287791** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4877314		OS	DQ	04/15/2021 19:59	041521M537_1a-DQ.mdb
LRB	4877261		RW	DQ	04/15/2021 20:25	041521M537_1a-DQ.mdb
FBL	4877264		RW	DQ	04/15/2021 20:37	041521M537_1a-DQ.mdb
CCM	4877315		OS	DQ	04/16/2021 04:22	041521M537_1a-DQ.mdb
CCH	4877316		OS	DQ	04/16/2021 05:53	041521M537_1a-DQ.mdb
CCM	4879654		OS	DQ	04/16/2021 10:44	041521M537_1a-DQ.mdb
CCH	4879655		OS	DQ	04/16/2021 12:14	041521M537_1a-DQ.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8639	2.0	ng/L	93	50 - 150	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.8149	2.0	ng/L	91	50 - 150	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		164934	164934	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	IS-PFOA-13C2	537.1	N/A	---		313184	313184	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	IS-PFOS-13C4	537.1	N/A	---		182003	182003	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		160.4300	160	ng/L	100	70 - 130	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	SS-PFDA-13C2	537.1	N/A	---		39.0989	40.0	ng/L	98	70 - 130	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	SS-PFHxA-13C2	537.1	N/A	---		39.0356	40.0	ng/L	98	70 - 130	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		38.6087	40.0	ng/L	97	70 - 130	---	---	1.0	04/13/2021 11:01	04/15/2021 19:59	4877314
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		183884	164934	ng/L	111	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	IS-PFOA-13C2	537.1	N/A	---		344957	313184	ng/L	110	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	IS-PFOS-13C4	537.1	N/A	---		201725	182003	ng/L	111	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		133.9130	160	ng/L	84	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	SS-PFDA-13C2	537.1	N/A	---		35.9513	40.0	ng/L	90	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	SS-PFHxA-13C2	537.1	N/A	---		34.9718	40.0	ng/L	87	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		34.9098	40.0	ng/L	87	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:25	4877261
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.6884	2.0	ng/L	84	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.7626	2.0	ng/L	88	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		177788	164934	ng/L	108	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	IS-PFOA-13C2	537.1	N/A	---		333758	313184	ng/L	107	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	IS-PFOS-13C4	537.1	N/A	---		191852	182003	ng/L	105	50 - 150	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		151.1810	160	ng/L	94	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	SS-PFDA-13C2	537.1	N/A	---		38.7130	40.0	ng/L	97	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	SS-PFHxA-13C2	537.1	N/A	---		37.1119	40.0	ng/L	93	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		36.8498	40.0	ng/L	92	70 - 130	---	---	1.0	04/15/2021 06:00	04/15/2021 20:37	4877264
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		98.3602	100	ng/L	98	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		96.5925	100	ng/L	97	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		176268	176268	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	IS-PFOA-13C2	537.1	N/A	---		339682	339682	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	IS-PFOS-13C4	537.1	N/A	---		190050	190050	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		164.2310	160	ng/L	103	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	SS-PFDA-13C2	537.1	N/A	---		37.8635	40.0	ng/L	95	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	SS-PFHxA-13C2	537.1	N/A	---		37.2864	40.0	ng/L	93	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		37.5172	40.0	ng/L	94	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 04:22	4877315
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		201.3470	200	ng/L	101	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		202.9460	200	ng/L	101	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		176750	176750	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCH	IS-PFOA-13C2	537.1	N/A	---		352728	352728	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316

QC Summary Report (cont.)																
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCH	IS-PFOS-13C4	537.1	N/A	---		195789	195789	ng/L	100	50 - 150	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		164.7160	160	ng/L	103	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCH	SS-PFDA-13C2	537.1	N/A	---		37.2014	40.0	ng/L	93	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCH	SS-PFHxA-13C2	537.1	N/A	---		37.0658	40.0	ng/L	93	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		37.1941	40.0	ng/L	93	70 - 130	---	---	1.0	04/13/2021 11:01	04/16/2021 05:53	4877316
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		97.6845	100	ng/L	98	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		98.1414	100	ng/L	98	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		184511	184511	ng/L	100	50 - 150	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	IS-PFOA-13C2	537.1	N/A	---		298916	298916	ng/L	100	50 - 150	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	IS-PFOS-13C4	537.1	N/A	---		190347	190347	ng/L	100	50 - 150	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		152.7380	160	ng/L	95	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	SS-PFDA-13C2	537.1	N/A	---		43.6148	40.0	ng/L	109	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	SS-PFHxA-13C2	537.1	N/A	---		44.1801	40.0	ng/L	110	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		40.5449	40.0	ng/L	101	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 10:44	4879654
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		201.6630	200	ng/L	101	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		199.0160	200	ng/L	100	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		197186	197186	ng/L	100	50 - 150	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	IS-PFOA-13C2	537.1	N/A	---		339161	339161	ng/L	100	50 - 150	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	IS-PFOS-13C4	537.1	N/A	---		199728	199728	ng/L	100	50 - 150	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		151.8090	160	ng/L	95	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	SS-PFDA-13C2	537.1	N/A	---		38.9641	40.0	ng/L	97	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	SS-PFHxA-13C2	537.1	N/A	---		39.1226	40.0	ng/L	98	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		37.7297	40.0	ng/L	94	70 - 130	---	---	1.0	04/13/2021 13:55	04/16/2021 12:14	4879655

Eurofins Eaton Analytical
Run Log

Run ID: **287821** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4879413		OS	FL	04/16/2021 18:31	041621M537_1a-FL.mdb
LRB	4879371		RW	FL	04/16/2021 18:57	041621M537_1a-FL.mdb
FBL	4879373		RW	FL	04/16/2021 19:10	041621M537_1a-FL.mdb
CCM	4879415		OS	FL	04/16/2021 23:05	041621M537_1a-FL.mdb
FS	4876238	PEF35907/Raw Water Tap	DW	FL	04/16/2021 23:57	041621M537_1a-FL.mdb
FS	4876239	PEF35908/MG Tank	DW	FL	04/17/2021 00:10	041621M537_1a-FL.mdb
CCH	4879417		OS	FL	04/17/2021 00:36	041621M537_1a-FL.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		2.1130	2.0	ng/L	106	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		2.2632	2.0	ng/L	113	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		351335	351335	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	IS-PFOA-13C2	537.1	N/A	---		973573	973573	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	IS-PFOS-13C4	537.1	N/A	---		320862	320862	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		162.4910	160	ng/L	102	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	SS-PFDA-13C2	537.1	N/A	---		40.6471	40.0	ng/L	102	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	SS-PFHxA-13C2	537.1	N/A	---		40.1781	40.0	ng/L	100	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		39.2296	40.0	ng/L	98	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 18:31	4879413
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		359886	351335	ng/L	102	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	IS-PFOA-13C2	537.1	N/A	---		1026790	973573	ng/L	105	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	IS-PFOS-13C4	537.1	N/A	---		331072	320862	ng/L	103	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		134.2010	160	ng/L	84	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	SS-PFDA-13C2	537.1	N/A	---		37.2891	40.0	ng/L	93	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	SS-PFHxA-13C2	537.1	N/A	---		34.3777	40.0	ng/L	86	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		29.9844	40.0	ng/L	75	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 18:57	4879371
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8606	2.0	ng/L	93	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.9595	2.0	ng/L	98	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		360390	351335	ng/L	103	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	IS-PFOA-13C2	537.1	N/A	---		1023590	973573	ng/L	105	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	IS-PFOS-13C4	537.1	N/A	---		335474	320862	ng/L	105	50 - 150	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		144.6740	160	ng/L	90	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	SS-PFDA-13C2	537.1	N/A	---		37.8162	40.0	ng/L	95	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	SS-PFHxA-13C2	537.1	N/A	---		36.6741	40.0	ng/L	92	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		33.7820	40.0	ng/L	84	70 - 130	---	---	1.0	04/16/2021 07:15	04/16/2021 19:10	4879373
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		98.6652	100	ng/L	99	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		98.0876	100	ng/L	98	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		343297	343297	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	IS-PFOA-13C2	537.1	N/A	---		964549	964549	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	IS-PFOS-13C4	537.1	N/A	---		312017	312017	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		150.4190	160	ng/L	94	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	SS-PFDA-13C2	537.1	N/A	---		38.3720	40.0	ng/L	96	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	SS-PFHxA-13C2	537.1	N/A	---		38.6280	40.0	ng/L	97	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		39.5402	40.0	ng/L	99	70 - 130	---	---	1.0	04/16/2021 13:50	04/16/2021 23:05	4879415
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF35907/Raw Water Tap		6.0		ng/L	---	---	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF35907/Raw Water Tap		62		ng/L	---	---	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF35907/Raw Water Tap		372710	343297	ng/L	109	50 - 150	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	IS-PFOA-13C2	537.1	N/A	PEF35907/Raw Water Tap		1055300	964549	ng/L	109	50 - 150	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOS-13C4	537.1	N/A	PEF35907/Raw Water Tap		335789	312017	ng/L	108	50 - 150	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF35907/Raw Water Tap		112.4400	160	ng/L	72	70 - 130	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	SS-PFDA-13C2	537.1	N/A	PEF35907/Raw Water Tap		34.3325	40.0	ng/L	88	70 - 130	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	SS-PFHxA-13C2	537.1	N/A	PEF35907/Raw Water Tap		36.1446	40.0	ng/L	93	70 - 130	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF35907/Raw Water Tap		35.2121	40.0	ng/L	91	70 - 130	---	---	0.97	04/16/2021 07:15	04/16/2021 23:57	4876238
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF35908/MG Tank	<	2.0		ng/L	---	---	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF35908/MG Tank	<	2.0		ng/L	---	---	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF35908/MG Tank		374307	343297	ng/L	109	50 - 150	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	IS-PFOA-13C2	537.1	N/A	PEF35908/MG Tank		1053160	964549	ng/L	109	50 - 150	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	IS-PFOS-13C4	537.1	N/A	PEF35908/MG Tank		336098	312017	ng/L	108	50 - 150	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF35908/MG Tank		121.1340	160	ng/L	81	70 - 130	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	SS-PFDA-13C2	537.1	N/A	PEF35908/MG Tank		34.3206	40.0	ng/L	91	70 - 130	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	SS-PFHxA-13C2	537.1	N/A	PEF35908/MG Tank		28.7033	40.0	ng/L	76	70 - 130	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF35908/MG Tank		27.2790	40.0	ng/L	73	70 - 130	---	---	0.94	04/16/2021 07:15	04/17/2021 00:10	4876239
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		204.4160	200	ng/L	102	70 - 130	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		203.5750	200	ng/L	102	70 - 130	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		349512	349512	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	IS-PFOA-13C2	537.1	N/A	---		947903	947903	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	IS-PFOS-13C4	537.1	N/A	---		311451	311451	ng/L	100	50 - 150	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		155.9760	160	ng/L	97	70 - 130	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	SS-PFDA-13C2	537.1	N/A	---		39.9572	40.0	ng/L	100	70 - 130	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	SS-PFHxA-13C2	537.1	N/A	---		39.5164	40.0	ng/L	99	70 - 130	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		40.5675	40.0	ng/L	101	70 - 130	---	---	1.0	04/16/2021 13:50	04/17/2021 00:36	4879417

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	2021-311
Sampled By: James F Murphy Jr	

Requested Analysis — Preservative Added: Trizma Mixture

Number of Containers: PFOA & PFOS

Page 1 of 1

☑ Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
Raw Water Tap	SPIN001	5/4/21	08:10	W	PEFL6477		2	X	
MG Tank	SPTP001	5/4/21	~~08:10~~ 08:15	W	PEFL6478		2	X	

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 1.5 °C *COC Seal:* ☑ *Intact* ☐ *Broken* ☐ *Absent*

Sub Lab Temperature on arrival: _____ °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
James F Murphy Jr	BUECI	5/4/21	Jerry Pollen	Pollen Env.	5-5-21 @ 0920am
Jerry Pollen	Pollen Env	5-5-21 @ 1030am			

POLLEN
ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 5/14/2021
Receipt Date: 5/5/2021
Sampled By: James F Murphy

Project Name: PFC Monitoring
Sampled By: James F. Murphy
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Tap	PEF66477	4894121	5/4/2021	8:10 AM
MG Tank	PEF66478	4894122	5/4/2021	8:15 AM

Jerry Pollen / Marcus Cogley
Pollen Environmental, LLC

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 517135
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4894121	PEF66477/Raw Water Tap	537.1	05/04/21 08:10	Client	05/06/21 09:45
4894122	PEF66478/MG Tank	537.1	05/04/21 08:15	Client	05/06/21 09:45

