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FINAL

SUMMARY REPORT  
King Salmon Airport Initial PFAS Site  
Characterization  
KING SALMON, ALASKA



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Submitted To: Alaska Department of Transportation & Public Facilities  
2301 Peger Road  
Fairbanks, Alaska 99709  
Attn: Mr. Marcus Zimmerman and Ms. Sammy Cummings

Subject: FINAL SUMMARY REPORT, KING SALMON AIRPORT INITIAL PFAS SITE  
CHARACTERIZATION, KING SALMON, ALASKA

Shannon & Wilson prepared this report and participated in this project as a consultant to Alaska Department of Transportation and Public Facilities (DOT&PF). Shannon & Wilson's services were authorized by Professional Services Agreement Number 25-19-013 *Per- and Polyfluorinated Substances (PFAS) Related Environmental & Engineering Services*, issued by the DOT&PF on May 31, 2019, under Amendment 36 and notice to proceed (NTP) P3-8 dated March 23, 2021.

This report presents a summary of Shannon & Wilson's initial PFAS site characterization effort at and near the King Salmon Airport (AKN). Ongoing water supply well monitoring activities are reported separately.

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, INC.

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## EXECUTIVE SUMMARY

The King Salmon Airport (AKN) was an active USAF installation known as the King Salmon Divert (KSD) in the 1930's. Ownership transferred to the Federal Aviation Administration (FAA) following World War II and remained a federal property until it was transferred to the State of Alaska upon statehood in 1959. The USAF continues to lease parcels of land surrounding the existing runway.

Aqueous film forming foam (AFFF) was used for aircraft rescue firefighting (ARFF) training and systems testing at the AKN for many years. Annual AFFF systems testing was required to maintain FAA certification. Prior to 2019, FAA inspections required the release of AFFF to ground surface; a small amount of AFFF would be discharged so the inspector could visually confirm the foam consistency. AFFF training activities at AKN likely occurred twice per year at two training areas beginning in the 1970s, and at least once per year at various locations along the AKN runways by the USAF and DOT&PF, with 11 known AFFF-release areas associated with the KSD. The precise timeline and locations of AFFF use are currently unknown.

The purpose of this project was to sample surface and subsurface soil, surface water, and groundwater at and near the AKN. The objective of this initial site characterization effort was to understand the extent of per- and polyfluoroalkyl substances (PFAS) contamination, if present, resulting from the historic use of AFFF by the DOT&PF at the AKN. Site characterization activities were conducted in accordance with the *General Work Plan Addendum 001-AKN-01 Revision 1.1*, dated June 2021.

In August of 2021, Shannon & Wilson, Inc. (S&W) staff traveled to King Salmon to perform initial site characterization activities at and near the AKN. S&W staff collected analytical samples from the AKN for analysis of gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), and PFAS. PFAS samples were submitted to Eurofins TestAmerica (TestAmerica) in West Sacramento, California and petroleum samples were submitted to SGS North America in Anchorage, Alaska. Soil and sediment results were compared to the most conservative of either the migration to groundwater or human health cleanup levels listed in 18 AAC 75.341 *Tables B1 Method Two and B2, Method Two – Under 40-inch*. Groundwater and surface water samples were compared to 18 AAC 75.345 *Table C, Groundwater Cleanup Level*.

PFOS and PFOA were detected above their respective regulatory levels in:

- five surface soil locations along the runway drainage areas;
- one subsurface soil location identified as a former Fire Training Area;
- five surface water locations, with highest concentrations observed in Fox Creek and the drainage channel sample to the east of Fox Creek; and
- one groundwater sample location identified as a Fire Training Area.

DRO were detected above its regulatory level at a subsurface soil location identified as Fire Training Area B. DRO contamination may have resulted from a fuel spill(s) or use of fuel during training exercises.

S&W recommends conducting further site characterization activities at the AKN. We recommend further delineation of the vertical and horizontal extent of PFOS, PFOA, and DRO contamination at the AKN and adjacent properties by conducting additional surface and shallow subsurface soil, surface water, and/or sediment sampling in the vicinity of regulatory exceedances. These recommendations are based on site conditions observed at the AKN at the time of our field activities, the results of testing performed on samples collected from the site, publicly available literature and data reviewed for this project, our understanding of the project, and information provided by the DOT&PF and other members of the project team.

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## ACRONYMS

AAC	Alaska Administrative Code
AFCEC	Air Force Civil Engineering Center
AFFF	aqueous film forming foam
ARFF	aircraft rescue and firefighting
AKN	King Salmon Airport
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CFR	Code of Federal Regulations
COC	contaminant of concern
COPC	contaminant of potential concern
CSM	conceptual site model
CSPP	Construction Safety and Phasing Plan
CUL	Cleanup Level
DEC	Alaska Department of Environmental Conservation
DOT&PF	Alaska Department of Transportation & Public Facilities
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
GAC	granular activated carbon
GRO	gasoline range organics
GWP	<i>General Work Plan Addendum 001-AKN-01 Revision 1.1</i>
IDW	investigative-derived waste
KSD	King Salmon Divert
LHA	Lifetime Health Advisory
LDRC	Laboratory Data Review Checklist
LOQ	limit of quantitation
LOD	limit of detection
mg/kg	milligram per kilogram
mg/L	milligram per liter
MTG	migration to groundwater
MW	monitoring well
mV	millivolt
ng/L	nanograms per liter
PAH	polycyclic aromatic hydrocarbons
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PID	photoionization detector

ACRONYMS

ppm	parts per million
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RL	reporting limit
RRO	residual range organics
SIM	selective ion monitoring
S&W	Shannon & Wilson, Inc.
TestAmerica	Eurofins TestAmerica Laboratories
µg/kg	micrograms per kilogram
µS	microSiemens
USACE	United States Army Corps of Engineers
USAF	United States Air Force
YSI	multiprobe water quality meter

# 1 INTRODUCTION

This report documents the initial per- and polyfluoroalkyl substances (PFAS) site characterization activities conducted in summer 2021 at and near the King Salmon Airport (AKN). AKN is an active, Alaska Department of Environmental Conservation (DEC) listed contaminated site due to the known presence of PFAS in groundwater (File Number 2569.38.033, Hazard ID 26981). The geographic coordinates of the AKN terminal are latitude 58.677, longitude -156.651 (Figure 1).

Shannon & Wilson, Inc. (S&W) has prepared this report on behalf of the Alaska Department of Transportation & Public Facilities (DOT&PF) Southcoast Region in accordance with the terms and conditions of S&W's contract. The field effort described herein was conducted in general accordance with:

- *DOT&PF Statewide PFAS General Work Plan Revision 1 (GWP)*, dated July 2020;
- *GWP Addendum 001-AKN-01 Revision 1.1 (Addendum)*, dated June 2021;
- 18 Alaska Administrative Code (AAC) 75.335; and
- relevant DEC regulatory guidance documents.

Site characterization efforts for this Addendum were focused on the portions of the DOT&PF AKN property that are not leased to the United States Air Force (USAF). S&W understands the United States Army Corps of Engineers (USACE), the Air Force Civil Engineer Center (AFCEC), and their contractors have performed environmental investigations on the King Salmon Divert (KSD), a former USAF installation located on DOT&PF-leased land north and north east of the AKN. The USACE and AFCEC investigations are focused on characterizing their leased parcels.

## 1.1 Purpose and Objectives

The purpose of the services described in this report was to evaluate the extent of PFAS contamination resulting from the historic use of aqueous film forming foam (AFFF) by the DOT&PF at AKN.

The initial PFAS site characterization effort included:

- collecting analytical surface and subsurface soil samples from near the AKN runways and potential AFFF releases areas;
- installing, developing, and sampling monitoring wells (MWs) near three AFFF release areas associated with DOT&PF activities;

- installing, developing, and sampling MW nests (two MWs each), located near the two “affected” properties; and
- collecting analytical surface water samples from AKN drainage ditches, ponds, and creeks.

## 1.2 Background

General background information relating to sites covered under the GWP is included in Section 1.1 of the GWP. Background information specific to the AKN is detailed below.

The AKN property was an active USAF installation known as the KSD during the 1930s through the 1950s. During the 1940s, the land was used for aircraft storage and fuel stops during World War II. Ownership transferred to the Federal Aviation Administration (FAA) following World War II and remained a federal property until it was transferred to the State of Alaska upon statehood in 1959. The USAF withdrew remaining permanent military personnel and aircraft from the KSD in 1994 but continues to lease multiple parcels of land surrounding the existing runway.

The airport meets the requirements defined in Title 14, Code of Federal Regulations (CFR), Part 139, which requires specific certification through the FAA. This certification requires in part that the airport provide aircraft rescue and firefighting (ARFF) services to ensure safety during air transportation. As part of this certification, Part 139 Airports are required to conduct annual ARFF training for emergency response situations using AFFF to demonstrate compliance with the regulations. The FAA lifted the requirement to use AFFF during training exercises beginning in 2019 and alternate FAA approved testing units have been implemented to test fire apparatus systems without discharging AFFF to the ground surface.

PFAS-containing AFFF was reportedly first used on AKN property in the 1970's. AFFF has been known to be stored and used for training purposes at the AKN runway and at additional locations on DOT&PF property. *CH2M's March 2018 Preliminary Assessment Report for Perfluorinated Compounds, King Salmon Divert, Alaska* summarized 11 known AFFF-release locations at old training areas located on the portions of the airport currently leased by the USAF. Discussions with DOT&PF staff revealed additional sites near the AKN runway where AFFF has been used for DOT&PF training and emergency response purposes. The precise locations of the DOT&PF training areas are unknown.