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Traci Chlebowski ASM

Authorized Signature | Title | 05/14/2021 Date

Client Name: Pollen Environmental LLC
Report #: 517135

Client Name: Pollen Environmental LLC Report #: 517135

Sampling Point: PEF66477/Raw Water Tap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**5.8**	ng/L	05/10/21 08:25	05/11/21 07:15	4894121
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**52**	ng/L	05/10/21 08:25	05/11/21 07:15	4894121

Sampling Point: PEF66478/MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	05/10/21 08:25	05/11/21 07:28	4894122
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	05/10/21 08:25	05/11/21 07:28	4894122

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

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Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC
425303

CLIENT INFORMATION	Contact Person: Jim Murphy	Requested Analysis 517135	Page 1 of 1
Company: **Barrow Utilities & Electric Coop.**			
Address: **P.O. Box 449**	**WWTP APDES #:**		
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**		
Phone: **907-852-8427**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **907-852-5164**	√ Yes ☐ No		
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001		☐ RUSH ____ day(s)
Project Name: **PFAS Monitoring**	2021-311		
Sampled By: James F Murphy Jr			

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Perservative Added: Trizma Mixture	Sample Comments
Raw Water Tap	SPIN001	5/4/21	08:10	W	PEF06477		2	X		489 121
MG Tank	SPTP001	5/4/21	~~08:10~~ 08:15	W	PEF06478		2	X		↓ 122

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 1.5 °C *COC Seal:* ☑ *Intact* ☐ *Broken* ☐ *Absent*
Sub Lab Temperature on arrival: 3.8 °C *COC Seal:* ☒ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
[signature]		BUECI	5/4/21	[signature] Pollen	Pollen Env.	5-5-21 @ 9:20am
[signature] Pollen		Pollen Env	5-5-21 @1030am	Received by:	Company:	Date & Time:
Relinquished by:		Company:	Date & Time:	Received by: [signature]	Company: EFA	Date & Time: 5-6-2021 0945

Eurofins Eaton Analytical
Run Log

Run ID: **288870** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4896946		OS	DQ	05/11/2021 04:14	051121M537_1a-DQ.mdb
LRB	4896906		RW	DQ	05/11/2021 04:40	051121M537_1a-DQ.mdb
FBL	4896908		RW	DQ	05/11/2021 04:53	051121M537_1a-DQ.mdb
FS	4894121	PEF66477/Raw Water Tap	DW	DQ	05/11/2021 07:15	051121M537_1a-DQ.mdb
FS	4894122	PEF66478/MG Tank	DW	DQ	05/11/2021 07:28	051121M537_1a-DQ.mdb
CCM	4896948		OS	DQ	05/11/2021 07:41	051121M537_1a-DQ.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		2.1733	2.0	ng/L	109	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		2.0172	2.0	ng/L	101	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		132667	132667	ng/L	100	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	IS-PFOA-13C2	537.1	N/A	---		324996	324996	ng/L	100	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	IS-PFOS-13C4	537.1	N/A	---		169256	169256	ng/L	100	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		158.1030	160	ng/L	99	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	SS-PFDA-13C2	537.1	N/A	---		39.7584	40.0	ng/L	99	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	SS-PFHxA-13C2	537.1	N/A	---		40.2464	40.0	ng/L	101	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		39.4523	40.0	ng/L	99	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 04:14	4896946
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		140153	132667	ng/L	106	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	IS-PFOA-13C2	537.1	N/A	---		362246	324996	ng/L	111	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	IS-PFOS-13C4	537.1	N/A	---		184002	169256	ng/L	109	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		141.7190	160	ng/L	89	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	SS-PFDA-13C2	537.1	N/A	---		35.5660	40.0	ng/L	89	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	SS-PFHxA-13C2	537.1	N/A	---		36.1103	40.0	ng/L	90	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		35.1466	40.0	ng/L	88	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:40	4896906
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		2.0720	2.0	ng/L	104	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		2.0870	2.0	ng/L	104	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		139675	132667	ng/L	105	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	IS-PFOA-13C2	537.1	N/A	---		343817	324996	ng/L	106	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	IS-PFOS-13C4	537.1	N/A	---		168317	169256	ng/L	99	50 - 150	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		149.1850	160	ng/L	93	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	SS-PFDA-13C2	537.1	N/A	---		38.4566	40.0	ng/L	96	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	SS-PFHxA-13C2	537.1	N/A	---		38.0370	40.0	ng/L	95	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		37.2635	40.0	ng/L	93	70 - 130	---	---	1.0	05/10/2021 08:25	05/11/2021 04:53	4896908
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF66477/Raw Water Ta		5.8		ng/L	---	---	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF66477/Raw Water Ta		52		ng/L	---	---	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF66477/Raw Water Ta		146814	132667	ng/L	111	50 - 150	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	IS-PFOA-13C2	537.1	N/A	PEF66477/Raw Water Ta		378486	324996	ng/L	116	50 - 150	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	IS-PFOS-13C4	537.1	N/A	PEF66477/Raw Water Ta		192174	169256	ng/L	114	50 - 150	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF66477/Raw Water Ta		133.7870	160	ng/L	89	70 - 130	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	SS-PFDA-13C2	537.1	N/A	PEF66477/Raw Water Ta		33.8193	40.0	ng/L	90	70 - 130	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	SS-PFHxA-13C2	537.1	N/A	PEF66477/Raw Water Ta		34.9712	40.0	ng/L	93	70 - 130	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF66477/Raw Water Ta		33.4138	40.0	ng/L	89	70 - 130	---	---	0.94	05/10/2021 08:25	05/11/2021 07:15	4894121
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF66478/MG Tank	<	2.0		ng/L	---	---	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF66478/MG Tank	<	2.0		ng/L	---	---	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF66478/MG Tank		153912	132667	ng/L	116	50 - 150	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
FS	IS-PFOA-13C2	537.1	N/A	PEF66478/MG Tank		364495	324996	ng/L	112	50 - 150	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOS-13C4	537.1	N/A	PEF66478/MG Tank		183558	169256	ng/L	108	50 - 150	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF66478/MG Tank		138.1380	160	ng/L	95	70 - 130	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
FS	SS-PFDA-13C2	537.1	N/A	PEF66478/MG Tank		34.3084	40.0	ng/L	94	70 - 130	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
FS	SS-PFHxA-13C2	537.1	N/A	PEF66478/MG Tank		33.2222	40.0	ng/L	91	70 - 130	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF66478/MG Tank		31.8050	40.0	ng/L	87	70 - 130	---	---	0.91	05/10/2021 08:25	05/11/2021 07:28	4894122
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		98.4896	100	ng/L	98	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		98.4517	100	ng/L	98	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		141371	141371	ng/L	100	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	IS-PFOA-13C2	537.1	N/A	---		324281	324281	ng/L	100	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	IS-PFOS-13C4	537.1	N/A	---		172803	172803	ng/L	100	50 - 150	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		162.4760	160	ng/L	102	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	SS-PFDA-13C2	537.1	N/A	---		38.6891	40.0	ng/L	97	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	SS-PFHxA-13C2	537.1	N/A	---		39.3469	40.0	ng/L	98	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		39.4955	40.0	ng/L	99	70 - 130	---	---	1.0	05/06/2021 12:59	05/11/2021 07:41	4896948

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC.

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Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-3176**	Send Results to ADEC:
Fax: **907-852-5164**	☒ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001 2021-449
Project Name: **PFAS Monitoring**	
Sampled By: Tom Drake II	

Requested Analysis — Perservative Added

Page 1 of 1

☒ Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
MG Tank	SPTP001	6/7/21	1340	W	PEF67592		2	X	
Raw Water Tap	SPIN001	6/7/21	1325	W	PEF67593		2	X	

Possible Hazard Identification:

☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:

Pollen Env Temperature on arrival: 1.1 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Sub Lab Temperature on arrival: °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II		BUECI	6/7/21 1530	Jerry Pollen	Pollen Env.	6-9-21 @ 1100
Jerry Pollen		Pollen Env	6-10-21 @ 1030am			

POLLEN ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 6/23/2021
Receipt Date: 6/9/2021
Sampled By: Tom Drake II

Project Name: PFAS Monitoring
Sampled By: James F. Murphy
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
MG Tank	PEF67592	4927105	6/7/2021	1:40 PM
Raw Water Tap	PEF67593	4927106	6/7/2021	1:25 PM

Jerry Pollen / Marcus Cogley
Pollen Environmental, LLC

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

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110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 520941
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4927105	PEF67592/MG Tank	537.1	06/07/21 13:40	Client	06/11/21 09:00
4927106	PEF67593/Raw Water Tap	537.1	06/07/21 13:25	Client	06/11/21 09:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Traci Chlebowski ASM — 06/22/2021

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 520941

Client Name: Pollen Environmental LLC Report #: 520941

Sampling Point: PEF67592/MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	06/14/21 07:43	06/15/21 07:53	4927105
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	06/14/21 07:43	06/15/21 07:53	4927105

Sampling Point: PEF67593/Raw Water Tap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**7.3**	ng/L	06/14/21 07:43	06/15/21 08:03	4927106
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**69**	ng/L	06/14/21 07:43	06/15/21 08:03	4927106

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

POLLEN ENVIRONMENTAL, LLC.

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jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC
428216

S20941

Page 1 of 1

CLIENT INFORMATION		Contact Person: Jim Murphy
Company: Barrow Utilities & Electric Coop.		
Address: P.O. Box 449		WWTP APDES #:
City, State Zip: Barrow, AK 99723		PWS ID #: 320078
Phone: 907-852-3176		Send Results to ADEC:
Fax: 907-852-5164		☒ Yes ☐ No
Email: powerplant@bueci.org		Purchase Order/Charge Code: 20210001 2021-449
Project Name: PFAS Monitoring		
Sampled By: Tom Drake II		

Requested Analysis

Perservative Added

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS								Sample Comments
MG Tank	SPTP001	6/7/21	1340	W	PEF67592		2	X								4927105
Raw Water Tap	SPIN001	6/7/21	1325	W	PEF67593		2	X								↓ 106

☐ Normal Turnaround
☐ RUSH ____ day(s)

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 1.1 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
Sub Lab Temperature on arrival: 3.4 °C *COC Seal:* ☒ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by: Tom Drake II		Company: BUECI	Date & Time: 6/7/21 1530	Received by: Jerry Pollen	Company: Pollen Env.	Date & Time: 6-9-21 @ 1100
Relinquished by: Jerry Pollen		Company: Pollen Env	Date & Time: 6-10-21 @ 1030am	Received by:	Company:	Date & Time:
Relinquished by:		Company:	Date & Time:	Received by: K Dun	Company: EEA	Date & Time: 6-11-2021 0900

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **290572** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4928350		OS	GA	06/15/2021 03:38	061521M537.1a.wiff
LRB	4928356		RW	GA	06/15/2021 03:59	061521M537.1a.wiff
FBL	4928358		RW	GA	06/15/2021 04:21	061521M537.1a.wiff
FBH	4928360		RW	GA	06/15/2021 04:42	061521M537.1a.wiff
CCM	4928352		OS	GA	06/15/2021 06:38	061521M537.1a.wiff
FS	4927105	PEF67592/MG Tank	DW	GA	06/15/2021 07:53	061521M537.1a.wiff
FS	4927106	PEF67593/Raw Water Tap	DW	GA	06/15/2021 08:03	061521M537.1a.wiff
CCH	4928354		OS	GA	06/15/2021 08:14	061521M537.1a.wiff

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		2.2390	2.0	ng/L	112	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.9052	2.0	ng/L	95	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		1223627	1223627	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	IS-PFOA-13C2	537.1	N/A	---		1252864	1252863.87	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	IS-PFOS-13C4	537.1	N/A	---		5005765	5005764.96	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		172.4896	160	ng/L	108	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	SS-PFDA-13C2	537.1	N/A	---		42.4995	40.0	ng/L	106	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	SS-PFHxA-13C2	537.1	N/A	---		40.4889	40.0	ng/L	101	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		40.8835	40.0	ng/L	102	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 03:38	4928350
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		1218613	1223627	ng/L	100	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	IS-PFOA-13C2	537.1	N/A	---		1247778	1252863.87	ng/L	100	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	IS-PFOS-13C4	537.1	N/A	---		4838080	5005764.96	ng/L	97	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		149.4932	160	ng/L	93	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	SS-PFDA-13C2	537.1	N/A	---		38.2767	40.0	ng/L	96	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	SS-PFHxA-13C2	537.1	N/A	---		38.9003	40.0	ng/L	97	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		36.9179	40.0	ng/L	92	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 03:59	4928356
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		2.2293	2.0	ng/L	111	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		2.0891	2.0	ng/L	104	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		1195512	1223627	ng/L	98	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	IS-PFOA-13C2	537.1	N/A	---		1232637	1252863.87	ng/L	98	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	IS-PFOS-13C4	537.1	N/A	---		4715514	5005764.96	ng/L	94	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		143.3461	160	ng/L	90	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	SS-PFDA-13C2	537.1	N/A	---		39.3493	40.0	ng/L	98	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	SS-PFHxA-13C2	537.1	N/A	---		38.1830	40.0	ng/L	95	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		37.3091	40.0	ng/L	93	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:21	4928358
FBH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		184.0703	200	ng/L	92	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		186.0938	200	ng/L	93	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	IS-NMeFOSAA-d3	537.1	N/A	---		1317415	1223627	ng/L	108	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	IS-PFOA-13C2	537.1	N/A	---		1291719	1252863.87	ng/L	103	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	IS-PFOS-13C4	537.1	N/A	---		4875966	5005764.96	ng/L	97	50 - 150	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	SS-NEtFOSAA-d5	537.1	N/A	---		141.3931	160	ng/L	88	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	SS-PFDA-13C2	537.1	N/A	---		38.9960	40.0	ng/L	97	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	SS-PFHxA-13C2	537.1	N/A	---		37.9500	40.0	ng/L	95	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
FBH	SS-HFPO-DA-13C3	537.1	N/A	---		38.3506	40.0	ng/L	96	70 - 130	---	---	1.0	06/14/2021 07:43	06/15/2021 04:42	4928360
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		104.0518	100	ng/L	104	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		102.6110	100	ng/L	103	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		1259826	1259826.31	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
CCM	IS-PFOA-13C2	537.1	N/A	---		1276413	1276412.9	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOS-13C4	537.1	N/A	---		4812748	4812747.59	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		164.3446	160	ng/L	103	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
CCM	SS-PFDA-13C2	537.1	N/A	---		40.3331	40.0	ng/L	101	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
CCM	SS-PFHxA-13C2	537.1	N/A	---		38.8841	40.0	ng/L	97	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		41.2573	40.0	ng/L	103	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 06:38	4928352
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF67592/MG Tank	<	2.0		ng/L	---	---	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF67592/MG Tank	<	2.0		ng/L	---	---	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF67592/MG Tank		1219228	1259826.31	ng/L	97	50 - 150	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	IS-PFOA-13C2	537.1	N/A	PEF67592/MG Tank		1287573	1276412.9	ng/L	101	50 - 150	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	IS-PFOS-13C4	537.1	N/A	PEF67592/MG Tank		4882149	4812747.59	ng/L	101	50 - 150	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF67592/MG Tank		140.4985	160	ng/L	101	70 - 130	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	SS-PFDA-13C2	537.1	N/A	PEF67592/MG Tank		33.4907	40.0	ng/L	96	70 - 130	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	SS-PFHxA-13C2	537.1	N/A	PEF67592/MG Tank		32.7597	40.0	ng/L	94	70 - 130	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF67592/MG Tank		32.6576	40.0	ng/L	94	70 - 130	---	---	0.87	06/14/2021 07:43	06/15/2021 07:53	4927105
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF67593/Raw Water Tap		7.3		ng/L	---	---	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF67593/Raw Water Tap		69		ng/L	---	---	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF67593/Raw Water Tap		1299932	1259826.31	ng/L	103	50 - 150	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	IS-PFOA-13C2	537.1	N/A	PEF67593/Raw Water Tap		1242470	1276412.9	ng/L	97	50 - 150	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	IS-PFOS-13C4	537.1	N/A	PEF67593/Raw Water Tap		5076711	4812747.59	ng/L	105	50 - 150	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF67593/Raw Water Tap		122.3226	160	ng/L	86	70 - 130	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	SS-PFDA-13C2	537.1	N/A	PEF67593/Raw Water Tap		34.3120	40.0	ng/L	96	70 - 130	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	SS-PFHxA-13C2	537.1	N/A	PEF67593/Raw Water Tap		30.2499	40.0	ng/L	85	70 - 130	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF67593/Raw Water Tap		32.4897	40.0	ng/L	91	70 - 130	---	---	0.89	06/14/2021 07:43	06/15/2021 08:03	4927106
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		209.0623	200	ng/L	105	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		200.1856	200	ng/L	100	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		1258605	1258605.19	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	IS-PFOA-13C2	537.1	N/A	---		1223320	1223319.77	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	IS-PFOS-13C4	537.1	N/A	---		4790552	4790551.63	ng/L	100	50 - 150	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		162.1123	160	ng/L	101	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	SS-PFDA-13C2	537.1	N/A	---		42.0159	40.0	ng/L	105	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	SS-PFHxA-13C2	537.1	N/A	---		40.3607	40.0	ng/L	101	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		41.2284	40.0	ng/L	103	70 - 130	---	---	1.0	06/11/2021 08:35	06/15/2021 08:14	4928354

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy		Requested Analysis	Page 1 of 1
Company: **Barrow Utilities & Electric Coop.**			Perservative Added	
Address: **P.O. Box 449**	**WWTP APDES #:**			
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**			
Phone: **907-852-3176**	Send Results to ADEC:			X Normal Turnaround
Fax: **907-852-5164**	☒ Yes ☐ No			☐ RUSH ____ day(s)
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001			
Project Name: **PFAS Monitoring**	Pollen PO# 2021-592			
Sampled By: Tom Drake II				

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
MG Tank	**SPTP001**	7/13/21	0840	W	PEF68672		2	X	
Raw Water Tap	**SPIN001**	7/13/21	0835	W	PEF68673		2	X	

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 5.7 °C

Sub Lab on arrival: °C

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	7/13/21 0915	Jerry Pollen	Pollen Env	7-15-21 @ 0915am
Jerry Pollen	Pollen Env	7-15-21 @ 1100am			

Accuracy, Precision, and Professional Service

POLLEN ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 7/24/2021
Receipt Date: 7/15/2021
Sampled By: Tom Drake II

Project Name: PFAS Monitoring
Sampled By: Tom Drake II
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
MG Tank	PEF68672	4957200	7/13/2021	8:40 AM
Raw Water Tap	PEF68673	4957201	7/13/2021	8:35 AM

Jerry Pollen / Marcus Cogley
Pollen Environmental, LLC

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 524415
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4957200	PEF68672/MG Tank	537.1	07/13/21 08:40	Client	07/16/21 09:00
4957201	PEF68673/Raw Water Tap	537.1	07/13/21 08:35	Client	07/16/21 09:00

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Authorized Signature | Title | 07/23/2021 Date

Client Name: Pollen Environmental LLC
Report #: 524415

Client Name: Pollen Environmental LLC Report #: 524415

Sampling Point: PEF68672/MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	07/20/21 06:28	07/21/21 06:56	4957200
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	07/20/21 06:28	07/21/21 06:56	4957200

Sampling Point: PEF68673/Raw Water Tap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**4.2**	ng/L	07/20/21 06:28	07/21/21 07:09	4957201
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**45**	ng/L	07/20/21 06:28	07/21/21 07:09	4957201

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

430959

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# 524445 BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-3176**	Send Results to ADEC:
Fax: **907-852-5164**	[X] Yes [ ] No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	Pollen PO # 2021-592
Sampled By: Tom Drake II	

Requested Analysis — Page 1 of 1

Perservative Added: Trizma reset

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
MG Tank	SPTP001	7/13/21	0840	W	PEF68672	4957200	2	X (1)	
Raw Water Tap	SPIN001	7/13/21	0835	W	PEF68673	4957201	2	X (1)	

[X] Normal Turnaround

[ ] RUSH ____ day(s)

IR 23

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 5.7 °C

Sub Lab on arrival: 2.2 °C intact

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	7/13/21 0917	Jenny Pollen	Pollen Env	7-15-21 @ 0915am
Jenny Pollen	Pollen Env	7-15-21 @ 1100am		EEA	7-16-21 0900

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **291874** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4956869		OS	GA	07/17/2021 02:57	071721M537.1a.wiff
LRB	4956839		RW	GA	07/17/2021 03:18	071721M537.1a.wiff
FBL	4956841		RW	GA	07/17/2021 03:29	071721M537.1a.wiff
FBH	4956843		RW	GA	07/17/2021 03:39	071721M537.1a.wiff
CCM	4956871		OS	GA	07/17/2021 05:46	071721M537.1a.wiff
CCH	4956873		OS	GA	07/17/2021 07:33	071721M537.1a.wiff

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8939	2.0	ng/L	95	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.7836	2.0	ng/L	89	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		1654247	1654247	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	IS-PFOA-13C2	537.1	N/A	---		1266519	1266518.98	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	IS-PFOS-13C4	537.1	N/A	---		4654952	4654952.15	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		162.8163	160	ng/L	102	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	SS-PFDA-13C2	537.1	N/A	---		41.1076	40.0	ng/L	103	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	SS-PFHxA-13C2	537.1	N/A	---		41.4198	40.0	ng/L	104	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		38.5938	40.0	ng/L	96	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 02:57	4956869
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		1656341	1654247	ng/L	100	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	IS-PFOA-13C2	537.1	N/A	---		1310941	1266518.98	ng/L	104	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	IS-PFOS-13C4	537.1	N/A	---		4792195	4654952.15	ng/L	103	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		134.0971	160	ng/L	84	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	SS-PFDA-13C2	537.1	N/A	---		35.0899	40.0	ng/L	88	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	SS-PFHxA-13C2	537.1	N/A	---		36.5000	40.0	ng/L	91	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		35.1300	40.0	ng/L	88	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:18	4956839
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.9129	2.0	ng/L	96	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.7817	2.0	ng/L	89	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		1607924	1654247	ng/L	97	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	IS-PFOA-13C2	537.1	N/A	---		1263896	1266518.98	ng/L	100	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	IS-PFOS-13C4	537.1	N/A	---		4698365	4654952.15	ng/L	101	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		151.6391	160	ng/L	95	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	SS-PFDA-13C2	537.1	N/A	---		38.1314	40.0	ng/L	95	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	SS-PFHxA-13C2	537.1	N/A	---		38.7846	40.0	ng/L	97	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		38.4010	40.0	ng/L	96	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:29	4956841
FBH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		186.0907	200	ng/L	93	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		192.7203	200	ng/L	96	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	IS-NMeFOSAA-d3	537.1	N/A	---		1576713	1654247	ng/L	95	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	IS-PFOA-13C2	537.1	N/A	---		1304913	1266518.98	ng/L	103	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	IS-PFOS-13C4	537.1	N/A	---		4584155	4654952.15	ng/L	98	50 - 150	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	SS-NEtFOSAA-d5	537.1	N/A	---		147.0777	160	ng/L	92	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	SS-PFDA-13C2	537.1	N/A	---		37.4954	40.0	ng/L	94	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	SS-PFHxA-13C2	537.1	N/A	---		37.6928	40.0	ng/L	94	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
FBH	SS-HFPO-DA-13C3	537.1	N/A	---		36.5091	40.0	ng/L	91	70 - 130	---	---	1.0	07/16/2021 05:00	07/17/2021 03:39	4956843
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		103.3606	100	ng/L	103	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		102.4348	100	ng/L	102	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		1521708	1521707.53	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCM	IS-PFOA-13C2	537.1	N/A	---		1198807	1198806.77	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOS-13C4	537.1	N/A	---		4448225	4448225.32	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		161.3829	160	ng/L	101	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCM	SS-PFDA-13C2	537.1	N/A	---		40.2546	40.0	ng/L	101	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCM	SS-PFHxA-13C2	537.1	N/A	---		42.4170	40.0	ng/L	106	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		40.7910	40.0	ng/L	102	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 05:46	4956871
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		198.8764	200	ng/L	99	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		202.6141	200	ng/L	101	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		1610688	1610687.79	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	IS-PFOA-13C2	537.1	N/A	---		1234123	1234123.22	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	IS-PFOS-13C4	537.1	N/A	---		4585530	4585530.33	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		152.5363	160	ng/L	95	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	SS-PFDA-13C2	537.1	N/A	---		39.0199	40.0	ng/L	98	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	SS-PFHxA-13C2	537.1	N/A	---		40.3146	40.0	ng/L	101	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		39.2073	40.0	ng/L	98	70 - 130	---	---	1.0	07/16/2021 11:01	07/17/2021 07:33	4956873