### 1.2.1 USAF Subsurface Investigations

The King Salmon area is underlain by glacial outwash plain sediments (Feulner 1963). Known areas of permafrost exist along Eskimo Creek and west of the confluence of Eskimo

Creek and the Naknek river. Multiple USAF reports between 1985 and 2006 describe and characterize three aquifers beneath King Salmon, denoted as A, B, and C. CH2M provided the following discussion of the hydrogeology in the area surrounding the King Salmon airport which are currently leased by the USAF in their document *Final Uniform Federal Policy – Quality Assurance Project Plan for Site Inspections of Aqueous Film Forming Foam Areas, KSD, Alaska*, dated July 2019. Some sections are provided below:

*Intense glaciation occurred during the Pleistocene period over much of the Alaska Peninsula, which produced the outwash sediment underlying much of KSD. At least three aquifer units are known to be present in the King Salmon area. These aquifers consist of unconsolidated, well-sorted to poorly sorted silty and gravelly sands, separated by aquitard units consisting of silty sands, silts, and clays. The aquitards separating these aquifers may be discontinuous (Science Applications International Corporation [SAIC], 1992).*

*The shallowest aquifer, the A-Aquifer, is unconfined and comprised of moderately well-sorted sands and silty sands with discontinuous lenses of medium- to coarse-grained gravel at the base. The A-Aquifer outcrops in many areas within KSD, and the total depth to the A-Aquifer ranges from ground surface at water bodies and wetlands, to 45 feet below ground surface (bgs) along the northern margin of KSD. The saturated thickness ranges from 0 to 15 feet. Groundwater movement is generally toward local topographic lows and surface drainages such as wetlands, rivers, creeks, and ditches, and is most likely recharged by precipitation and surface water. Major drainages such as the Eskimo and Red Fox Creeks have eroded through the A-Aquifer. At the base of the A-Aquifer is a zone of lower hydraulic conductivity, consisting of a gravelly clayey silt and sandy silt, referred to as the A-Aquitard. The underlying A-Aquitard is from 7 to 22 feet thick (USAF, 2017b). The A-Aquitard has previously been reported to locally disrupt and modify the regional unconfined groundwater flow pattern (A-Aquifer) in some areas when encountered at its thickest points (SAIC, 1992). Some drinking water wells downgradient of the KSD may be screened in the A-Aquifer.*

*The top of the B-Aquifer has been encountered at depths ranging from 50 to 80 feet bgs. The known thickness of this aquifer ranges from 15 to 40 feet. The B-Aquifer is situated in interbedded sequences of silty sands, sandy gravels, and silty sandy gravels. A second aquitard (the B-Aquitard) is present at the base of the B-Aquifer. The thickness of this B-Aquitard is estimated at between 10 and 120 feet (USAF, 2017b). This unit is comprised of predominantly sandy clay (SAIC, 1992). Groundwater in the B-Aquifer is probably in equilibrium with the A-Aquifer; similar piezometric surface has been measured in adjacent A-Aquifer and B-Aquifer monitoring wells. Groundwater flow direction in the B-Aquifer is south towards the Naknek River. Numerous residential drinking water-supply wells are screened in this aquifer.*

*The C-Aquifer underlies the B-Aquitard at a depth of approximately 205 feet bgs. KSD water-supply wells are reported to terminate in the C-Aquifer, which is thought to be a confined aquifer. The aquifer thickness and flow direction are unknown for the C-Aquifer (Paug-Vik Services [PVS], 2009a). Limited data from water supply well No. 5 suggest that the thickness of C-Aquifer is at least 20 feet (SAIC, 1992).*

### 1.2.2 Water Supply Well PFAS Monitoring

DEC collected water supply well samples from nine locations around AKN in December 2018. In response to the detections of PFAS compounds, S&W was contracted by the DOT&PF to conduct a preliminary water supply well search for the areas near AKN. The initial water supply well search was conducted in March 2019 and was focused on the area hydraulically downgradient from AFFF training areas at the AKN. During the initial well search, S&W sampled 21 private wells within the well search area. Several of the buildings southeast of town along the Naknek River were determined to be dry structures that are occupied seasonally. S&W conducted quarterly sampling in July 2019, October 2019, January 2020, July 2020, May 2021, and August 2021 based on the DEC-approved monitoring criteria. Two affected properties were reported from these sampling events. DEC defines affected properties as those with private wells with at least one sample result above the U.S. Environmental Protection Agency (EPA) published a Lifetime Health Advisory (LHA) level of 70 nanograms per liter (ng/L) for the sum of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA).

The following list presents the affected properties associated with the AKN PFAS plume:

1. AKNPW-204 (100 South Side Eskimo Creek)
2. AKNPW-003 (1 Waterfront Way)

The properties are currently using an interim water solution. Permanent solutions for affected properties are being investigated.

## 1.3 Contaminants of Potential Concern and Regulatory Levels

General information regarding COPCs for the Statewide projects and the associated regulatory levels is included in Section 2.2 of the GWP. The primary contaminants of concern (COCs) for this project are PFOS and PFOA. DEC's *Field Sampling Guidance* (2019) also identifies gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and polynuclear aromatic hydrocarbons (PAHs) as COPCs at AFFF training areas and emergency response sites.

King Salmon has an annual average precipitation of approximately 20 inches per year, per the Western Region Climate Center database (<https://wrcc.dri.edu/>). To evaluate analytical data, soil results were compared to 18 AAC 75.341 *Table B2 Method Two – Petroleum Hydrocarbon Soil Cleanup Levels – Under 40-Inch Zone* and *Table B1 Method Two – Soil Cleanup Levels*. The most stringent regulatory value between Human Health and Migration to Groundwater (MTG) cleanup levels is used for reporting purposes. Groundwater and surface water samples were compared to Alaska’s 18 AAC 75.341 *Table C, Groundwater Human Health Cleanup Level*. The current cleanup levels and analytical reporting limits for the site COCs are summarized in Exhibit 1-1.

## 1.4 Scope of Services

The scope of services summarized in this report includes site access and permitting; targeted soil field screening; analytical soil, groundwater, and surface water sampling; data analysis; and preparing this summary report. Soil sampling included collection of surface soil and subsurface soil from borings. Groundwater sampling included collection of water samples from newly installed MWs. Figure 2 provides an overview of the initial site characterization sample locations.

This report was prepared for the exclusive use of the DOT&PF and its representatives. This work presents S&W’s professional judgment as to the conditions of the site. Information presented here is based on the sampling and analyses field staff performed. This report should not be used for other purposes without S&W’s approval or if any of the following occurs:

- Project details change, or new information becomes available, such as revised regulatory levels or the discovery of additional source areas.
- Conditions change due to natural forces or human activity at, under, or adjacent to the project site.
- Assumptions stated in this report have changed.
- If the site ownership or land use has changed.
- Regulations, laws, or cleanup levels change.
- If the site’s regulatory status has changed.

If any of these occur, S&W should be retained to review the applicability of recommendations. This report should not be used for other purposes without S&W’s review. If a service is not specifically indicated in this report, do not assume it was performed.

**Exhibit 1-1: COPCs, Regulatory and Laboratory Reporting Limits**

Method	Analyte	Soil Limit <sup>a</sup> (mg/kg)	Water Limit <sup>b</sup> (µg/L)	Laboratory LODs/RLs <sup>c</sup>	
				Soil (mg/kg)	Water (µg/L)
<b>PFAS Analytes</b>					
537.1 <sup>d</sup>	PFOS	0.0030	0.40	0.000200	0.00200
	PFOA	0.0017	0.40	0.000200	0.00200
<b>Petroleum Analytes</b>					
AK101	GRO	300	2,200	1.25	50
AK102	DRO	250	1,500	10	300
AK103	RRO	11,000	1,100	50	250
EPA SW8260D (BTEX)	Benzene	0.022	4.6	0.00625	0.2
	Toluene	6.7	1,100	0.0125	0.5
	Ethylbenzene	0.13	15	0.0125	0.5
	Xylenes Total	1.5	190	0.0375	1.5
<b>PAH Analytes</b>					
EPA SW8270D- SIM SW(PAH)	1-Methylnaphthalene	0.41	11	0.0125	0.025
	2-Methylnaphthalene	1.3	36	0.0125	0.025
	Acenaphthene	37	530	0.0125	0.025
	Acenaphthylene	18	260	0.0125	0.025
	Anthracene	390	43	0.0125	0.025
	Benzo(a)anthracene	0.70	0.30	0.0125	0.025
	Benzo[a]pyrene	1.9	0.25	0.0125	0.010
	Benzo[b]fluoranthene	15†	2.5	0.0125	0.025
	Benzo[g,h,i]perylene	2,300†	0.26	0.0125	0.025
	Benzo[k]fluoranthene	150†	0.80	0.0125	0.025
	Chrysene	600	2.0	0.0125	0.025
	Dibenzo[a,h]anthracene	1.5†	0.25	0.0125	0.010
	Fluoranthene	590	260	0.0125	0.025
	Fluorene	36	290	0.0125	0.025
	Indeno [1,2,3-c,d] pyrene	15†	0.19	0.0125	0.025
	Naphthalene	0.38	1.7	0.0100	0.050
	Phenanthrene	39	170	0.0125	0.025
Pyrene	87	120	0.0125	0.025	

Notes:

- a. 18 AAC 75 Table B2 Method Two – Petroleum Hydrocarbon Soil Cleanup Levels – Under 40-Inch Zone and Table B1 Method Two – Soil Cleanup Levels. The most stringent between Human Health and Migration to Groundwater cleanup levels are used for reporting purposes. The Migration to Groundwater cleanup level is reported unless otherwise identified.
- b. 18 AAC 75 Table C. Groundwater Cleanup Levels.
- c. August 2021 LODs from SGS North America, Inc. for petroleum and PAH analyses. August 2021 RLs from TestAmerica for PFAS analyses.
- d. All available PFAS analytes will be requested for analytical reports. However, only PFOS and PFOA have DEC Cleanup Levels and are reported in this table.
- † 18 AAC 75 Table B1 Method Two Human Health cleanup level reported.

BTEX = benzene, toluene, ethylbenzene, and total xylenes; DRO = diesel range organics; EPA = U.S. Environmental Protection Agency; GRO = gasoline range organics; LOD = limit of detection; mg/kg = milligram per kilogram; µg/L = micrograms per liter; PAH = polynuclear aromatic hydrocarbons; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid; RL = reporting limit; RRO = residual range organics; SIM = selective ion monitoring.



## 2 FIELD ACTIVITIES

This section summarizes field activities performed between August 13 and August 31, 2021 to implement the GWP Addendum. S&W staff members James Dutt, Environmental Scientist, and Veselina Yakimova, Geologist, conducted the initial site characterization effort described in this report. These individuals are State of Alaska Qualified Environmental Professionals as defined in 18 AAC 75.333[b].

Analytical sample locations are presented in Figure 2, Sample Locations. Soil boring logs are included in Appendix A. Copies of S&W's field notes are included in Appendix B. Copies of the laboratory reports are provided in Appendix C.

### 2.1 Preparation and Permitting

The FAA was notified of the drilling activities via a FAA 7460-1: Notice of Proposed Construction Form, which was approved by the FAA on September 22, 2020. S&W coordinated with the AKN Airport Manager and DOT&PF's Aviation Safety and Security officer to determine if runway closures were required for these activities. S&W also coordinated with DOT&PF's Division of Leasing, who determined a building permit was not required.

S&W prepared a Construction Safety and Phasing Plan (CSPP) related to sampling activities on and near active runways and taxiways. The CSPP documents project phasing, access and vehicle routes, work zone lighting, and other relevant details. The draft CSPP was submitted on May 26, 2021. The CSPP was revised following the receipt of comments from DOT&PF Southcoast Region Engineering, Aviation Safety and Security, and the AKN Airport Manager. The final CSPP was submitted July 30, 2021. A runway closure was not necessary as the drilling locations were outside of the Runway Safety Areas and Taxiway Safety Areas.

DOT&PF's engineering staff assisted with utility locates near the AKN runways. Naknek Electric Association, Bristol Bay Telephone Cooperative and Bristol Bay Borough assisted with utility locates at the well nests installed near the two "affected" properties.

### 2.2 Soil Sampling

Soil characterization activities for this project included surface and subsurface soil sample collection, as described in the following sections.

### 2.2.1 Surface Soil

S&W field staff collected surface soil samples from 20 locations along the drainage system for the two runways at the AKN (Figure 3). Samples were collected immediately beneath the vegetation, where present, using hand tools. Samples were generally comprised of silty sand or sandy silt, some with gravel. Some of the samples were interpreted to be fill and not native soil.

The surface soil samples were field screened using a photoionization detector (PID). The field-screening readings ranged from less than 1 part per million (ppm) to 10.9 ppm. Surface soil field duplicate samples were collected at a rate of one per ten primary samples.

Rinsate or equipment blank samples were not collected because the soil sampling tools were not reused between different samples. Copies of S&W's *Soil Sample Collection Logs* are included in Appendix B.



**Exhibit 2-1: Surface soil sample collection near the north end of the Runway 18/36.**

### 2.2.2 Soil Borings

S&W retained the services of drilling contractor GeoTek Alaska, Inc. (GeoTek) to advance soil borings and install long-term groundwater MWs. GeoTek used a Geoprobe Model 8040DT track-mounted drill rig. This drill is equipped with Macro-Core® tooling, a solid barrel (2-inch outside diameter) direct-push device for collecting continuous core samples of unconsolidated materials at depth. James Dutt and Veselina Yakimova observed the drilling and recovered soil for the purpose of determining lithology, collecting analytical soil samples, and preparing a descriptive log of soil conditions encountered during drilling. The boring logs are included in Appendix A. Copies of our *Soil Sample Collection Logs* are also included in Appendix B.

Drilling occurred between August 14 and August 27, 2021. GeoTek staged their equipment and decontaminated the soil barrels outside Runway Safety Areas and Taxiway Safety Areas. GeoTek advanced five soil borings at the following locations (Figure 4):

- Three on-site locations near historical fire training areas of known AFFF use:
  - 21AKN-SB-01: near Fire Training Area A (near intersection of Runway 12/30 and Runway 18/36)
  - 21AKN-SB-02: near Fire Training Area B (north of Runway 12/30)
  - 21AKN-SB-03: near Fire Training Area C (south of Taxiway C)

- Two locations near each of the affected properties:
  - 21AKN-SB-04: near AKNPW-204
  - 21AKN-SB-05: near AKNPW-003

Soil cores from on-site locations were field screened at 5-foot intervals for volatile organic compounds using a PID until the groundwater table was observed. The field screening readings ranged from less than 1 ppm to 1.6 ppm. Soil drill cuttings for the borings at the three fire training areas were containerized in a 55-gallon drum pending receipt of analytical results. S&W did not observe indications of petroleum contamination on the soil or groundwater during drilling.

S&W collected two soil samples from each soil boring at the three fire training areas, one



**Exhibit 2-2: Geologist James Dutt logging a soil boring during drilling at AKNPW-204.**

each from 0 to 1 ft bgs and one within the groundwater vadose zone. The soil samples were submitted for PFAS, GRO, DRO, RRO, BTEX, and PAH analysis at each of these three borings.

Subsurface soil samples were also collected below the groundwater table from each of the deep, off-site boring locations near the affected properties. Field staff selected samples from the presumed A-, B-, and C-Aquifers, based on boring observations of

confining clay layers. However, it was noted by the field staff that the confining clay layers were thin in places and may not be uniform throughout the area. The sampling locations and depths bgs are depicted in the boring logs (Appendix A) and analytical data tables.

## 2.3 Water Sampling

Water characterization activities for this project included sampling surface water and groundwater at and near AKN. Groundwater characterization was conducted by sampling newly installed MWs after well development.

### 2.3.1 Surface Water

Surface water sampling was conducted between August 15 through August 29, 2021. No petroleum odors or sheen were noted during sampling. Surface water samples were collected from the following drainage ditches and culverts (Figure 5):

- 21AKN-SW-01: drainage between Runway 18/36 and Taxiway C
- 21AKN-SW-03: drainage north of intersection of Runway 18/36 and Runway 12/30
- 21AKN-SW-04: culvert halfway along southern portion of Runway 12/30
- 21AKN-SW-09: culvert near the intersection of Runway 12/30 and Taxiway M

Surface water samples were collected from the following creeks:

- 21AKN-SW-02: Red Fox Creek culvert diverting the creek under Runway 12/30
- 21AKN-SW-05: Eskimo Creek downstream from AKNPW-204
- 21AKN-SW-06: Eskimo Creek upstream from AKNPW-204
- 21AKN-SW-07: Red Fox Creek downstream from AKN
- 21AKN-SW-08: Red Fox Creek upstream from AKN

The surface water samples were collected using a new, PFAS-free disposable transfer container or the laboratory-supplied sample container. Most of the samples were collected within an arm's reach from the edge of the water. Sample 21AKN-SS-09 was collected using a peristaltic pump and new disposable tubing.

No reusable equipment was employed to sample the surface water. Three surface water field-duplicate samples were collected. The surface water samples were submitted for PFAS analysis. Copies of S&W's *Surface Water Sample Logs* are included in Appendix B.



**Exhibit 2-3: Geologist Veselina Yakimova collecting surface water sample 21AKN-SW-07 at Red Fox Creek, downstream from AKN.**

### 2.3.2 Monitoring Wells

S&W sampled seven MWs on or near AKN property (Figure 6).

#### 2.3.2.1 Installation

GeoTek installed seven groundwater MWs using a hollow stem auger with the Geoprobe Model 8040DT drill rig. The wells are at the same locations as the soil borings described in

Section 2.2.2 above. The three MWs installed on-site at the fire training areas have well-screen depths targeted to span the groundwater table.

The shallow well near the AKNPW-003 property has a well-screen depth targeted to span the groundwater table. The deeper well is screened at approximately 78 to 83 feet bgs.

Based on field observations by the field staff during drilling, the shallow well at the AKNPW-204 property was not screened to span the observed groundwater table. Field staff noted a confining silt layer (11.0 to 13.5 feet bgs) directly above the observed groundwater table (13.5 feet bgs), with indications of seasonal water above the confining layer. Field staff recommended moving the shallow well deeper into the water table to avoid possible cross contamination of the seasonal water possibly present at this location above 11.0 feet bgs. The shallow well at the AKNPW-204 property is screened at approximately 40 to 45 feet bgs. The deep well is screened at approximately 79 to 84 feet bgs.

GeoTek completed the wells using flush-mounted monuments. The wells were constructed using two-inch inside-diameter schedule 40 polyvinyl chloride (PVC) material. The shallow wells have a 10-foot screened interval, the deeper wells have a 5-foot screened interval. The screens are pre-pack 0.010-inch slotted screen with 20/40 sand and threaded end caps. The filter pack within the 8-inch annular space at and around the screened interval is comprised of 10/20 silica sand. A bentonite pellet seal followed by pea gravel fills the remaining annular space. Well construction details can be found in the individual boring logs (Appendix A) and field forms (Appendix B).

### 2.3.2.2 Development and Sampling



**Exhibit 2-4: Groundwater MW purging prior to sample collection.**

The MWs were developed using a Proactive™ stainless steel submersible pump and HDPE tubing. Development proceeded until there was a significant improvement in the clarity of the water. Due to the abundance of silt, the two deep MWs did not produce clear water after pumping 50 gallons or more from each well. The development water was containerized while the sediment settled from suspension prior to treating with granular activated carbon (GAC). Copies of *Well Development Logs* are included in Appendix B.

Following development, the same submersible pump was used to purge the well until the water parameters stabilized or a total of three well volumes had been purged. Field staff measured these parameters using a multiprobe water quality meter (YSI) and recorded pH, temperature in degrees Celsius (°C), conductivity in microSiemens (µS), dissolved oxygen (DO) in milligrams per liter (mg/L), and redox potential in millivolts (mV) approximately once every three minutes until sample collection. The following values were used to indicate stability for a minimum of three consecutive readings:  $\pm 0.1$  pH,  $\pm 3$  percent °C,  $\pm 10$  percent DO,  $\pm 3$  percent conductivity, and  $\pm 10$  mV redox. Water clarity (visual) was also recorded.

The water samples were collected using laboratory-supplied containers immediately after each well was purged. Samples were collected for PFAS, GRO, DRO, RRO, BTEX, and PAH analyses from the three MWs at the fire training areas. Samples were collected for PFAS analysis from the MWs at the two affected properties. Copies of the *Monitoring Well Sampling Logs* are included in Appendix B, Field Forms.

Groundwater field-duplicate samples and submersible pump equipment blank samples were collected at a rate of one per ten primary samples.

## 2.4 Sample Custody, Storage, and Shipping

Field staff collected, handled, and stored samples in a manner consistent with the GWP and DEC *Field Sampling Guidance*. Immediately after collection, the samples were placed in a designated sample cooler maintained between 0 °C and 6 °C with ice substitute. The PFAS samples were stored in individual Ziploc bags. S&W maintained custody of the samples

until submitting them to the laboratory for analysis. The samples were stored in sample coolers or a small in-room refrigerator at nighttime.

When shipping the analytical samples, chain-of-custody forms were placed in the hard-sided cooler with an adequate quantity of frozen ice substitute to maintain the proper temperature range. The samples were packaged as necessary to prevent bottle breakage and sealed with custody seals on the outside of each cooler. Field staff shipped the samples to TestAmerica in West Sacramento, California using Alaska Air Cargo's Goldstreak service. The non-PFAS samples were received by SGS North America, Inc. (SGS) in Fairbanks, Alaska and delivered to their Anchorage laboratory by carrier.

Most of the samples were received by the laboratory within the required temperature range. However, TestAmerica picked up one of the coolers several days late due to an internal laboratory communication error which resulted in several soil and groundwater samples being received out of the required temperature range and hold time. Quality assurance (QA)/quality control (QC) details can be found in Appendix D.