Eurofins Eaton Analytical
Run Log

Run ID: **291916** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4959292		OS	FL	07/21/2021 02:35	072121M537_1a-FL.mdb
LRB	4959307		RW	FL	07/21/2021 03:01	072121M537_1a-FL.mdb
FBL	4959308		RW	FL	07/21/2021 03:14	072121M537_1a-FL.mdb
CCM	4959300		OS	FL	07/21/2021 06:04	072121M537_1a-FL.mdb
FS	4957200	PEF68672/MG Tank	DW	FL	07/21/2021 06:56	072121M537_1a-FL.mdb
FS	4957201	PEF68673/Raw Water Tap	DW	FL	07/21/2021 07:09	072121M537_1a-FL.mdb
CCH	4959301		OS	FL	07/21/2021 13:39	072121M537_1a-FL.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8131	2.0	ng/L	91	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.9880	2.0	ng/L	99	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		589851	589851	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	IS-PFOA-13C2	537.1	N/A	---		1241320	1241320	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	IS-PFOS-13C4	537.1	N/A	---		295054	295054	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		166.8110	160	ng/L	104	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	SS-PFDA-13C2	537.1	N/A	---		40.1148	40.0	ng/L	100	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	SS-PFHxA-13C2	537.1	N/A	---		39.9913	40.0	ng/L	100	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		38.9700	40.0	ng/L	97	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 02:35	4959292
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		555020	589851	ng/L	94	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	IS-PFOA-13C2	537.1	N/A	---		1179130	1241320	ng/L	95	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	IS-PFOS-13C4	537.1	N/A	---		290795	295054	ng/L	99	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		157.0900	160	ng/L	98	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	SS-PFDA-13C2	537.1	N/A	---		39.6079	40.0	ng/L	99	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	SS-PFHxA-13C2	537.1	N/A	---		38.5642	40.0	ng/L	96	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		35.0050	40.0	ng/L	88	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:01	4959307
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.8769	2.0	ng/L	94	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.8557	2.0	ng/L	93	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		539700	589851	ng/L	91	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	IS-PFOA-13C2	537.1	N/A	---		1156070	1241320	ng/L	93	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	IS-PFOS-13C4	537.1	N/A	---		278709	295054	ng/L	94	50 - 150	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		154.0620	160	ng/L	96	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	SS-PFDA-13C2	537.1	N/A	---		37.8394	40.0	ng/L	95	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	SS-PFHxA-13C2	537.1	N/A	---		37.4152	40.0	ng/L	94	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		35.7350	40.0	ng/L	89	70 - 130	---	---	1.0	07/20/2021 06:28	07/21/2021 03:14	4959308
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		102.8970	100	ng/L	103	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		102.6680	100	ng/L	103	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		581949	581949	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	IS-PFOA-13C2	537.1	N/A	---		1238270	1238270	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	IS-PFOS-13C4	537.1	N/A	---		305844	305844	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		157.9280	160	ng/L	99	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	SS-PFDA-13C2	537.1	N/A	---		39.2844	40.0	ng/L	98	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	SS-PFHxA-13C2	537.1	N/A	---		40.5183	40.0	ng/L	101	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		40.0291	40.0	ng/L	100	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 06:04	4959300
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF68672/MG Tank	<	2.0		ng/L	---	---	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF68672/MG Tank	<	2.0		ng/L	---	---	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF68672/MG Tank		577778	581949	ng/L	99	50 - 150	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	IS-PFOA-13C2	537.1	N/A	PEF68672/MG Tank		1208590	1238270	ng/L	98	50 - 150	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200

QC Summary Report (cont.)															
Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	IS-PFOS-13C4	537.1	N/A	PEF68672/MG Tank		300202	305844	ng/L	98	50 - 150	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF68672/MG Tank		141.6600	160	ng/L	97	70 - 130	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	SS-PFDA-13C2	537.1	N/A	PEF68672/MG Tank		36.1693	40.0	ng/L	99	70 - 130	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	SS-PFHxA-13C2	537.1	N/A	PEF68672/MG Tank		34.8929	40.0	ng/L	96	70 - 130	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF68672/MG Tank		34.1963	40.0	ng/L	94	70 - 130	---	---	0.91	07/20/2021 06:28	07/21/2021 06:56	4957200
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF68673/Raw Water Tap		4.2		ng/L	---	---	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF68673/Raw Water Tap		45		ng/L	---	---	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF68673/Raw Water Tap		509527	581949	ng/L	88	50 - 150	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	IS-PFOA-13C2	537.1	N/A	PEF68673/Raw Water Tap		1086940	1238270	ng/L	88	50 - 150	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	IS-PFOS-13C4	537.1	N/A	PEF68673/Raw Water Tap		282612	305844	ng/L	92	50 - 150	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF68673/Raw Water Tap		141.8180	160	ng/L	95	70 - 130	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	SS-PFDA-13C2	537.1	N/A	PEF68673/Raw Water Tap		36.9586	40.0	ng/L	99	70 - 130	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	SS-PFHxA-13C2	537.1	N/A	PEF68673/Raw Water Tap		35.2009	40.0	ng/L	95	70 - 130	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF68673/Raw Water Tap		38.4797	40.0	ng/L	103	70 - 130	---	---	0.93	07/20/2021 06:28	07/21/2021 07:09	4957201
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		205.8940	200	ng/L	103	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		204.7360	200	ng/L	102	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		699905	699905	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	IS-PFOA-13C2	537.1	N/A	---		1359590	1359590	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	IS-PFOS-13C4	537.1	N/A	---		354214	354214	ng/L	100	50 - 150	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		153.6580	160	ng/L	96	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	SS-PFDA-13C2	537.1	N/A	---		42.3936	40.0	ng/L	106	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	SS-PFHxA-13C2	537.1	N/A	---		41.4260	40.0	ng/L	104	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		42.5707	40.0	ng/L	106	70 - 130	---	---	1.0	07/16/2021 11:22	07/21/2021 13:39	4959301

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-3176**	Send Results to ADEC:
Fax: **907-852-5164**	[X] Yes [ ] No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	2021-711
Sampled By: Tom Drake II	

Requested Analysis

Perservative Added: Trizma

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS							Sample Comments
MG Tank	SPTP001	8/9/21	11:15	W	PEF69475		2	X							
Raw Water Tap	SPIN001	8/9/21	11:20	W	PEF69476		2	X							

[X] Normal Turnaround

[ ] RUSH ____ day(s)

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 1.4 °C

Sub Lab on arrival: °C

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	B.U.E.C.I.	8/9/21 1200	Ad D. Pdh	Pollen Env	8-10-21@1000
Ad D. Pdh	Pollen Env	8-11-21@1100			

Accuracy, Precision, and Professional Service

POLLEN ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 8/31/2021
Receipt Date: 8/10/2021
Sampled By: Tom Drake II

Project Name: PFAS Monitoring
Sampled By: James F. Murphy
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
MG Tank	PEF69475	4983142	8/9/2021	11:15 AM
Raw Water Tap	PEF69476	4983143	8/9/2021	11:20 AM

Jerry Pollen / Marcus Cogley
Pollen Environmental, LLC

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

eurofins | Eaton Analytical

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Pollen Environmental LLC

Attn: Jerry Pollen
3536 International Avenue
Fairbanks, AK 99701

Report: 527268
Priority: Standard Written
Status: Final
PWS ID: AK2320078
Alaska Lab ID # IN00035

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4983142	PEF69475/MG Tank	537.1	08/09/21 11:15	Client	08/12/21 09:00
4983143	PEF69476/RawWaterTap	537.1	08/09/21 11:15	Client	08/12/21 09:00

Report Summary

Note: See attached page for additional comments.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Traci Chlebowski ASM — 08/30/2021

Authorized Signature | Title | Date

Client Name: Pollen Environmental LLC
Report #: 527268

Client Name: Pollen Environmental LLC Report #: 527268

Sampling Point: PEF69475/MG Tank PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	< 2.0	ng/L	08/17/21 07:00	08/18/21 00:41	4983142
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	< 2.0	ng/L	08/17/21 07:00	08/18/21 00:41	4983142

Sampling Point: PEF69476/RawWaterTap PWS ID: AK2320078

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
335-67-1	Perfluorooctanoic acid (PFOA)	537.1	---	2.0	**3.6**	ng/L	08/17/21 07:00	08/18/21 00:54	4983143
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	537.1	---	2.0	**43**	ng/L	08/17/21 07:00	08/18/21 00:54	4983143

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

433065
527268

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CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION		Requested Analysis	Page 1 of 1
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**	Perservative Added: Trizma	
Address: **P.O. Box 449**	**WWTP APDES #:**		
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**		
Phone: **907-852-3176**	Send Results to ADEC:		☒ Normal Turnaround
Fax: **907-852-5164**	☒ Yes ☐ No		☐ RUSH ____ day(s)
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210061		
Project Name: **PFAS Monitoring**	2021-711		
Sampled By: Tom Drake II			

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
MG Tank	SPTP001	8/9/21	11:15	W	PEF69475	4983142	2	X	
Raw Water Tap	SPIN001	8/9/21	11:20	W	PEF69476	4983143	2	X	

Special Instructions/QC Requirements & Comments:

Shipping straps intact upon receipt

Sample Temperature:

Pollen Env on arrival: 1.4 °C

Sub Lab on arrival: 1.0 °C

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	B.U.E.C.I.	8/9/21 1211	A. D. Pdl	Pollen Env	8-10-21@1000
A. D. Pdl	Pollen Env	8-11-21@1100			
				EEA SB	8.12.21 0900

Accuracy, Precision, and Professional Service

Eurofins Eaton Analytical
Run Log

Run ID: **293449** Method: **537.1**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
CCL	4987027		OS	FL	08/17/2021 18:48	081721M537_1a-FL.mdb
LRB	4987001		RW	FL	08/17/2021 19:14	081721M537_1a-FL.mdb
FBL	4987003		RW	FL	08/17/2021 19:27	081721M537_1a-FL.mdb
FBH	4987005		RW	FL	08/17/2021 19:54	081721M537_1a-FL.mdb
CCM	4987031		OS	FL	08/17/2021 22:56	081721M537_1a-FL.mdb
FS	4983142	PEF69475/MG Tank	DW	FL	08/18/2021 00:41	081721M537_1a-FL.mdb
FS	4983143	PEF69476/RawWaterTap	DW	FL	08/18/2021 00:54	081721M537_1a-FL.mdb
CCH	4987033		OS	FL	08/18/2021 01:07	081721M537_1a-FL.mdb