## 2.5 Investigation-Derived Waste

MW development and purge water, and decontamination rinse water were filtered using three, new five-gallon GAC units in series (Exhibit 2-5). Silty MW development water was allowed to settle prior to filtration. The filtered water was containerized, sampled for PFAS analyses, and stored on-site to await analytical results. After the analytical results were confirmed to be below the DEC Groundwater Cleanup Levels, DEC approved the discharge of the contents to the ground surface.

Soil cuttings from the three on-site borings drilled near the fire training areas were containerized in a 55-gallon drum. The settled solids from the MW purge water that was too silty to filter was also placed in the investigation-derived waste drum with other soils. The labeled drum containing approximately 20 gallons of investigation-derived waste is stored onsite pending disposal approval from DEC.

Soil cuttings from the other borings were spread on the ground surface at each sample location.



**Exhibit 2-5: Filtering MW development water through portable GAC filtration system.**

MW tubing, direct push soil liners, nitrile gloves, and other inert investigation-derived waste were disposed of in a dumpster at AKN.

## 2.6 Deviations

In general, S&W conducted these services in accordance with the approved GWP and the AKN Addendum. The following are the deviations from our agreed-upon scope of services. These modifications do not impact the overall data quality or project objectives.

- S&W collected four additional surface water samples than planned. These samples were collected from drainage ditches along the runways.
- Several sample locations were moved based on local conditions and information provided by DOT&PF staff. The MW nest at AKNPW-003 was moved outside the fenced area due to the limited space around the fishing vessels in the boat yard.
- The shallow well at the AKNPW-204 property was not installed to span the groundwater table. As noted above, S&W field staff noted a confining silt layer (11.0 to 13.5 feet bgs) directly above the observed groundwater table (13.5 feet bgs), with indications of seasonal water above the confining layer. Field staff recommended moving the shallow well deeper into the water table to avoid possible cross contamination of the seasonal water possibly present at this location above 11.0 feet bgs. The shallow well at the AKNPW-204 property is screened at approximately 40 to 45 feet bgs.
- The GWP Addendum described constructing the deep monitoring wells at affected properties with 6-inch inside diameter schedule 40 PVC material with 0.010-inch slotted screen and treaded caps, with the potential to be converted to water supply wells for these properties. The anticipated depths for the two deep wells were approximately 150 to 200 feet bgs. S&W directed GeoTek to install these MWs with 2-inch inside-diameter to approximately 85 feet bgs due to uncertainty in the proposed installation for the 6-inch wells to later be used as water supply wells for the properties and the inability of the Geoprobe 8040DT to reach depths greater than 90 feet bgs.

## 3 ANALYTICAL RESULTS

The soil and water samples submitted for this project were analyzed for determination of the 18 PFAS compounds listed in Environmental Protection Agency Method 537.1 (waters)/537M (soils). The PFAS samples were analyzed by TestAmerica in West Sacramento, California. In addition, S&W submitted on-site soil boring and groundwater samples for analysis of GRO, DRO, RRO, BTEX, and PAHs by Methods AK101, AK102, AK103, 8260D, and 8270D- SIM, respectively. These samples were analyzed by SGS in Anchorage, Alaska.



The AKN analytical results are summarized in Tables 1 to 5. Our analytical sample QA/QC summary is presented in Appendix D. The TestAmerica and SGS laboratory reports and DEC Laboratory Data Review Checklists (LDRCs) for each work order are included in Appendix C. Figure 2 shows the various sample locations, while Figures 3 through 6 display analytical results. The following sections identify samples detected above the respective regulatory limits.

### 3.1 Surface Soil

PFOS was detected at concentrations exceeding the DEC MTG soil cleanup level of 3.0 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) in the following samples:

- 21AKN-SS-12
- 21AKN-SS-13
- 21AKN-SS-15
- 21AKN-SS-19
- 21AKN-SS-20

In addition, PFOA was detected at a concentration above the DEC MGT soil cleanup level of 1.7  $\mu\text{g}/\text{kg}$  in the following samples:

- 21AKN-SS-12
- 21AKN-SS-13
- 21AKN-SS-15
- 21AKN-SS-20

The surface soil samples exceeding the DEC MTG cleanup level are located at the north end of Runway 18/36 (21AKN-SS-12 and 21AKN-SS-13), and west of the runway intersection along Runway 12/30 (21AKN-SS-15, 21AKN-SS-19, and 21AKN-SS-20).

Additional detections for PFOS and PFOA were observed but were below the DEC MTG soil cleanup levels. Also, several other PFAS compounds were detected but the remaining PFAS analytes do not have DEC soil cleanup levels.

PFAS results for surface soil samples are summarized in Table 1 and shown on Figure 3.

### 3.2 Soil Borings

PFOS was detected at concentrations exceeding the DEC MTG cleanup level in the following soil boring samples:

- 21AKN-SB-03 (0'-1')
- 21AKN-SB-03 (7.3'-7.8')
- 21AKN-SB-04 (12.1'-12.7')

SB-03 samples were collected from the soil boring near Fire Training Area C and SB-04 samples were collected from the soil boring near the AKNPW-204 property. In addition,

PFOA was detected at a concentration above the DEC cleanup level in sample 21AKN-SB-03(0'-1'), near Fire Training Area C.

Additional detections for PFOS and PFOA were observed but were below the DEC MTG soil cleanup levels. Also, several other PFAS compounds were detected but do not have DEC soil cleanup levels. PFAS results for subsurface soil samples are summarized in Table 2a and Figure 4.

In addition to PFAS samples, subsurface soil from the three soil borings near the fire training areas were submitted for analysis of petroleum compounds. DRO were detected at a concentration exceeding the DEC MTG soil cleanup level of 250 mg/kg in sample 21AKN-SB-02 (0'-1'). Additional detections for GRO, DRO, RRO, and PAHs were observed but were below the associated DEC MTG soil cleanup levels. BTEX analytes were not detected in the project samples. The GRO detections were attributed to laboratory contamination and considered non-detect (refer to Appendix D for details). Petroleum results for the subsurface soil samples are summarized in Table 2b.

### 3.3 Surface Water

PFOS was detected at concentrations exceeding the DEC groundwater cleanup level of 400 ng/L in the following samples:

- 21AKN-SW-02 (Red Fox Creek in secure area of AKN)
- 21AKN-SW-04 (Drainage along south end of Runway 12/30)
- 21AKN-SW-07 (Red Fox Creek downstream from AKN)
- 21AKN-SW-08 (Red Fox Creek upstream from AKN)
- 21AKN-SW-09 (Drainage along northwest end of Runway 12/30)

PFOA was also detected at a concentration exceeding the DEC groundwater cleanup level of 400 ng/L in sample 21AKN-SW-04.

Additional detections for PFOS and PFOA were observed but were below the DEC MTG groundwater cleanup levels. Also, several other PFAS compounds were detected but the remaining PFAS analytes do not have DEC groundwater cleanup



**Exhibit 3-1: Surface water sample 21AKN-SW-04 collected from the drainage south of Runway 12/30.**

levels. PFAS results for surface water samples are summarized in Table 3 and shown on Figure 5.

Because several nearby water supply wells use groundwater as drinking water, we also compared the surface water sample results to the EPA LHA of 70 ng/L. In addition to the samples noted above, the following samples also exceed the EPA LHA for the sum of PFOS and PFOA.

- 21AKN-SW-03 (drainage north of intersection of Runway 18/36 and Runway 12/30)
- 21AKN-SW-05/ 21AKN-SW-105 (Eskimo Creek downstream from AKNPW-204)
- 21AKN-SW-06 (Eskimo Creek upstream from AKNPW-204)

### 3.4 Groundwater

PFOS was detected at concentrations exceeding the DEC MTG groundwater cleanup level of 400 ng/L in sample 21AKN-MW-03, near Fire Training Area C. Additional detections for PFOS and PFOA were observed but were below the DEC groundwater cleanup levels. Also, several other PFAS compounds were detected but the remaining PFAS analytes do not have DEC groundwater cleanup levels. PFAS results for the groundwater samples are summarized in Table 4a and Figure 6.

As mentioned in Section 3.3, since several nearby water supply wells use groundwater as drinking water, we also compared the groundwater sample results to the EPA LHA of 70 ng/L. In addition to the sample noted above, the following samples also exceed the EPA LHA for the sum of PFOS and PFOA.

- 21AKN-MW-1 (near Fire Training Area A)
- 21AKN-MW-2 (near Fire Training Area B)
- 21AKN-MW-4-45 (shallow well near AKNPW-204)

In addition to PFAS samples, on-site monitoring wells were submitted for analysis of petroleum compounds. DRO, RRO, benzene, 1-methylnaphthalene, fluoranthene, and pyrene were detected in one or more sample but were reported as estimated detections (below the laboratory quantitation limit; LOQ) below the DEC groundwater cleanup levels. Petroleum results for the groundwater samples are summarized in Table 4b and Figure 6.

### 3.5 Investigative Derived Waste

We collected a post-treatment GAC effluent sample. Only PFOS was detected at an estimated concentration of 1.3 J ng/L in post-filtration water sample 21AKN-Drum-02 (Table 5). These results were provided to DEC and the treated purge water was approved to be

discharged to the ground surface, provided that the water was discharged 100 feet from the monitoring wells and surface water bodies.

## 4 CONCEPTUAL SITE MODEL

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. This section describes the suspected contaminant sources, migration and exposure pathways, and potential receptors using the DEC Human Health Conceptual Site Model Scoping and Graphic Forms; these documents included in Appendix E. The COCs at and near the AKN are PFOS, PFOA, and DRO.

A draft CSM was included in the GWP Addendum describing planned site characterization activities. The enclosed CSM has been updated based on observed site conditions and the analytical results discussed in Section 3.

### 4.1 Description of Potential Receptors

S&W considers residents, commercial/industrial/construction workers, site visitors and trespassers to be current or future potential receptors for one or more exposure pathway. DOT&PF and FAA personnel, airline or cargo employees, emergency responders, and private pilots are permitted within portions of the AKN restricted area. S&W considers recreational users, subsistence harvesters, or subsistence consumers to be potential receptors.

### 4.2 Potential Exposure Pathways

Potential exposure pathways include:

- incidental ingestion of soil or groundwater;
- dermal exposure to soil, sediment, surface water, or groundwater;
- inhalation of fugitive dust; and
- ingesting of wild or farmed foods.

#### 4.2.1 Soil Exposure

DOT&PF personnel, tenants, construction workers, residents, and visitors/trespassers could inhale wind-blown dust during outdoor, summertime work. The surface soil and fill at AKN have a moderate to high silt content that likely allows for small respirable particles (i.e., less than 10 micrometers).