QC Summary Report

Sample Type	Analyte	Method	MDA95	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		2.0048	2.0	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		2.1268	2.0	ng/L	106	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	IS-NMeFOSAA-d3	537.1	N/A	---		482540	482540	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	IS-PFOA-13C2	537.1	N/A	---		1050130	1050130	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	IS-PFOS-13C4	537.1	N/A	---		248112	248112	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	SS-NEtFOSAA-d5	537.1	N/A	---		168.8510	160	ng/L	106	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	SS-PFDA-13C2	537.1	N/A	---		41.2802	40.0	ng/L	103	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	SS-PFHxA-13C2	537.1	N/A	---		39.6683	40.0	ng/L	99	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
CCL	SS-HFPO-DA-13C3	537.1	N/A	---		39.7134	40.0	ng/L	99	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 18:48	4987027
LRB	Perfluorooctanoic acid (PFOA)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---	<	2.0		ng/L	---	---	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	IS-NMeFOSAA-d3	537.1	N/A	---		490554	482540	ng/L	102	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	IS-PFOA-13C2	537.1	N/A	---		1080250	1050130	ng/L	103	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	IS-PFOS-13C4	537.1	N/A	---		253821	248112	ng/L	102	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	SS-NEtFOSAA-d5	537.1	N/A	---		146.0450	160	ng/L	91	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	SS-PFDA-13C2	537.1	N/A	---		37.9491	40.0	ng/L	95	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	SS-PFHxA-13C2	537.1	N/A	---		37.0543	40.0	ng/L	93	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
LRB	SS-HFPO-DA-13C3	537.1	N/A	---		35.4246	40.0	ng/L	89	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:14	4987001
FBL	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		1.9798	2.0	ng/L	99	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		1.9656	2.0	ng/L	98	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	IS-NMeFOSAA-d3	537.1	N/A	---		497521	482540	ng/L	103	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	IS-PFOA-13C2	537.1	N/A	---		1114970	1050130	ng/L	106	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	IS-PFOS-13C4	537.1	N/A	---		266467	248112	ng/L	107	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	SS-NEtFOSAA-d5	537.1	N/A	---		150.4940	160	ng/L	94	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	SS-PFDA-13C2	537.1	N/A	---		37.0252	40.0	ng/L	93	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	SS-PFHxA-13C2	537.1	N/A	---		35.9226	40.0	ng/L	90	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBL	SS-HFPO-DA-13C3	537.1	N/A	---		34.5627	40.0	ng/L	86	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:27	4987003
FBH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		187.6380	200	ng/L	94	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		189.8320	200	ng/L	95	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	IS-NMeFOSAA-d3	537.1	N/A	---		465419	482540	ng/L	96	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	IS-PFOA-13C2	537.1	N/A	---		1031440	1050130	ng/L	98	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	IS-PFOS-13C4	537.1	N/A	---		249163	248112	ng/L	100	50 - 150	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	SS-NEtFOSAA-d5	537.1	N/A	---		139.8520	160	ng/L	87	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	SS-PFDA-13C2	537.1	N/A	---		38.0202	40.0	ng/L	95	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	SS-PFHxA-13C2	537.1	N/A	---		37.2746	40.0	ng/L	93	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
FBH	SS-HFPO-DA-13C3	537.1	N/A	---		37.2852	40.0	ng/L	93	70 - 130	---	---	1.0	08/17/2021 07:00	08/17/2021 19:54	4987005
CCM	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		99.3707	100	ng/L	99	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
CCM	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		99.8718	100	ng/L	100	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
CCM	IS-NMeFOSAA-d3	537.1	N/A	---		473919	473919	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
CCM	IS-PFOA-13C2	537.1	N/A	---		1030320	1030320	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
CCM	IS-PFOS-13C4	537.1	N/A	---		250616	250616	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
CCM	SS-NEtFOSAA-d5	537.1	N/A	---		161.2850	160	ng/L	101	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
CCM	SS-PFDA-13C2	537.1	N/A	---		41.4909	40.0	ng/L	104	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
CCM	SS-PFHxA-13C2	537.1	N/A	---		40.2629	40.0	ng/L	101	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
CCM	SS-HFPO-DA-13C3	537.1	N/A	---		39.7334	40.0	ng/L	99	70 - 130	---	---	1.0	08/16/2021 12:59	08/17/2021 22:56	4987031
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF69475/MG Tank	<	2.0		ng/L	---	---	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF69475/MG Tank	<	2.0		ng/L	---	---	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF69475/MG Tank		467654	473919	ng/L	99	50 - 150	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	IS-PFOA-13C2	537.1	N/A	PEF69475/MG Tank		1022340	1030320	ng/L	99	50 - 150	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	IS-PFOS-13C4	537.1	N/A	PEF69475/MG Tank		243251	250616	ng/L	97	50 - 150	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF69475/MG Tank		135.7060	160	ng/L	89	70 - 130	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	SS-PFDA-13C2	537.1	N/A	PEF69475/MG Tank		37.0584	40.0	ng/L	98	70 - 130	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	SS-PFHxA-13C2	537.1	N/A	PEF69475/MG Tank		37.2034	40.0	ng/L	98	70 - 130	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF69475/MG Tank		34.6477	40.0	ng/L	91	70 - 130	---	---	0.95	08/17/2021 07:00	08/18/2021 00:41	4983142
FS	Perfluorooctanoic acid (PFOA)	537.1	2.0	PEF69476/RawWaterTap		3.6		ng/L	---	---	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	PEF69476/RawWaterTap		43		ng/L	---	---	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	IS-NMeFOSAA-d3	537.1	N/A	PEF69476/RawWaterTap		457711	473919	ng/L	97	50 - 150	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	IS-PFOA-13C2	537.1	N/A	PEF69476/RawWaterTap		1007180	1030320	ng/L	98	50 - 150	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	IS-PFOS-13C4	537.1	N/A	PEF69476/RawWaterTap		251053	250616	ng/L	100	50 - 150	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	SS-NEtFOSAA-d5	537.1	N/A	PEF69476/RawWaterTap		136.3230	160	ng/L	89	70 - 130	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	SS-PFDA-13C2	537.1	N/A	PEF69476/RawWaterTap		36.7202	40.0	ng/L	96	70 - 130	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	SS-PFHxA-13C2	537.1	N/A	PEF69476/RawWaterTap		37.1167	40.0	ng/L	97	70 - 130	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
FS	SS-HFPO-DA-13C3	537.1	N/A	PEF69476/RawWaterTap		38.9446	40.0	ng/L	101	70 - 130	---	---	0.96	08/17/2021 07:00	08/18/2021 00:54	4983143
CCH	Perfluorooctanoic acid (PFOA)	537.1	2.0	---		204.1360	200	ng/L	102	70 - 130	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	Perfluorooctanesulfonic acid (PFOS)	537.1	2.0	---		205.1490	200	ng/L	103	70 - 130	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	IS-NMeFOSAA-d3	537.1	N/A	---		442851	442851	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	IS-PFOA-13C2	537.1	N/A	---		975989	975989	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	IS-PFOS-13C4	537.1	N/A	---		241646	241646	ng/L	100	50 - 150	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	SS-NEtFOSAA-d5	537.1	N/A	---		151.4040	160	ng/L	95	70 - 130	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	SS-PFDA-13C2	537.1	N/A	---		39.7504	40.0	ng/L	99	70 - 130	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	SS-PFHxA-13C2	537.1	N/A	---		40.2279	40.0	ng/L	101	70 - 130	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033
CCH	SS-HFPO-DA-13C3	537.1	N/A	---		41.7400	40.0	ng/L	104	70 - 130	---	---	1.0	08/16/2021 12:59	08/18/2021 01:07	4987033

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCH	Continuing Calibration High		
CCL	Continuing Calibration Low		
CCM	Continuing Calibration Mid		
FS	Field Sample		
FBH	Fortified Blank High		
FBL	Fortified Blank Low		
LRB	Laboratory Reagent Blank		

END OF REPORT

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION			
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**		
Address: **P.O. Box 449**	**WWTP APDES #:**		
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**		
Phone: **907-852-3176**	Send Results to ADEC:		
Fax: **907-852-5164**	[X] Yes ☐ No		
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001		
Project Name: **PFAS Monitoring**			
Sampled By: Tom Drake II			

Requested Analysis — Perservative Added: Trizma

Page 1 of 1

[X] Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
MG Tank	**SPTP001**	9/7/21	13:40	W	PEF 70452		2	X	
Raw Water Tap	**SPIN001**	9/7/21	1334	W	PEF 70453		2	X	

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 0.1 °C

Sub Lab on arrival: °C

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	9/7/21 1530	Jerry Pollen	Pollen Env	9-9-21@ 0920am
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

POLLEN
ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.polleneny.com

SAMPLE RECEIPT CHECKLIST

Date & Time Received 9/9/24 @ 0920 Initials EW

Laboratory Identification PEF 70452 - 70453

N/A	YES	NO	
☐	☑	☐	Custody Seals intact? (N/A if hand delivered)
☐	☑	☐	Chain of Custody (COC) present and properly filled out?
☐	☑	☐	Samples received in hold time?
☐	☑	☐	Proper container and preservatives used?
☐	☑	☐	Bottles received intact and properly labeled
☐	☑	☐	Do sample labels match the COC?
☐	☑	☐	Sufficient volume of sample for all analysis?
☐	☑	☐	Temperature Blank received in cooler?
☐	☑	☐	Were samples chilled before delivery to lab?
☐	☑	☐	Did samples have sufficient time to cool before delivery to lab? If not, mark **ITTC** (Insufficient Time To Cool) on COC form.
☐	☐	☑	Are air bubbles present in VOA vials?

Notes: _____

*Temperature upon receipt at the laboratory 0.1 °C

☐ internal sample kit thermometer ☑ infra-red thermometer

POLLEN ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 10/4/2021
Receipt Date: 9/9/2021
Sampled By: Tom Drake II

Project Name: PFAS Monitoring
Sampled By: James F. Murphy
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
MG Tank	PEF70452	810-1699-1	9/7/2021	1:40 PM
Raw Water Tap	PEF70453	810-1699-2	9/7/2021	1:35 PM

Jerry Pollen / Marcus Cogley
Pollen Environmental, LLC

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-1699-1
Client Project/Site: PFC Compliance

For:
Pollen Environmental LLC
3039 Davis Road
Fairbanks, Alaska 99709

Attn: Jerry Pollen

Authorized for release by:
10/4/2021 1:11:53 PM

Traci Chlebowski, Project Manager
(574)233-4777
traci.chlebowski@eurofinset.com

Table of Contents

Definitions/Glossary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Case Narrative

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Job ID: 810-1699-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative
810-1699-1

Comments
No additional comments.

Receipt
The samples were received on 9/10/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.2º C.

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

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

Detection Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Client Sample ID: PEF70452/MG Tank

Lab Sample ID: 810-1699-1

PWSID Number: AK2320078

No Detections.

Client Sample ID: PEF70453/Raw Water Tap

Lab Sample ID: 810-1699-2

PWSID Number: AK2320078

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	50		1.8		ng/L	1		537.1	Total/NA
Perfluorooctanoic acid (PFOA)	4.5		1.8		ng/L	1		537.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Client Sample ID: PEF70452/MG Tank

Lab Sample ID: 810-1699-1
Date Collected: 09/07/21 13:40
Matrix: Drinking Water
Date Received: 09/10/21 09:00
PWSID Number: AK2320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7		ng/L		09/14/21 08:49	09/15/21 01:48	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7		ng/L		09/14/21 08:49	09/15/21 01:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:48*	*1*
13C2 PFDA	*97*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:48*	*1*
13C3 HFPO-DA	*91*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:48*	*1*
d5-NEtFOSAA	*84*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:48*	*1*

Client Sample ID: PEF70453/Raw Water Tap

Lab Sample ID: 810-1699-2
Date Collected: 09/07/21 13:35
Matrix: Drinking Water
Date Received: 09/10/21 09:00
PWSID Number: AK2320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**50**		1.8		ng/L		09/14/21 08:49	09/15/21 01:58	1
Perfluorooctanoic acid (PFOA)	**4.5**		1.8		ng/L		09/14/21 08:49	09/15/21 01:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:58*	*1*
13C2 PFDA	*100*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:58*	*1*
13C3 HFPO-DA	*82*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:58*	*1*
d5-NEtFOSAA	*87*		*70 - 130*	*09/14/21 08:49*	*09/15/21 01:58*	*1*

Surrogate Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		PFHxA	PFDA	HFPODA	d5NEFOS
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
810-1699-1	PEF70452/MG Tank	101	97	91	84
810-1699-2	PEF70453/Raw Water Tap	85	100	82	87
LCS 810-3130/3-A	Lab Control Sample	92	95	95	83
LLCS 810-3130/2-A	Lab Control Sample	104	98	94	87
MB 810-3130/1-A	Method Blank	99	98	90	92

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
HFPODA = 13C3 HFPO-DA
d5NEFOS = d5-NEtFOSAA

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 810-3130/1-A
Matrix: Drinking Water
Analysis Batch: 3207

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 3130

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		09/14/21 08:49	09/14/21 22:16	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/14/21 08:49	09/14/21 22:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*09/14/21 08:49*	*09/14/21 22:16*	
13C2 PFDA	*98*		*70 - 130*	*09/14/21 08:49*	*09/14/21 22:16*	
13C3 HFPO-DA	*90*		*70 - 130*	*09/14/21 08:49*	*09/14/21 22:16*	
d5-NEtFOSAA	*92*		*70 - 130*	*09/14/21 08:49*	*09/14/21 22:16*	

Lab Sample ID: LCS 810-3130/3-A
Matrix: Drinking Water
Analysis Batch: 3207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 3130

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			178	158		ng/L		89	70 - 130		
Perfluorooctanoic acid (PFOA)			178	164		ng/L		92	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*92*		*70 - 130*
13C2 PFDA	*95*		*70 - 130*
13C3 HFPO-DA	*95*		*70 - 130*
d5-NEtFOSAA	*83*		*70 - 130*

Lab Sample ID: LLCS 810-3130/2-A
Matrix: Drinking Water
Analysis Batch: 3207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 3130

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			1.78	1.58		ng/L		89	50 - 150		
Perfluorooctanoic acid (PFOA)			1.78	1.66		ng/L		93	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*104*		*70 - 130*
13C2 PFDA	*98*		*70 - 130*
13C3 HFPO-DA	*94*		*70 - 130*
d5-NEtFOSAA	*87*		*70 - 130*

QC Association Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

LCMS

Prep Batch: 3130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-1699-1	PEF70452/MG Tank	Total/NA	Drinking Water	537.1 DW	
810-1699-2	PEF70453/Raw Water Tap	Total/NA	Drinking Water	537.1 DW	
MB 810-3130/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LCS 810-3130/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	
LLCS 810-3130/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 3207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-1699-1	PEF70452/MG Tank	Total/NA	Drinking Water	537.1	3130
810-1699-2	PEF70453/Raw Water Tap	Total/NA	Drinking Water	537.1	3130
MB 810-3130/1-A	Method Blank	Total/NA	Drinking Water	537.1	3130
LCS 810-3130/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1	3130
LLCS 810-3130/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1	3130