Direct contact with PFOS-, PFOA-, or DRO-contaminated surface and subsurface soil is unlikely during normal operations. However, runway repairs and other construction could expose contaminated soil to DOT&PF personnel, construction workers, and visitors/trespassers.

#### 4.2.2 Groundwater Exposure

Industrial workers, construction workers, or site visitors could be exposed to shallow contaminated groundwater during future excavation and construction projects.

Exposure of residents and commercial or industrial workers to PFAS-impacted groundwater through ingestion is considered significant. Dermal absorption is considered a possible pathway, however, according to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. We therefore consider dermal exposure to these compounds to be insignificant for the purposes of this CSM. Hangars and offices on airport property have water supply wells. Identified water supply wells near the AKN are used for industrial purposes only. Two water supply wells near the AKN have PFAS contamination at concentrations greater than the LHA. Ingestion of groundwater is a potential pathway for these locations. Alternative water is being provided to the owners of these two water supply wells to avoid this potential pathway. However, one of these water supply wells is still operational.

#### 4.2.3 Surface Water

The creeks and drainage ditches sampled during this investigation are not commonly used for drinking water sources. Incidental ingestion of contaminated surface water is not a likely human exposure pathway. However, PFOS and PFOA are documented as being able to absorb through the skin. Direct contact with surface water is an exposure pathway to nearby residents, commercial or industrial workers, visitors, recreational users, and construction workers. However, as mentioned above, PFOS and PFOA are not appreciably absorbed through the skin and dermal exposure to these compounds is considered insignificant for the purposes of this CSM.

#### 4.2.4 Sediment

While sediment was not directly sampled, PFOS and PFOA are expected to be detected in this medium. Direct contact with sediment is an exposure pathway to nearby residents, commercial or industrial workers, visitors, recreational users, and construction workers. As noted above, PFOS and PFOA are not appreciably absorbed through the skin and dermal exposure to these compounds is considered insignificant for the purposes of this CSM.

#### 4.2.5 Other Media

The biota in the area are expected to uptake the PFAS compounds detected in the surficial soils around the runway. Based on conversations with DOT&PF staff, the public are sometimes allowed to harvest fireweed after DOT&PF staff trim it along the runways. Ingestion of wild harvested foods is considered an exposure pathway.

Wildlife, including fish, are known to use the area where PFAS contamination has been identified in surface waters. Eskimo Creek and Red Fox Creek are adjacent to areas of known AFFF use. It is unlikely that subsistence users rely on AKN property for harvesting terrestrial biota but the King Salmon/Bristol Bay region supports a commercial fishery with global reach. Since PFAS can bioaccumulate, subsistence and recreational harvesting of the biota are potential exposure pathways for visitors and residents of the area.

### 4.3 CSM Summary

Affected media include contaminated soil, sediment, surface water, and groundwater. Potential human exposure pathways include inhalation of fugitive dust, direct contact with contaminated soil/sediment, and ingestion of soil, surface water, and groundwater. Additionally, ingestion of wild foods may be a human exposure pathway as PFOS and PFOA are bioaccumulative. Potential receptors are described below:

- Site investigations and construction activities at the site may result in incidental ingestion of soil, direct contact with soils and sediment, groundwater, and inhalation of outdoor air by nearby residents, commercial/industrial workers, visitors/trespassers, or construction workers. However, according to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. We therefore consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.
- Contaminated surface soil may result in fugitive dust that could be an exposure pathway for commercial workers, visitors, construction workers, and nearby residents.
- Two water supply wells near the AKN have PFAS contamination at concentrations greater than the LHA. Ingestion of groundwater is a potential pathway for these locations. Alternative water is being provided to the owners of these two water supply wells to avoid this potential pathway. However, one of these water supply wells is still operational. Refer to Section 1.1.2 for details.
- Incidental ingestion of contaminated surface water is a potential human exposure pathway to commercial workers, visitors, construction workers, and nearby residents, although surface water is not expected to be used as a drinking water source. Direct contact with surface water is an exposure pathway because PFAS analytes can be absorbed through the skin.

- Wildlife, including fish, are known to use the area where PFAS contamination has been identified in groundwater and surface water. Eskimo Creek and Red Fox Creek are adjacent to areas of known AFFF use. It is unlikely that subsistence users rely on AKN property for harvesting terrestrial biota but the King Salmon/Bristol Bay region supports a commercial fishery with global reach. Because PFAS can bioaccumulate, subsistence and recreational harvesting of the biota are potential exposure pathways for visitors and residents of the area. However, the lack of data on the nature and extent of PFAS contamination in the project area prevents ruling out this exposure pathway.

## 5 DISCUSSION AND RECOMMENDATIONS

The site characterization effort described in this report discovered PFAS and/or DRO concentrations exceeding DEC cleanup levels at the AKN in surface soil, subsurface soil, surface water, and groundwater samples. Below is a summary of the areas identified that had detections for these contaminants above DEC Cleanup Levels (CULs).

- Surface soil samples identified PFOS and PFOA at concentrations exceeding DEC CULs at the north end of Runway 18/36 and around the middle of Runway 12/30. These areas do not correspond with DOT&PF identified Fire Training Areas. Further investigation may be required for these areas of high PFAS contamination.
- Subsurface soil samples from Fire Training Area C identified PFOS and PFOA at concentrations exceeding DEC CULs at 0.0 to 1.0 feet bgs and 7.3 to 7.8 feet bgs. In addition, this location had PFAS detections in groundwater samples that exceeded the DEC CULs.
- Subsurface soil samples from the PWAKN-204 property had PFOS at concentrations exceeding DEC CULs at 12.1 to 12.7 feet bgs. This is believed to be in the upper portion of the A-Aquifer.
- Subsurface soil samples from Fire Training Area B identified DRO at concentrations exceeding the DEC CUL for the 0.0 to 1.0 feet bgs sample.
- Surface water samples from Red Fox Creek and nearby drainage channels to the east had high concentrations for PFOS and PFOA that exceeded DEC CULs.
- Surface water sample from the drainage area where Taxiway M and Runway 12/30 intersect had high concentrations for PFOS and PFOA that exceeded DEC CULs.
- Additional analytes were detected at the site with concentrations less than the DEC CULs, or for analytes without CULs. Refer to the analytical summary tables for details.

Some of the samples exceeding regulatory standards are upgradient of the runways and identified DOT&PF Fire Training Areas. These are presumed to be related to DoD AFFF release areas identified with high concentrations of PFAS during their investigation

reported in Summer 2019 Site Investigations (FINAL Site Inspection Report of Aqueous Film-Forming Foam Areas at King Salmon Divert, King Salmon, Alaska dated June 2020).

Based on the results of S&W's initial site characterization effort, we recommend the DOT&PF:

- Coordinate with the USAF to discuss plans for remediation and long-term solutions for affected properties.
- Collect additional surface water samples further upstream in the Eskimo and Red Fox Creeks to better assess the source of the contamination.
- Collect surface water samples from the Naknek River to assess the extent of PFAS contamination.
- Install additional MWs between source areas and the affected properties to further characterize the lateral and vertical extent of PFAS-impacted groundwater.
- Monitor PFAS water sample concentrations quarterly in the 2022 using the newly installed MWs.
- Dispose of remaining investigation-derived waste by shipping to a treatment facility.

These recommendations are based on:

- Site conditions observed at and near the AKN in August 2021.
- The results of testing performed on soil samples, collected borings, the soil surface, and water bodies on and near AKN.
- The results of testing performed on water samples collected from the MWs, and surface water, on, near, and downgradient of the AKN.
- S&W's previous experience at the AKN.
- Publicly available literature and data reviewed for this project.
- S&W's understanding of the project and information provided by DOT&PF and other members of the project team.
- The limitations of our approved scope and schedule described in our approved proposal dated June 2021.

The information included in this report is based on limited sampling and should be considered representative of the times and locations at which the sampling occurred. Regulatory agencies may reach different conclusions than S&W. We have prepared and included the attachment "Important Information about your Geotechnical/Environmental Report" to assist you and others in understanding the use and limitations of this report.



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Table 1 - August 2021 Surface Soil PFAS Results

Analyte	Sample Name		21AKN-SS-01	21AKN-SS-02	21AKN-SS-03	21AKN-SS-04	21AKN-SS-05	21AKN-SS-06	21AKN-SS-07	21AKN-SS-08
	Cleanup Level	Units								
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	0.059 J	<0.22	0.14 JH*	0.22	<0.20	<0.21	<0.21	<0.20
Perfluorohexanoic acid (PFHxA)	—	µg/kg	0.045 J	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.23	0.044 J	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluorononanoic acid (PFNA)	—	µg/kg	0.044 JH*	0.097 J	<0.20	0.050 J	<0.20	<0.21	<0.21	<0.20
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.23	<0.22	0.17 J	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.23	<0.22	0.071 J	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluorotridecanoic acid (PFTTrDA)	—	µg/kg	<0.23	<0.22	0.18 J	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.23	<0.22	<0.20	<0.20	<0.20	<0.21	<0.21	<0.20
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	0.16 JH*	0.40 JH*	<0.42	2.4	<0.20	<0.21	<0.21	<0.20
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.23	<0.22	<0.20	0.17 J	<0.20	<0.21	<0.21	<0.20

Notes: Results reported from Eurofins TestAmerica work order 320-77655.  
 Sample 21AKN-SW-109 is a field-duplicate of sample 21AKN-SW-09.  
 Sample 21AKN-SW-117 is a field-duplicate of sample 21AKN-SW-17.  
 Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) 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. (\*)  
 DUP = field-duplicate; µg/kg= micrograms per kilogram; PFAS = per- and polyfluoroalkyl substances

Table 1 - August 2021 Surface Soil PFAS Results

Analyte	Sample Name		21AKN-SS-09	21AKN-SS-109	21AKN-SS-10	21AKN-SS-11	21AKN-SS-12	21AKN-SS-13	21AKN-SS-14	21AKN-SS-15
	Cleanup Level	Units	DUP							
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	0.10 J	0.11 J	<0.22	<2.1	1.6	5.4	0.10 J	3.6
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.22	<0.19	0.23	<2.1 J*	0.18 J	0.81	<0.23	0.49 J
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.22	<0.19	0.046 J	<2.1	0.061 J	0.35	<0.23	0.40 J
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.22	<0.19	0.030 J	<2.1	0.054 JH*	0.039 J	<0.23	1.0
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.22	<0.19	<0.22	<2.1	<0.21	0.055 J	<0.23	<0.55
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.22	<0.19	<0.22	<2.1	<0.21	<0.20	<0.23	0.18 J
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	0.17 J	0.14 J	<0.22	<2.1	0.11 J	<0.20	<0.23	1.1
Perfluorododecanoic acid (PFDoA)	—	µg/kg	0.060 J	0.061 J	<0.22	<2.1	<0.21	0.051 J	<0.23	0.20 J
Perfluorotridecanoic acid (PFTTrDA)	—	µg/kg	0.61	0.51	<0.22	<2.1	0.054 J	<0.20	<0.23	0.45 J
Perfluorotetradecanoic acid (PFTTeA)	—	µg/kg	0.046 J*	<0.19	<0.22	<2.1	<0.21	<0.20	<0.23	<0.55
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.22	<0.19	<0.22	<2.1	<0.21	<0.20	0.56	<0.55
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.22	<0.19	<0.22	<2.1	<0.21	<0.20	23	<0.55
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.22	<0.19	<0.22	<2.1	<0.21	<0.20	<0.23	<0.55
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.22	<0.19	<0.22	<2.1	<0.21	<0.20	<0.23	<0.55
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.22	<0.19	<0.22	<2.1	<0.21	<0.20	<0.23	<0.55
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.22	<0.19	<0.22	<2.1 J*	<0.21	<0.20	<0.23	<0.55
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	1.4	1.0	<0.22	1.9 JH*	<b>3.3</b>	<b>7.3</b>	2.0	<b>100</b>
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.22	<0.19	<0.22	0.62 J	<b>2.4</b>	<b>13</b>	0.060 J	<b>5.8</b>

Notes: Results reported from Eurofins TestAmerica work order 320-77655.  
 Sample 21AKN-SW-109 is a field-duplicate of sample 21AKN-SW-09.  
 Sample 21AKN-SW-117 is a field-duplicate of sample 21AKN-SW-17.  
 Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) 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. (\*)  
 DUP = field-duplicate; µg/kg= micrograms per kilogram; PFAS = per- and polyfluoroalkyl substances

Table 1 - August 2021 Surface Soil PFAS Results

Analyte	Sample Name		21AKN-SS-16	21AKN-SS-17	21AKN-SS-117	21AKN-SS-18	21AKN-SS-19	21AKN-SS-20
	Cleanup Level	Units	DUP					
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	0.048 JH*	0.14 J	0.13 J	<0.22	2.0 JH*	5.5
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	0.46	0.43 JH*
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	0.18 J	0.084 J
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	0.24	0.19
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	0.079 J	0.049 J
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.23	<0.22	<0.23	0.063 J	0.32	0.25
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	0.14 J	0.13 J	0.11 J	0.061 J	10	1.1
Perfluorododecanoic acid (PFDoA)	—	µg/kg	0.080 J	0.070 J	0.077 J	0.078 J	0.20 J	0.047 J
Perfluorotridecanoic acid (PFTTrDA)	—	µg/kg	0.11 J	0.065 J	0.053 J	0.033 J	0.55	0.11 J
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	0.074 J	0.041 J	0.058 J	0.043 J	0.065 J	<0.19 J*
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	0.034 J	<0.22	<0.23	<0.22	<0.24	0.14 JH*
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.23	<0.22	0.78	<0.22	<0.24	0.13 J
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	<0.24	<0.19
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	<0.24	<0.19
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	<0.24	<0.19 J*
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.23	<0.22	<0.23	<0.22	<0.24	<0.19
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.23	2.5	2.3	<0.31	<b>15 JH*</b>	<b>28</b>
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.23	<0.22	<0.23	0.061 J	0.19 J	<b>2.6</b>

Notes: Results reported from Eurofins TestAmerica work order 320-77655.  
 Sample 21AKN-SW-109 is a field-duplicate of sample 21AKN-SW-09.  
 Sample 21AKN-SW-117 is a field-duplicate of sample 21AKN-SW-17.  
 Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) 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. (\*)  
 DUP = field-duplicate; µg/kg= micrograms per kilogram; PFAS = per- and polyfluoroalkyl substances

Table 2A - August 2021 Soil Boring PFAS Results

Sample Name			21AKN-SB-01 (0'-1')	21AKN-SB-01 (6.5'-7.5')	21AKN-SB-101 (6.5'-7.5')	21AKN-SB-02 (0'-1')	21AKN-SB-02 (6'-7')	21AKN-SB-03 (0'-1')	21AKN-SB-03 (7.3'-7.8')
Soil Boring Sample Depth			0.0 - 1.0 feet bgs	6.5 - 7.5 feet bgs	6.5 - 7.5 feet bgs	0.0 - 1.0 feet bgs	6.0 - 7.0 feet bgs	0.0 - 1.0 feet bgs	7.3 - 7.8 feet bgs
Analyte	Cleanup Level	Units	DUP						
	Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	0.071 J	<0.23	0.032 J	0.050 J	0.088 J	12
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	3.8	1.6
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	0.89 J	0.43
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	14	2.5
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	0.99 J	0.28
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	1.9	<0.24
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	52	<0.24
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	0.38 J	<0.24
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	4.3	<0.24
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<1.1	<0.24
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<1.1	<0.24
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<1.1	<0.24
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<1.1	<0.24
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<1.1	<0.24
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<1.1	<0.24
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<1.1	<0.24
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.95	0.091 J	0.11 J	0.35	0.23 J	<b>340</b>	<b>17</b>
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.22	<0.23	<0.22	<0.20	<0.24	<b>1.9</b>	1.2

Notes: Results reported from Eurofins TestAmerica work orders 320-77655, 320-78376, and 320-7891.  
 Sample 21AKN-MW-101 is a field-duplicate of sample 21AKN-MW-01.  
 Sample 21AKN-MW-105-15 is a field-duplicate of sample 21AKN-MW-05-15.  
 Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.  
 N\* Analyte result is considered tentatively unidentified (non-detects)/identified (detects) due to analysis outside of hold time. Flag applied by Shannon & Wilson, Inc.  
 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. (\*)  
 bgs = below ground surface; DUP = field-duplicate; µg/kg= micrograms per kilogram; PFAS = per- and polyfluoroalkyl substances

Table 2A - August 2021 Soil Boring PFAS Results

Sample Name		21AKN-SB-04 (12.1-12.7)	21AKN-SB-04 (18.6-19.3)	21AKN-SB-04 (63.7-64.5)	21AKN-SB-04 (82-82.6)	21AKN-SB-04 (87-87.5)	21AKN-SB-05(3.1'-3.6')	21AKN-SB-05(4.2'-4.7')	
Soil Boring Sample Depth		12.1 - 12.7 feet bgs	18.6 - 19.3 feet bgs	63.7 - 64.5 feet bgs	82.0 - 82.6 feet bgs	87.0 - 87.5 feet bgs	3.1 - 3.6 feet bgs	4.2 - 4.7 feet bgs	
Analyte	Cleanup Level	Units							
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	0.048 N*	0.036 N*	<0.22 N*	<0.22 N*	<0.21	0.13 J	0.069 J
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	0.081 J	0.039 J
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Perfluorononanoic acid (PFNA)	—	µg/kg	0.060 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Perfluorodecanoic acid (PFDA)	—	µg/kg	0.19 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23 J*
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24 J*	<0.23 J*
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	0.33 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	2.9 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	<0.24	<0.23
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<b>3.5 N*</b>	<0.23 N*	<0.22 N*	<0.22 N*	0.48	0.34 JH*	<0.23
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.24 N*	<0.23 N*	<0.22 N*	<0.22 N*	<0.21	0.095 J	0.065 J

Notes: Results reported from Eurofins TestAmerica work orders 320-77655, 320-78376, and 320-7891.  
 Sample 21AKN-MW-101 is a field-duplicate of sample 21AKN-MW-01.  
 Sample 21AKN-MW-105-15 is a field-duplicate of sample 21AKN-MW-05-15.  
 Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.  
 N\* Analyte result is considered tentatively unidentified (non-detects)/identified (detects) due to analysis outside of hold time. Flag applied by Shannon & Wilson, Inc.  
 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. (\*)  
 bgs = below ground surface; DUP = field-duplicate; µg/kg= micrograms per kilogram; PFAS = per- and polyfluoroalkyl substances

**Table 2A - August 2021 Soil Boring PFAS Results**

Sample Name		21AKN-SB-05(58'-63')	21AKN-SB-105(58'-63')	21AKN-SB-05(70'-70.5')	21AKN-SB-05(82.8-83.3)	
Soil Boring Sample Depth		58.0 - 63.0 feet bgs	58.0 - 63.0 feet bgs	70.0 - 70.5 feet bgs	82.8 - 83.3 feet bgs	
Analyte	Cleanup Level	Units	DUP			
Perfluorohexanesulfonic acid (PFHxS)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluorohexanoic acid (PFHxA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluoroheptanoic acid (PFHpA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluorononanoic acid (PFNA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluorobutanesulfonic acid (PFBS)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluorodecanoic acid (PFDA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluoroundecanoic acid (PFUnA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluorododecanoic acid (PFDoA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluorotridecanoic acid (PFTrDA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Perfluorotetradecanoic acid (PFTeA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	µg/kg	<0.23	<0.22	<0.20	<0.23
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	µg/kg	<0.23 J*	<0.22	<0.20	<0.23
Perfluorooctanesulfonic acid (PFOS)	3.0	µg/kg	<0.23	<b>0.048 J</b>	<0.20	<0.23
Perfluorooctanoic acid (PFOA)	1.7	µg/kg	<0.23	<0.22	<0.20	<0.23

Notes: Results reported from Eurofins TestAmerica work orders 320-77655, 320-78376, and 320-7891.  
 Sample 21AKN-MW-101 is a field-duplicate of sample 21AKN-MW-01.  
 Sample 21AKN-MW-105-15 is a field-duplicate of sample 21AKN-MW-05-15.  
 Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater).  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.  
 N\* Analyte result is considered tentatively unidentified (non-detects)/identified (detects) due to analysis outside of hold time. Flag applied by Shannon & Wilson, Inc.  
 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. (\*)  
 bgs = below ground surface; DUP = field-duplicate; µg/kg= micrograms per kilogram; PFAS = per- and polyfluoroalkyl substances