Lab Chronicle

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Client Sample ID: PEF70452/MG Tank

Lab Sample ID: 810-1699-1

Date Collected: 09/07/21 13:40

Matrix: Drinking Water

Date Received: 09/10/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			3130	09/14/21 08:49	ST	EA SB
Total/NA	Analysis	537.1		1	3207	09/15/21 01:48	MH	EA SB

Client Sample ID: PEF70453/Raw Water Tap

Lab Sample ID: 810-1699-2

Date Collected: 09/07/21 13:35

Matrix: Drinking Water

Date Received: 09/10/21 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			3130	09/14/21 08:49	ST	EA SB
Total/NA	Analysis	537.1		1	3207	09/15/21 01:58	MH	EA SB

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Laboratory: Eurofins Eaton Analytical - South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-22

Method Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Method	Method Description	Protocol	Laboratory
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance

Job ID: 810-1699-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-1699-1	PEF70452/MG Tank	Drinking Water	09/07/21 13:40	09/10/21 09:00	AK2320078
810-1699-2	PEF70453/Raw Water Tap	Drinking Water	09/07/21 13:35	09/10/21 09:00	AK2320078

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

810-1699 Chain of Custody

...STODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	
Company: Barrow Utilities & Electric Coop.	Contact Person: Jim Murphy
Address: P.O. Box 449	WWTP APDES #:
City, State Zip: Barrow, AK 99723	PWS ID #: 320078
Phone: 907-852-3176	Send Results to ADEC:
Fax: 907-852-5164	X Yes ☐ No
Email: powerplant@bueci.org	Purchase Order/Charge Code: 20210001 2021-829
Project Name: PFAS Monitoring	
Sampled By: Tom Drake II	

Requested Analysis — Perservative Added: Trizma

Page 1 of 1

X Normal Turnaround

☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS							Sample Comments
MG Tank	SPTP001	9/7/21	13:40	W	PEF 70452		2	X (1)							
Raw Water Tap	SPIN001	9/7/21	1334	W	PEF 70453		2	X (1)							

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 0.1 °C

Sub Lab on arrival: 2.2 °C IR 23

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	9/7/21 1530	Jerry Pollen	Pollen Env	9-9-21@ 0920am
Jerry Pollen	Pollen Env	9-9-21@ 1100am	[signature]	EEA	9-10-21 0900

Accuracy, Precision, and Professional Service

Login Sample Receipt Checklist

Client: Pollen Environmental LLC

Job Number: 810-1699-1

Login Number: 1699

List Source: Eurofins Eaton Analytical - South Bend

List Number: 1

Creator: Spurgeon, Sheri

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION		
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**	
Address: **P.O. Box 449**	**WWTP APDES #:**	
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**	
Phone: **907-852-3176**	Send Results to ADEC:	
Fax: **907-852-5164**	☒ Yes ☐ No	
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001 PO#2021-982	
Project Name: **PFAS Monitoring**		
Sampled By: Tom Drake II		

Requested Analysis

Perservative Added: TMZMA

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS							Sample Comments
MG Tank	**SPTP001**	10/25/21	0945	W	PEF71446		2	X							
Raw Water Tap	**SPIN001**	10/25/21	0940	W	PEF71447		2	X							

☒ Normal Turnaround

☐ RUSH ____ day(s)

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 1.9 °C

Sub Lab on arrival: °C

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	10/25/21 0945		Pollen Env	10/26/2021 @ 10:50
	Pollen Env	10/26/21 @ 1130			

Accuracy, Precision, and Professional Service

POLLEN
ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

SAMPLE RECEIPT CHECKLIST

Date & Time Received 10/26/2021 @ 10'50 Initials TDP

Laboratory Identification PEF71446-PEF71447

N/A	YES	NO	
☐	☑	☐	Custody Seals intact? (N/A if hand delivered)
☐	☑	☐	Chain of Custody (COC) present and properly filled out?
☐	☑	☐	Samples received in hold time?
☐	☑	☐	Proper container and preservatives used?
☐	☑	☐	Bottles received intact and properly labeled
☐	☑	☐	Do sample labels match the COC?
☐	☑	☐	Sufficient volume of sample for all analysis?
☐	☑	☐	Temperature Blank received in cooler?
☐	☑	☐	Were samples chilled before delivery to lab?
☐	☑	☐	Did samples have sufficient time to cool before delivery to lab? If not, mark ITTC (Insufficient Time To Cool) on COC form.
☑	☐	☐	Are air bubbles present in VOA vials?

Notes: _____

*Temperature upon receipt at the laboratory 1.9 °C

☐ internal sample kit thermometer ☑ infra-red thermometer

POLLEN ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 11/8/2021
Receipt Date: 10/26/2021
Sampled By: Tom Drake II

Project Name: PFAS Monitoring
Sampled By: James F. Murphy
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
MG Tank	PEF71446	810-6039-1	10/25/2021	9:15 AM
Raw Water Tap	PEF71447	810-6039-2	10/25/2021	9:10 AM

Jerry Pollen
Pollen Environmental, LLC

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6039-1
Client Project/Site: PFC Compliance 2021-982

For:
Pollen Environmental LLC
3039 Davis Road
Fairbanks, Alaska 99709

Attn: Jerry Pollen

Authorized for release by:
11/7/2021 9:25:55 AM

Traci Chlebowski, Project Manager
(574)233-4777
traci.chlebowski@eurofinset.com

Table of Contents

Definitions/Glossary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

Qualifiers

LCMS

Qualifier	Qualifier Description
	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Detection Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

Client Sample ID: PEF71446/MG Tank
PWSID Number: AK2320078

Lab Sample ID: 810-6039-1

No Detections.

Client Sample ID: PEF71447/Raw Water Tap
PWSID Number: AK2320078

Lab Sample ID: 810-6039-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	61		1.7		ng/L	1		537.1	Total/NA
Perfluorooctanoic acid (PFOA)	5.3		1.7		ng/L	1		537.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

Client Sample ID: PEF71446/MG Tank

Lab Sample ID: 810-6039-1
Date Collected: 10/25/21 09:15
Matrix: Drinking Water
Date Received: 10/27/21 14:00
PWSID Number: AK2320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8		ng/L		10/29/21 06:00	10/29/21 23:21	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8		ng/L		10/29/21 06:00	10/29/21 23:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:21*	
13C2 PFDA	*94*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:21*	
13C3 HFPO-DA	*84*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:21*	
d5-NEtFOSAA	*85*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:21*	

Client Sample ID: PEF71447/Raw Water Tap

Lab Sample ID: 810-6039-2
Date Collected: 10/25/21 09:10
Matrix: Drinking Water
Date Received: 10/27/21 14:00
PWSID Number: AK2320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**61**		1.7		ng/L		10/29/21 06:00	10/29/21 23:32	1
Perfluorooctanoic acid (PFOA)	**5.3**		1.7		ng/L		10/29/21 06:00	10/29/21 23:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:32*	
13C2 PFDA	*92*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:32*	
13C3 HFPO-DA	*82*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:32*	
d5-NEtFOSAA	*86*		*70 - 130*	*10/29/21 06:00*	*10/29/21 23:32*	

Surrogate Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		PFHxA	PFDA	HFPODA	d5NEFOS
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
810-6039-1	PEF71446/MG Tank	84	94	84	85
810-6039-2	PEF71447/Raw Water Tap	76	92	82	86
LCS 810-6210/3-A	Lab Control Sample	93	88	90	86
LLCS 810-6210/2-A	Lab Control Sample	88	88	87	88
MB 810-6210/1-A	Method Blank	88	86	91	84

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
HFPODA = 13C3 HFPO-DA
d5NEFOS = d5-NEtFOSAA

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 810-6210/1-A
Matrix: Drinking Water
Analysis Batch: 6267

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6210

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		10/29/21 06:00	10/29/21 19:49	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		10/29/21 06:00	10/29/21 19:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*10/29/21 06:00*	*10/29/21 19:49*	
13C2 PFDA	*86*		*70 - 130*	*10/29/21 06:00*	*10/29/21 19:49*	
13C3 HFPO-DA	*91*		*70 - 130*	*10/29/21 06:00*	*10/29/21 19:49*	
d5-NEtFOSAA	*84*		*70 - 130*	*10/29/21 06:00*	*10/29/21 19:49*	

Lab Sample ID: LCS 810-6210/3-A
Matrix: Drinking Water
Analysis Batch: 6267

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6210

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			95.7	97.1		ng/L		101	70 - 130		
Perfluorooctanoic acid (PFOA)			95.7	98.3		ng/L		103	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*93*		*70 - 130*
13C2 PFDA	*88*		*70 - 130*
13C3 HFPO-DA	*90*		*70 - 130*
d5-NEtFOSAA	*86*		*70 - 130*

Lab Sample ID: LLCS 810-6210/2-A
Matrix: Drinking Water
Analysis Batch: 6267

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6210

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			1.88	1.89		ng/L		100	50 - 150		
Perfluorooctanoic acid (PFOA)			1.88	1.80		ng/L		95	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*88*		*70 - 130*
13C2 PFDA	*88*		*70 - 130*
13C3 HFPO-DA	*87*		*70 - 130*
d5-NEtFOSAA	*88*		*70 - 130*

QC Association Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

LCMS

Prep Batch: 6210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6039-1	PEF71446/MG Tank	Total/NA	Drinking Water	537.1 DW	
810-6039-2	PEF71447/Raw Water Tap	Total/NA	Drinking Water	537.1 DW	
MB 810-6210/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LCS 810-6210/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	
LLCS 810-6210/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 6267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6039-1	PEF71446/MG Tank	Total/NA	Drinking Water	537.1	6210
810-6039-2	PEF71447/Raw Water Tap	Total/NA	Drinking Water	537.1	6210
MB 810-6210/1-A	Method Blank	Total/NA	Drinking Water	537.1	6210
LCS 810-6210/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1	6210
LLCS 810-6210/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1	6210

Lab Chronicle

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

Client Sample ID: PEF71446/MG Tank

Date Collected : 10/ 25/ 21 09:15
Date Received : 10/ 27/ 21 14:00

Lab Sample ID: 810- 6039- 1
Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			6210	10/29/21 06:00	TR	EA SB
Total/NA	Analysis	537.1		1	6267	10/29/21 23:21	MH	EA SB

Client Sample ID: PEF71447/Raw Water Tap

Date Collected : 10/ 25/ 21 09:10
Date Received : 10/ 27/ 21 14:00

Lab Sample ID: 810- 6039-2
Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			6210	10/29/21 06:00	TR	EA SB
Total/NA	Analysis	537.1		1	6267	10/29/21 23:32	MH	EA SB

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Pollen Environmental LLC
Job ID: 810-6039-1
Project/Site: PFC Compliance 2021-982

Laboratory: Eurofins Eaton Analytical - South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-22

Method Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

Method	Method Description	Protocol	Laboratory
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance 2021-982

Job ID: 810-6039-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-6039-1	PEF71446/MG Tank	Drinking Water	10/25/21 09:15	10/27/21 14:00	AK2320078
810-6039-2	PEF71447/Raw Water Tap	Drinking Water	10/25/21 09:10	10/27/21 14:00	AK2320078

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

810-6039 Chain of Custody

ISTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-3176**	Send Results to ADEC:
Fax: **907-852-5164**	[X] Yes [ ] No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001 PO#2021-982
Project Name: **PFAS Monitoring**	
Sampled By: Tom Drake II	

Requested Analysis

Perservative Added: TN2M4

[X] Normal Turnaround

[ ] RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
MG Tank	SPTP001	10/25/21	09:45	W	PEF 71446		2	X (1)	
Raw Water Tap	SPIN001	10/25/21	09:40	W	PEF 71447		2	X (1)	

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 1.9 °C IR 23

Sub Lab on arrival: 1.2 °C Intact

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II	BUECI	10/25/21 09:45		Pollen Env	10/26/2021 @ 10:50
	Pollen Env	10/26/21 @ 11:30		EEA	10/27/21 1400

Accuracy, Precision, and Professional Service

Login Sample Receipt Checklist

Client: Pollen Environmental LLC

Job Number: 810-6039-1

Login Number: 6039
List Number: 1
Creator: Spurgeon, Sheri

List Source: Eurofins Eaton Analytical - South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: **Jim Murphy**
Company: **Barrow Utilities & Electric Coop.**	
Address: **P.O. Box 449**	**WWTP APDES #:**
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**
Phone: **907-852-8427**	Send Results to ADEC:
Fax: **907-852-5164**	√ Yes ☐ No
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001
Project Name: **PFAS Monitoring**	2021-995
Sampled By: Tom Drake II	