**Table 2B - August 2021 Soil Borings Fuel Results**

Sample Name		21AKN-SB-01 (0'-1')	21AKN-SB-01 (6.5'-7.5')	21AKN-SB-101 (6.5'-7.5')	21AKN-SB-02 (0'-1')	21AKN-SB-02 (6'-7')	21AKN-SB-03 (0'-1')	21AKN-SB-03 (7.3'-7.8')		
Soil Boring Sample Depth		0.0 - 1.0 feet bgs	6.5 - 7.5 feet bgs	6.5 - 7.5 feet bgs	0.0 - 1.0 feet bgs	6.0 - 7.0 feet bgs	0.0 - 1.0 feet bgs	7.3 - 7.8 feet bgs		
Analytical Method	Analyte	Cleanup Level	Units	DUP						
AK101	Gasoline Range Organics	300	mg/kg	<4.84 B*	<4.55 B*	<4.44 B*	<3.58 B*	<5.75 B*	<4.44 B*	<4.34 B*
AK102	Diesel Range Organics	250	mg/kg	38.0	<11.7	<11.6	<b>302</b>	<11.9	210	9.05 J
AK103	Residual Range Organics	11,000	mg/kg	334	<58.5	<58.0	3,250	<60.0	1,900	118 J
SW8260D (BTEX)	Benzene	0.022	mg/kg	<0.0121	<0.0114	<0.0111	<0.00895	<0.0144	<0.0111	<0.0109
	Toluene	6.7	mg/kg	<0.0242	<0.0227	<0.0222	<0.0179	<0.0288	<0.0222	<0.0217
	Ethylbenzene	0.13	mg/kg	<0.0242	<0.0227	<0.0222	<0.0179	<0.0288	<0.0222	<0.0217
	m,p-xylenes	1.5	mg/kg	<0.0483	<0.0455	<0.0444	<0.0357	<0.0575	<0.0445	<0.0434
	o-Xylene	1.5	mg/kg	<0.0242	<0.0227	<0.0222	<0.0179	<0.0288	<0.0222	<0.0217
	Total Xylenes	1.5	mg/kg	<0.0725	<0.0680	<0.0665	<0.0535	<0.0865	<0.0665	<0.0650
SW8270D-SIM (PAH)	1-Methylnaphthalene	0.41	mg/kg	<0.0730	<0.0144	<0.0145	<0.134	<0.0150	<0.137	<0.0147
	2-Methylnaphthalene	1.3	mg/kg	<0.0730	<0.0144	<0.0145	<0.134	<0.0150	<0.137	<0.0147
	Acenaphthene	37	mg/kg	<0.0730	<0.0144	<0.0145	<0.134	<0.0150	<0.137	<0.0147
	Acenaphthylene	18	mg/kg	<0.0730	<0.0144	<0.0145	<0.134	<0.0150	<0.137	<0.0147
	Anthracene	390	mg/kg	<0.0730	<0.0144	<0.0145	0.159 J	<0.0150	<0.137	<0.0147
	Benzo(a)anthracene	0.7	mg/kg	<0.0730	<0.0144	<0.0145	0.323	<0.0150	<0.137	<0.0147
	Benzo(a)pyrene	1.9	mg/kg	<0.0730	<0.0144	<0.0145	0.359	<0.0150	<0.137	<0.0147
	Benzo(b)fluoranthene	15†	mg/kg	<0.0730	<0.0144	<0.0145	0.493	<0.0150	<0.137	<0.0147
	Benzo(g,h,i)perylene	2,300†	mg/kg	<0.0730	<0.0144	<0.0145	0.317	<0.0150	<0.137	<0.0147
	Benzo(k)fluoranthene	150†	mg/kg	<0.0730	<0.0144	<0.0145	0.130 J	<0.0150	<0.137	<0.0147
	Chrysene	600	mg/kg	<0.0730	<0.0144	<0.0145	0.499	<0.0150	<0.137	<0.0147
	Dibenzo(a,h)anthracene	1.5†	mg/kg	<0.0730	<0.0144	<0.0145	<0.134	<0.0150	<0.137	<0.0147
	Fluoranthene	590	mg/kg	<0.0730	<0.0144	<0.0145	0.898	<0.0150	<0.137	<0.0147
	Fluorene	36	mg/kg	<0.0730	<0.0144	<0.0145	<0.134	<0.0150	<0.137	<0.0147
	Indeno(1,2,3-cd)pyrene	15†	mg/kg	<0.0730	<0.0144	<0.0145	0.215 J	<0.0150	<0.137	<0.0147
	Naphthalene	0.038	mg/kg	<0.0585	<0.0116	<0.0116	<0.107	<0.0121	<0.110	<0.0117
Phenanthrene	39	mg/kg	<0.0730	<0.0144	<0.0145	0.600	<0.0150	<0.137	<0.0147	
Pyrene	87	mg/kg	<0.0730	<0.0144	<0.0145	0.709	<0.0150	<0.137	<0.0147	

## Table 2B - August 2021 Soil Borings Fuel Results

- Notes: Results reported from SGS North America, Inc. work order 1215191.  
 Sample 21AKN-MW-101 is a field-duplicate of sample 21AKN-MW-01 .  
 Regulatory limits from 18 AAC 75.341 Table B2 Method Two - Petroleum Hydrocarbon Soil Cleanup Levels - Under 40-Inch Zone or Table B1 Method Two - Soil Cleanup Levels Table. The most stringent between Human Health and Migration to Groundwater cleanup levels are reported.  
 Migration to Groundwater cleanup level reported unless otherwise identified.
- † 18 AAC 75 Table B1 Human Health cleanup level reported.
  - < Analyte not detected; listed as less than the limit of detection (LOD) unless otherwise flagged due to quality-control failures.
  - <Bold The laboratory's limit of detection (LOD) is greater than the regulatory limit.
  - BOLD** Detected concentration exceeds the
  - J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.
  - B\* Result is included in the same batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (\*)  
 BTEX = benzene, toluene, ethylbenzene, and xylenes; bgs = below ground surface; mg/kg = milligrams per kilogram; PAH = polynuclear aromatic hydrocarbon

**Table 3 - August 2021 Surface Water PFAS Results**

Analyte	Sample Name		21AKN-SW-01	21AKN-SW-101	21AKN-SW-02	21AKN-SW-03	21AKN-SW-04	21AKN-SW-05	21AKN-SW-105	21AKN-SW-06
	Cleanup Level	Units	DUP						DUP	
Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	<1.9	<2.0	200	130	1,600	60	58	50
Perfluorohexanoic acid (PFHxA)	—	ng/L	3.5	3.4	48	19	600	11	13	9.6
Perfluoroheptanoic acid (PFHpA)	—	ng/L	1.8 J	2.0	19	9.8	120	5.0	4.6	4.4
Perfluorononanoic acid (PFNA)	—	ng/L	1.5 J	1.7 J	5.2	2.1	14	0.94 J	1.0 J	0.87 J
Perfluorobutanesulfonic acid (PFBS)	—	ng/L	<1.9	<2.0	8.2	5.7	54	3.0	3.2	2.4
Perfluorodecanoic acid (PFDA)	—	ng/L	<1.9	<2.0	<1.9	<1.9	1.7 J	<1.9	<1.9	<1.9
Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotridecanoic acid (PFTrDA)	—	ng/L	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.8	<4.9	<4.7	<4.8	<4.8	<4.7	<4.8	<4.8
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.8	<4.9	<4.7	<4.8	<4.8	<4.7	<4.8	<4.8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.9	<3.9	<3.8	<3.8	<3.9	<3.7	<3.8	<3.9
Perfluorooctanesulfonic acid (PFOS)	400	ng/L	<2.0	1.0 J	<b>1,900</b>	230	<b>4,100</b>	110	130	110
Perfluorooctanoic acid (PFOA)	400	ng/L	<1.9	<2.0	64	26	<b>1,500</b>	30	32	31

Notes: Results reported from Eurofins TestAmerica work order 320-77653-1 and 320-78371-1.  
 Sample 21AKN-SW-101 is a field-duplicate of sample 21AKN-SW-01.  
 Sample 21AKN-SW-105 is a field-duplicate of sample 21AKN-SW-05.  
 Sample 21AKN-SW-107 is a field-duplicate of sample 21AKN-SW-07.  
 Groundwater-Cleanup Levels from 18 AAC 75.345, Table C.  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) 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. (\*)  
 DUP = field-duplicate; ng/L = nanograms per liter; PFAS = per- and polyfluoroalkyl substances

**Table 3 - August 2021 Surface Water PFAS Results**

Analyte	Sample Name		21AKN-SW-07	21AKN-SW-107	21AKN-SW-08	21AKN-SW-09
	Cleanup Level	Units	DUP			
Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	320	290	330 J*	460
Perfluorohexanoic acid (PFHxA)	—	ng/L	84	78	74 J*	55
Perfluoroheptanoic acid (PFHpA)	—	ng/L	39	39	34 J*	24
Perfluorononanoic acid (PFNA)	—	ng/L	8.0	8.4	7.5 J*	9.5
Perfluorobutanesulfonic acid (PFBS)	—	ng/L	10	11	11 J*	14
Perfluorodecanoic acid (PFDA)	—	ng/L	<1.9	<1.9	<1.9 J*	<1.9
Perfluoroundecanoic acid (PFUnA)	—	ng/L	6.7	5.2	<1.9 J*	<1.9
Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.9	0.60 J	<1.9 J*	<1.9
Perfluorotridecanoic acid (PFTrDA)	—	ng/L	1.8 J*	2.8 J*	<1.9 J*	<1.9
Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.9	<1.9	<1.9 J*	<1.9
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.8 J*	<4.8	<4.7 J*	<4.6
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.8	<4.8	<4.7 J*	<4.6
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.9	<1.9 J*	<1.9
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.9	<1.9 J*	<1.9
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.9	<1.9	<1.9 J*	<1.9
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.8	<3.9	<3.8 J*	<3.7
Perfluorooctanesulfonic acid (PFOS)	400	ng/L	<b>2,400</b>	<b>2,200</b>	<b>3,200</b>	<b>1,500</b>
Perfluorooctanoic acid (PFOA)	400	ng/L	170	180	130 J*	120

Notes: Results reported from Eurofins TestAmerica work order 320-77653-1 and 320-78371-1.  
 Sample 21AKN-SW-101 is a field-duplicate of sample 21AKN-SW-01.  
 Sample 21AKN-SW-105 is a field-duplicate of sample 21AKN-SW-05.  
 Sample 21AKN-SW-107 is a field-duplicate of sample 21AKN-SW-07.  
 Groundwater-Cleanup Levels from 18 AAC 75.345, Table C.

— No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).