Requested Analysis — Page 1 of 1

Perservative Added: Trizma Mixture — PFOA & PFOS

☒ Normal Turnaround
☐ RUSH ____ day(s)

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS								Sample Comments
Raw Water Tap	**SPIN001**	11/1/21	0900	W	PEF71570		2	X								
MG Tank	**SPTP001**	11/1/21	0905	W	PEF71571		2	X								

Possible Hazard Identification:
☐ *Non-Hazardous* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Unknown*

Sample Condition:
Pollen Env Temperature on arrival: 3.8 °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*
Sub Lab Temperature on arrival: ____ °C *COC Seal:* ☐ *Intact* ☐ *Broken* ☐ *Absent*

Special Instructions/QC Requirements & Comments:

Relinquished by: Tom Drake II	Company: B.U.E.C.I.	Date & Time: 11/1/21 0945	Received by: [signature]	Company: Pollen Env.	Date & Time: 11/2/21 @1010
Relinquished by: [signature]	Company: Pollen Env	Date & Time: 11-3-21 @ 1100am	Received by:	Company:	Date & Time:
Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:

POLLEN
ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

SAMPLE RECEIPT CHECKLIST

Date & Time Received 11/2/21 @1010 Initials MC

Laboratory Identification PEF 71570-71572

N/A	YES	NO	
☐	☒	☐	Custody Seals intact? (N/A if hand delivered)
☐	☒	☐	Chain of Custody (COC) present and properly filled out?
☐	☒	☐	Samples received in hold time?
☐	☒	☐	Proper container and preservatives used?
☐	☒	☐	Bottles received intact and properly labeled
☐	☒	☐	Do sample labels match the COC?
☐	☒	☐	Sufficient volume of sample for all analysis?
☐	☒	☐	Temperature Blank received in cooler?
☐	☒	☐	Were samples chilled before delivery to lab?
☐	☒	☐	Did samples have sufficient time to cool before delivery to lab? If not, mark ITTC (Insufficient Time To Cool) on COC form.
☒	☐	☐	Are air bubbles present in VOA vials?

Notes: _____

*Temperature upon receipt at the laboratory 3.8 °C

☐ internal sample kit thermometer ☒ infra-red thermometer

POLLEN ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 11/18/2021
Receipt Date: 11/2/2021
Sampled By: Tom Drake II

Project Name: PFAS Monitoring
Sampled By: Tom Drake II
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
Raw Water Tap	PEF71570	810-6759-1	11/1/2021	9:00 AM
MG Tank	PEF71571	810-6759-2	11/1/2021	9:05 AM

Jerry Pollen
Pollen Environmental, LLC

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-6759-1
Client Project/Site: PFC Compliance - 2021-995

For:
Pollen Environmental LLC
3039 Davis Road
Fairbanks, Alaska 99709

Attn: Jerry Pollen

Authorized for release by:
11/18/2021 2:48:35 PM

Traci Chlebowski, Project Manager
(574)233-4777
traci.chlebowski@eurofinset.com

Table of Contents

Definitions/Glossary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Case Narrative

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

Job ID: 810-6759-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative
810-6759-1

Comments
No additional comments.

Receipt
The samples were received on 11/4/2021 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.2º C.

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

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

Detection Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

Client Sample ID: PEF71570/Raw Water Tap
PWSID Number: AK2320078

Lab Sample ID: 810-6759-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac		Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	53		1.8		ng/L	1		537.1	Total/NA
Perfluorooctanoic acid (PFOA)	4.8		1.8		ng/L	1		537.1	Total/NA

Client Sample ID: PEF71571/MG Tank
PWSID Number: AK2320078

Lab Sample ID: 810-6759-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: PEF71570/Raw Water Tap

Lab Sample ID: 810-6759-1
Date Collected: 11/01/21 09:00
Matrix: Drinking Water
Date Received: 11/04/21 09:15
PWSID Number: AK2320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**53**		1.8		ng/L		11/05/21 05:20	11/05/21 23:13	1
Perfluorooctanoic acid (PFOA)	**4.8**		1.8		ng/L		11/05/21 05:20	11/05/21 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:13*	
13C2 PFDA	*95*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:13*	
13C3 HFPO-DA	*80*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:13*	
d5-NEtFOSAA	*82*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:13*	

Client Sample ID: PEF71571/MG Tank

Lab Sample ID: 810-6759-2
Date Collected: 11/01/21 09:05
Matrix: Drinking Water
Date Received: 11/04/21 09:15
PWSID Number: AK2320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7		ng/L		11/05/21 05:20	11/05/21 23:24	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7		ng/L		11/05/21 05:20	11/05/21 23:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:24*	
13C2 PFDA	*88*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:24*	
13C3 HFPO-DA	*85*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:24*	
d5-NEtFOSAA	*83*		*70 - 130*	*1/05/21 05:20*	*1/05/21 23:24*	

Surrogate Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	PFHxA (70-130)	PFDA (70-130)	HFPODA (70-130)	d5NEFOS (70-130)
810-6759-1	PEF71570/Raw Water Tap	78	95	80	82
810-6759-2	PEF71571/MG Tank	89	88	85	83
LLCS 810-6664/2-A	Lab Control Sample	94	87	93	86
MB 810-6664/1-A	Method Blank	83	90	86	83

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
HFPODA = 13C3 HFPO-DA
d5NEFOS = d5-NEtFOSAA

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 810-6664/1-A
Matrix: Drinking Water
Analysis Batch: 6722

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 6664

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		11/05/21 05:20	11/05/21 21:16	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		11/05/21 05:20	11/05/21 21:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*1/05/21 05:20*	*1/05/21 21:16*	
13C2 PFDA	*90*		*70 - 130*	*1/05/21 05:20*	*1/05/21 21:16*	
13C3 HFPO-DA	*86*		*70 - 130*	*1/05/21 05:20*	*1/05/21 21:16*	
d5-NEtFOSAA	*83*		*70 - 130*	*1/05/21 05:20*	*1/05/21 21:16*	

Lab Sample ID: LLCS 810-6664/2-A
Matrix: Drinking Water
Analysis Batch: 6722

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 6664

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			1.94	1.82		ng/L		94	50 - 150		
Perfluorooctanoic acid (PFOA)			1.94	1.67		ng/L		86	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*94*		*70 - 130*
13C2 PFDA	*87*		*70 - 130*
13C3 HFPO-DA	*93*		*70 - 130*
d5-NEtFOSAA	*86*		*70 - 130*

QC Association Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

LCMS

Prep Batch: 6664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6759-1	PEF71570/Raw Water Tap	Total/NA	Drinking Water	537.1 DW	
810-6759-2	PEF71571/MG Tank	Total/NA	Drinking Water	537.1 DW	
MB 810-6664/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LLCS 810-6664/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 6722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-6759-1	PEF71570/Raw Water Tap	Total/NA	Drinking Water	537.1	6664
810-6759-2	PEF71571/MG Tank	Total/NA	Drinking Water	537.1	6664
MB 810-6664/1-A	Method Blank	Total/NA	Drinking Water	537.1	6664
LLCS 810-6664/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1	6664

Lab Chronicle

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

Client Sample ID: PEF71570/Raw Water Tap

Lab Sample ID: 810-6759-1

Date Collected: 11/01/21 09:00

Matrix: Drinking Water

Date Received: 11/04/21 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			6664	11/05/21 05:20	TR	EA SB
Total/NA	Analysis	537.1		1	6722	11/05/21 23:13	MH	EA SB

Client Sample ID: PEF71571/MG Tank

Lab Sample ID: 810-6759-2

Date Collected: 11/01/21 09:05

Matrix: Drinking Water

Date Received: 11/04/21 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			6664	11/05/21 05:20	TR	EA SB
Total/NA	Analysis	537.1		1	6722	11/05/21 23:24	MH	EA SB

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Pollen Environmental LLC
Job ID: 810-6759-1
Project/Site: PFC Compliance - 2021-995

Laboratory: Eurofins Eaton Analytical - South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-22

Method Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

Method	Method Description	Protocol	Laboratory
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Pollen Environmental LLC
Project/Site: PFC Compliance - 2021-995

Job ID: 810-6759-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-6759-1	PEF71570/Raw Water Tap	Drinking Water	11/01/21 09:00	11/04/21 09:15	AK2320078
810-6759-2	PEF71571/MG Tank	Drinking Water	11/01/21 09:05	11/04/21 09:15	AK2320078

POLLEN ENVIRONMENTAL, LLC.

3536 International Street
Fairbanks, AK 99701
(907) 479-8368 Phone (907) 452-6853 Fax
jerry@pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

810-6759 Chain of Custody

CLIENT INFORMATION		Requested Analysis	Page 1 of 1
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**		
Address: **P.O. Box 449**	**WWTP APDES #:**	Perservative Added	
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**	Trizma Mixture	
Phone: **907-852-8427**	Send Results to ADEC:		☒ Normal Turnaround
Fax: **907-852-5164**	√ Yes ☐ No	Number of Containers / PFOA & PFOS	☐ RUSH ____ day(s)
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: 20210001		
Project Name: **PFAS Monitoring**	2021-995		
Sampled By: Tom Drake II			

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS	Sample Comments
Raw Water Tap	SPIN001	11/1/21	0900	W	PEF71570		2	x (1)	
MG Tank	SPTP001	11/1/21	0905	W	PEF71571		2	x (1)	

Possible Hazard Identification:
☐ Non-Hazardous ☐ Flammable ☐ Skin Irritant ☐ Unknown

Sample Condition:
Pollen Env Temperature on arrival: 3.8 °C COC Seal: ☐ Intact ☐ Broken ☐ Absent
Sub Lab Temperature on arrival: 0.2 °C COC Seal: ☒ Intact ☐ Broken ☐ Absent

Special Instructions/QC Requirements & Comments:

IR 23

Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
Tom Drake II		B.U.E.C.I.	11/1/21 0945		Pollen Env.	11/2/21 0810
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:
		Pollen Env	11-3-21 @1100am		EEA	11-4-21 0915
Relinquished by:		Company:	Date & Time:	Received by:	Company:	Date & Time:

Accuracy, Precision, and Professional Service

Login Sample Receipt Checklist

Client: Pollen Environmental LLC

Job Number: 810-6759-1

Login Number: 6759
List Number: 1
Creator: Spurgeon, Sheri

List Source: Eurofins Eaton Analytical - South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CHAIN OF CUSTODY/WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION	Contact Person: Jim Murphy	Requested Analysis	Page 1 of 1
Company: **Barrow Utilities & Electric Coop.**		Perservative Added	
Address: **P.O. Box 449**	**WWTP APDES #:**		
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**		
Phone: **907-852-3176**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **907-852-5164**	☐ Yes ☐ No		
Email: **powerplant@bueci.org**	Purchase Order/Charge Code: P.O. # 2021-1095		☐ RUSH ____ day(s)
Project Name: **PFAS Monitoring**			
Sampled By: Mark Ahsoak III			

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS								Sample Comments
MG Tank	**SPTP001**	12-7	1058	W	PEF72297		2	X								
Raw Water Tap	**SPIN001**	12-7	1100	W	PEF72298		2	X								

Special Instructions/QC Requirements & Comments:

Sample Temperature:

Pollen Env on arrival: 0.9 °C

Sub Lab on arrival: _____ °C

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
per phone call for	BUECI	12-7-21 @1100		Pollen Env	12-8-21 @0935
	Pollen Env	12/9/2021 @10:00			

Accuracy, Precision, and Professional Service

POLLEN
ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

SAMPLE RECEIPT CHECKLIST

Date & Time Received 12/8/2021 @ 9:35 Initials JEP

Laboratory Identification PEF72296-PEF72298

N/A	YES	NO	
☐	☑	☐	Custody Seals intact? (N/A if hand delivered)
☐	☑	☐	Chain of Custody (COC) present and properly filled out?
☐	☑	☐	Samples received in hold time?
☐	☑	☐	Proper container and preservatives used?
☐	☑	☐	Bottles received intact and properly labeled
☐	☑	☐	Do sample labels match the COC?
☐	☑	☐	Sufficient volume of sample for all analysis?
☐	☑	☐	Temperature Blank received in cooler?
☐	☑	☐	Were samples chilled before delivery to lab?
☐	☑	☐	Did samples have sufficient time to cool before delivery to lab? If not, mark **ITTC** (Insufficient Time To Cool) on COC form.
☑	☐	☐	Are air bubbles present in VOA vials?

Notes: _____

_____

_____

*Temperature upon receipt at the laboratory 0.9 °C

☐ internal sample kit thermometer ☑ infra-red thermometer

POLLEN ENVIRONMENTAL, LLC
3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

CERTIFICATE OF ANALYSIS

Barrow Utilities and Electric Coop.
Attn: Jim Murphy
PO Box 449
Barrow, AK 99723
Phone: (907) 852-5164
Fax: (907) 852-6751
E-mail: powerplant@bueci.org

Report Date: 12/30/2021
Receipt Date: 12/8/2021
Sampled By: Mark Ahsoak III

Project Name: PFAS Monitoring
Sampled By: Mark Ahsoak III
PWS ID: 320078

Sample ID:	Pollen Env ID:	Eurofins ID:	Date:	Time:
MG Tank	PEF72297	810-10100-1	12/7/2021	10:58 AM
Raw Water Tap	PEF72298	810-10100-2	12/7/2021	11:00 AM

Jerry Pollen
Pollen Environmental, LLC

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-10100-1
Client Project/Site: 2021-1095

For:
Pollen Environmental LLC
3039 Davis Road
Fairbanks, Alaska 99709

Attn: Jerry Pollen

Authorized for release by:
12/29/2021 2:13:23 PM

Traci Chlebowski, Project Manager
(574)233-4777
traci.chlebowski@eurofinset.com

Table of Contents

Definitions/Glossary

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Case Narrative

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Job ID: 810-10100-1

Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative
810-10100-1

Comments
No additional comments.

Receipt
The samples were received on 12/13/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2º C.

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

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

Detection Summary

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Client Sample ID: PEF72297/MG Tank
PWSID Number: AK320078

Lab Sample ID: 810-10100-1

No Detections.

Client Sample ID: PEF72298/Raw Water Tap
PWSID Number: AK320078

Lab Sample ID: 810-10100-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	61		1.9		ng/L	1		537.1	Total/NA
Perfluorooctanoic acid (PFOA)	5.7		1.9		ng/L	1		537.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: PEF72297/MG Tank

Lab Sample ID: 810-10100-1
Date Collected: 12/07/21 10:58
Matrix: Drinking Water
Date Received: 12/13/21 10:00
PWSID Number: AK320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9		ng/L		12/16/21 06:22	12/19/21 19:57	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		12/16/21 06:22	12/19/21 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*70 - 130*	*12/16/21 06:22*	*12/19/21 19:57*	*1*
13C2 PFDA	*93*		*70 - 130*	*12/16/21 06:22*	*12/19/21 19:57*	*1*
13C3 HFPO-DA	*92*		*70 - 130*	*12/16/21 06:22*	*12/19/21 19:57*	*1*
d5-NEtFOSAA	*87*		*70 - 130*	*12/16/21 06:22*	*12/19/21 19:57*	*1*

Client Sample ID: PEF72298/Raw Water Tap

Lab Sample ID: 810-10100-2
Date Collected: 12/07/21 11:00
Matrix: Drinking Water
Date Received: 12/13/21 10:00
PWSID Number: AK320078

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**61**		1.9		ng/L		12/16/21 06:22	12/19/21 20:07	1
Perfluorooctanoic acid (PFOA)	**5.7**		1.9		ng/L		12/16/21 06:22	12/19/21 20:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*12/16/21 06:22*	*12/19/21 20:07*	*1*
13C2 PFDA	*96*		*70 - 130*	*12/16/21 06:22*	*12/19/21 20:07*	*1*
13C3 HFPO-DA	*89*		*70 - 130*	*12/16/21 06:22*	*12/19/21 20:07*	*1*
d5-NEtFOSAA	*80*		*70 - 130*	*12/16/21 06:22*	*12/19/21 20:07*	*1*

Surrogate Summary

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	PFHxA (70-130)	PFDA (70-130)	HFPODA (70-130)	d5NEFOS (70-130)
810-10100-1	PEF72297/MG Tank	97	93	92	87
810-10100-2	PEF72298/Raw Water Tap	87	96	89	80
LCS 810-9297/2-A	Lab Control Sample	103	97	96	91
LLCS 810-9297/3-A	Lab Control Sample	103	98	91	87
MB 810-9297/1-A	Method Blank	101	97	94	87

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
HFPODA = 13C3 HFPO-DA
d5NEFOS = d5-NEtFOSAA

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 810-9297/1-A
Matrix: Drinking Water
Analysis Batch: 9489

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9297

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		12/16/21 06:22	12/19/21 19:25	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		12/16/21 06:22	12/19/21 19:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*12/16/21 06: 22*	*12/19/21 19: 25*	
13C2 PFDA	*97*		*70 - 130*	*12/16/21 06: 22*	*12/19/21 19: 25*	
13C3 HFPO-DA	*94*		*70 - 130*	*12/16/21 06: 22*	*12/19/21 19: 25*	
d5-NEt FOSAA	*87*		*70 - 130*	*12/16/21 06: 22*	*12/19/21 19: 25*	

Lab Sample ID: LCS 810-9297/2-A
Matrix: Drinking Water
Analysis Batch: 9489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9297

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			97.2	96.8		ng/L		100	70 - 130		
Perfluorooctanoic acid (PFOA)			97.2	96.7		ng/L		99	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*103*		*70 - 130*
13C2 PFDA	*97*		*70 - 130*
13C3 HFPO-DA	*96*		*70 - 130*
d5-NEt FOSAA	*9*		*70 - 130*

Lab Sample ID: LLCS 810-9297/3-A
Matrix: Drinking Water
Analysis Batch: 9489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9297

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanesulfonic acid (PFOS)			1.92	1.76		ng/L		92	50 - 150		
Perfluorooctanoic acid (PFOA)			1.92	1.74		ng/L		91	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*103*		*70 - 130*
13C2 PFDA	*98*		*70 - 130*
13C3 HFPO-DA	*9*		*70 - 130*
d5-NEt FOSAA	*87*		*70 - 130*

QC Association Summary

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

LCMS

Prep Batch: 9297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-10100-1	PEF72297/MG Tank	Total/NA	Drinking Water	537.1 DW	
810-10100-2	PEF72298/Raw Water Tap	Total/NA	Drinking Water	537.1 DW	
MB 810-9297/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LCS 810-9297/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	
LLCS 810-9297/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 9489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-10100-1	PEF72297/MG Tank	Total/NA	Drinking Water	537.1	9297
810-10100-2	PEF72298/Raw Water Tap	Total/NA	Drinking Water	537.1	9297
MB 810-9297/1-A	Method Blank	Total/NA	Drinking Water	537.1	9297
LCS 810-9297/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1	9297
LLCS 810-9297/3-A	Lab Control Sample	Total/NA	Drinking Water	537.1	9297

Lab Chronicle

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Client Sample ID: PEF72297/MG Tank

Lab Sample ID: 810-10100-1

Date Collected: 12/07/21 10:58

Matrix: Drinking Water

Date Received: 12/13/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			9297	12/16/21 06:22	CM	EA SB
Total/NA	Analysis	537.1		1	9489	12/19/21 19:57	MH	EA SB

Client Sample ID: PEF72298/Raw Water Tap

Lab Sample ID: 810-10100-2

Date Collected: 12/07/21 11:00

Matrix: Drinking Water

Date Received: 12/13/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW			9297	12/16/21 06:22	CM	EA SB
Total/NA	Analysis	537.1		1	9489	12/19/21 20:07	MH	EA SB

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Laboratory: Eurofins Eaton Analytical - South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-22

Method Summary

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Method	Method Description	Protocol	Laboratory
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Pollen Environmental LLC
Project/Site: 2021-1095

Job ID: 810-10100-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-10100-1	PEF72297/MG Tank	Drinking Water	12/07/21 10:58	12/13/21 10:00	AK320078
810-10100-2	PEF72298/Raw Water Tap	Drinking Water	12/07/21 11:00	12/13/21 10:00	AK320078

POLLEN ENVIRONMENTAL, LLC

3039 Davis Road Fairbanks, AK 99709 | 907.479.8368 | www.pollenenv.com

810-10100 COC

N OF CUSTODY / WORKORDER FORM

COC# BUECI PFC

CLIENT INFORMATION		Requested Analysis	Page 1 of 1
Company: **Barrow Utilities & Electric Coop.**	Contact Person: **Jim Murphy**	Perservative Added	
Address: **P.O. Box 449**	**WWTP APDES #:**		
City, State Zip: **Barrow, AK 99723**	**PWS ID #: 320078**		
Phone: **907-852-3176**	Send Results to ADEC:		☐ Normal Turnaround
Fax: **907-852-5164**	☐ Yes ☐ No		
Email: **powerplant@bueci.org**	Purchase Order/Charge Code:		☐ RUSH ____ day(s)
Project Name: **PFAS Monitoring**	P.C. #2021-1095		
Sampled By: [illegible]			

Sample Identification	Sample Point ID:	Sample Date	Sample Time	Matrix	Lab ID#	Sub Lab ID#	Number of Containers	PFOA & PFOS								Sample Comments
MG Tank	SPTP001			W	PEF72297		2	X								
Raw Water Tap	SPIN001			W	PEF72298		2	X								

Special Instructions/QC Requirements & Comments:

Sample Temperature:
Pollen Env on arrival: 0.9 °C
Sub Lab on arrival: 3.2 °C
Blue

Relinquished by:	Company:	Date & Time:	Received by:	Company:	Date & Time:
[signature] per phone call for	BUECI	12-7-21 @ 1100	[signature]	Pollen Env	12-8-21 @ 0935
Relinquished by: [signature]	Company: Pollen Env	Date & Time: 12/9/2021 @ 1010	Received by:	Company:	Date & Time:
Relinquished by:	Company:	Date & Time:	Received by: [signature]	Company:	Date & Time: 12-13-2021 1000

Accuracy, Precision, and Professional Service

Login Sample Receipt Checklist

Client: Pollen Environmental LLC

Job Number: 810-10100-1

Login Number: 10100
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton Analytical - South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: ADOT&PF Barrow (Utqiagvik) Airport Sitewide PFAS

File Number: 310.38.036

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Aqueous Film Forming Foam (AFFF) releases

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☒ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☒ Subsistence harvester (i.e. gathers wild foods)
- ☒ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☒ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

PFAS has been detected in surface water adjacent to the site, likely as a result of AFFF releases to the ground surface at the airport.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

AFFF releases to the ground surface may cause soil contamination at the site. According to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Groundwater is not used as a drinking water source at or near the site.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☒

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

PFAS have been detected in surface water samples collected from a reservoir adjacent to the airport which is used as a water source for Utqiagvik's municipal water system.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Complete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

PFAS are not included in Appendix D. If volatile organic compounds are reported during site characterization activities, this section will be updated with the new information.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

AFFF was likely released to the ground surface that may be dusty in the summertime.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

To our knowledge, no sediment samples have been collected at the BRW. Due to the potential for residents to access potentially contaminated surface water bodies, this has been marked as a pathway in need of further evaluation.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF Utqiagvik Airport Sitewide PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: March 2023

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil → check soil									
	☑ Migration to subsurface → check soil									
	☑ Migration to groundwater → check groundwater									
	☐ Volatilization → check air									
	☑ Runoff or erosion → check surface water									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil → check soil									
	☑ Migration to groundwater → check groundwater									
	☐ Volatilization → check air									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater → check groundwater									
	☐ Volatilization → check air									
	☐ Flow to surface water body → check surface water									
	☐ Flow to sediment → check sediment									
	☐ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Surface Water	☑ Direct release to surface water → check surface water									
	☐ Volatilization → check air									
	☑ Sedimentation → check sediment									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Sediment	☑ Direct release to sediment → check sediment									
	☑ Resuspension, runoff, or erosion → check surface water									
	☑ Uptake by plants or animals → check biota									
	☐ Other (list):									
		☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F	C/F	
			☑ Dermal Absorption of Contaminants from Soil	I	I	I	I	I	I	
			☑ Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F	C/F	C/F	
		☑ groundwater	☐ Ingestion of Groundwater							
			☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I	I	I	
			☐ Inhalation of Volatile Compounds in Tap Water							
		☐ air	☐ Inhalation of Outdoor Air							
			☐ Inhalation of Indoor Air							
			☐ Inhalation of Fugitive Dust							
		☑ surface water	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F		
			☑ Dermal Absorption of Contaminants in Surface Water	I	I	I	I	I	I	
			☐ Inhalation of Volatile Compounds in Tap Water							
		☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F	C/F	
		☑ biota	☑ Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F	C/F	C/F	

Revised, 10/01/2010

IMPORTANT INFORMATION

Important Information

About Your Environmental Report

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the Geoprofessional Business Association (https://www.geoprofessional.org)