**BOLD** Detected concentration exceeds regulatory limit.

J Estimated concentration, detected greater than the method detection limit (MDL) 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. (\*)  
 DUP = field-duplicate; ng/L = nanograms per liter; PFAS = per- and polyfluoroalkyl substances

Table 4A - August 2021 Monitoring Well PFAS Results

Sample Name	21AKN-MW-01	21AKN-MW-01	21AKN-MW-02	21AKN-MW-03	21AKN-MW-04-45	21AKN-MW-04-85	21AKN-MW-04-85F		
Monitoring Well Screened Depth	4 - 14 feet bgs	4 - 14 feet bgs	4 - 14 feet bgs	4 - 14 feet bgs	40-45 feet bgs	80-85 feet bgs	80-85 feet bgs		
Analytes	Cleanup Level	Units		DUP			Filtered		
Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	370	380	200	2100	140	<1.8 B*	<1.8 B*
Perfluorohexanoic acid (PFHxA)	—	ng/L	63	70	7.7	1300	110	0.65 J	0.68 J
Perfluoroheptanoic acid (PFHpA)	—	ng/L	29	34	<1.9 B*	190	25	<1.8	<1.8
Perfluorononanoic acid (PFNA)	—	ng/L	<1.9 B*	<1.9 B*	<1.9 B*	270	<1.8	<1.8	<1.8
Perfluorobutanesulfonic acid (PFBS)	—	ng/L	18	18	7.3	390	45 J*	<1.8	<1.8
Perfluorodecanoic acid (PFDA)	—	ng/L	<1.9	<1.9	<1.9	<1.9 B*	<1.8	<1.8	<1.8
Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.9	<1.9	<1.9	2.3	<1.8	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8
Perfluorotridecanoic acid (PFTrDA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.8	<4.6	<4.7	<4.7	<4.5	<4.6	<4.6
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.8	<4.6	<4.7	<4.7	<4.5	<4.6	<4.6
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.9	<1.9	<1.9	<1.9	<1.8	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.8	<3.7 J*	<3.7 J*	<3.8	<3.6 J*	<3.6	<3.7
Perfluorooctanesulfonic acid (PFOS)	400	ng/L	360	360	56	<b>800</b>	11	<1.8 B*	<1.8
Perfluorooctanoic acid (PFOA)	400	ng/L	170	180	35	250	140	<1.8 B*	<1.8 B*

Notes: Results reported from Eurofins TestAmerica work order 320-78371-1 and 320-78378-1.  
 Sample 21AKN-MW-101 is a field-duplicate of sample 21AKN-MW-01.  
 Sample 21AKN-MW-105-15 is a field-duplicate of sample 21AKN-MW-05-15.  
 Groundwater-Cleanup Levels from 18 AAC 75.345, Table C.  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
**BOLD** Detected concentration exceeds regulatory limit.  
 J Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.  
 B\* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (\*)  
 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. (\*)  
 bgs = below ground surface; DUP = field-duplicate; ng/L = nanograms per liter; PFAS = per- and polyfluoroalkyl substances

**Table 4A - August 2021 Monitoring Well PFAS Results**

Sample Name			21AKN-MW-05-15	21AKN-MW-105-15	21AKN-MW-05-85	21AKN-MW-05-85F
Monitoring Well Screened Depth			10-15 feet bgs	10-15 feet bgs	80-85 feet bgs	80-85 feet bgs
Analytes	Cleanup Level	Units		DUP		Filtered
	Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	49	46	5.0 JH*
Perfluorohexanoic acid (PFHxA)	—	ng/L	45	48	23	37
Perfluoroheptanoic acid (PFHpA)	—	ng/L	8.4	8.8	3.4	6.6
Perfluorononanoic acid (PFNA)	—	ng/L	<3.2 B*	<3.7 B*	<1.9	<1.8
Perfluorobutanesulfonic acid (PFBS)	—	ng/L	33	32	8.4	16
Perfluorodecanoic acid (PFDA)	—	ng/L	<1.9	<1.8	<1.9	<1.8
Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.9	<1.8	<1.9	<1.8
Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.9	<1.8	<1.9	<1.8
Perfluorotridecanoic acid (PFTrDA)	—	ng/L	<1.9	<1.8	<1.9	<1.8
Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.9	<1.8	<1.9	<1.8
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.6	1.3 J	<4.8	<4.6
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.6	<4.6	<4.8	<4.6
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.8	<1.9	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.8	<1.9	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.9	<1.8	<1.9	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.7	<3.7	<3.8	<3.7
Perfluorooctanesulfonic acid (PFOS)	400	ng/L	10	10	<1.9 B*	<2.6 B*
Perfluorooctanoic acid (PFOA)	400	ng/L	26	27	12	35

Notes: Results reported from Eurofins TestAmerica work order 320-78371-1 and 320-78378-1.

Sample 21AKN-MW-101 is a field-duplicate of sample 21AKN-MW-01.

Sample 21AKN-MW-105-15 is a field-duplicate of sample 21AKN-MW-05-15.

Groundwater-Cleanup Levels from 18 AAC 75.345, Table C.

— No applicable regulatory limit exists for the associated analyte.

< Analyte was not detected; reported as <Reporting Limit (RL).

**BOLD** Detected concentration exceeds regulatory limit.

J Estimated concentration, detected greater than the method detection limit (MDL) and less than the reporting limit (RL). Flag applied by the laboratory.

B\* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (\*)

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. (\*)

bgs = below ground surface; DUP = field-duplicate; ng/L = nanograms per liter; PFAS = per- and polyfluoroalkyl substances

**Table 4B - August 2021 Monitoring Well Fuel Results**

Sample Name		21AKN-MW-01	21AKN-MW-101	21AKN-MW-02	21AKN-MW-03
Monitoring Well Screened Depth		4 - 14 feet bgs	4 - 14 feet bgs	4 - 14 feet bgs	4 - 14 feet bgs
Analytical Method	Analyte	Cleanup Level	Units	DUP	
AK101	Gasoline Range Organics	2.2	mg/L	<0.0500	<0.0500
AK102	Diesel Range Organics	1.5	mg/L	0.198 J	<0.294
AK103	Residual Range Organics	1.1	mg/L	<0.236	<0.245
SW8260D (BTEX)	Benzene	4.6	µg/L	<0.200	<0.200
	Toluene	1,100	µg/L	<0.500	<0.500
	Ethylbenzene	15	µg/L	<0.500	<0.500
	m,p-xylenes	190	µg/L	<1.00	<1.00
	o-Xylene	190	µg/L	<0.500	<0.500
	Total Xylenes	190	µg/L	<1.50	<1.50
	SW8270D-SIM (PAHs)	1-Methylnaphthalene	11	µg/L	<0.0240
2-Methylnaphthalene		36	µg/L	<0.0240 J*	<0.0510 B*
Acenaphthene		530	µg/L	<0.0240 J*	<0.0255 J*
Acenaphthylene		260	µg/L	<0.0240 J*	<0.0255 J*
Anthracene		43	µg/L	<0.0240 J*	<0.0255 J*
Benzo(a)anthracene		0.30	µg/L	<0.0240	<0.0255
Benzo(a)pyrene		0.25	µg/L	<0.00960	<0.0102
Benzo(b)fluoranthene		2.5	µg/L	<0.0240	<0.0255
Benzo(g,h,i)perylene		0.26	µg/L	<0.0240	<0.0255
Benzo(k)fluoranthene		0.8	µg/L	<0.0240	<0.0255
Chrysene		2.0	µg/L	<0.0240	<0.0255
Dibenzo(a,h)anthracene		0.25	µg/L	<0.00960	<0.0102
Fluoranthene		260	µg/L	<0.0240	<0.0255
Fluorene		290	µg/L	<0.0240 J*	<0.0255 J*
Indeno(1,2,3-cd)pyrene		0.19	µg/L	<0.0240	<0.0255
Naphthalene		1.7	µg/L	<0.0481 J*	<0.0510 J*
Phenanthrene		170	µg/L	<0.0481 B*	<0.0510 B*
Pyrene	120	µg/L	<0.0240	<0.0255	

Notes: Results reported from SGS North America, Inc work order 1215513.  
 Sample 21AKN-MW-101 is a field-duplicate of sample 21AKN-MW-01.  
 Groundwater-Cleanup Levels from 18 AAC 75.345, Table C.  
 < Analyte not detected; listed as less than the limit of detection (LOD) unless otherwise flagged due to quality-control failures.  
 J Estimated concentration, detected greater than the detection limit (DL) and less than the limit of quantitation (LOQ). Flag applied by the laboratory.  
 B\* Result is included in the same batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (\*)  
 J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 BTEX = benzene, toluene, ethylbenzene, and xylenes; bgs = below ground surface; µg/L = micrograms per liter; mg/L = milligrams per liter; PAH = polynuclear aromatic hydrocarbon

Table 5 - August 2021 IDW PFAS Results

Analyte	Sample Name		21AKN-Drum-01	21AKN-Drum-101	21AKN-Drum-02	21AKN-Drum-03	21AKN-Drum-04	21AKN-Drum-06	21AKN-Drum-07	21AKN-Drum-08	21AKN-Drum-10
	Cleanup Level	Units	DUP								
Perfluorohexanesulfonic acid (PFHxS)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorohexanoic acid (PFHxA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluoroheptanoic acid (PFHpA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorononanoic acid (PFNA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorobutanesulfonic acid (PFBS)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorodecanoic acid (PFDA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluoroundecanoic acid (PFUnA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorotridecanoic acid (PFTrDA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorotetradecanoic acid (PFTeA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8 J*
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	—	ng/L	<4.7	<4.5	<4.6	<4.7	<4.5	<4.7	<4.6	<4.6	<4.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	—	ng/L	<4.7	<4.5	<4.6	<4.7	<4.5	<4.7	<4.6	<4.6	<4.5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	—	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Hexafluoropropylene oxide dimer acid (HFPO-DA)	—	ng/L	<3.7	<3.6	<3.6	<3.7	<3.6	<3.7	<3.6	<3.7	<3.6
Perfluorooctanesulfonic acid (PFOS)	400	ng/L	<1.9	<1.8	1.3 J	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8
Perfluorooctanoic acid (PFOA)	400	ng/L	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8

Notes: Results reported from Eurofins TestAmerica work order 320-78371-1.  
 Sample 21AKN-DRUM-101 is a field-duplicate of sample 21AKN-DRUM-01.  
 Groundwater-Cleanup Levels from 18 AAC 75.345, Table C.  
 — No applicable regulatory limit exists for the associated analyte.  
 < Analyte was not detected; reported as <Reporting Limit (RL).  
 J Estimated concentration, detected greater than the method detection limit (MDL) 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. (\*)  
 DUP = field-duplicate; ng/L = nanograms per liter; PFAS = per- and polyfluoroalkyl substances



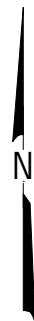
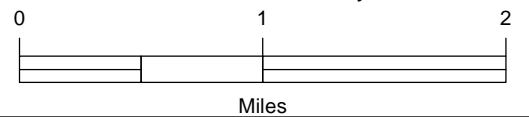


**Legend**

- Well Search Area and Project Vicinity
- King Salmon, Alaska



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



DOT&PF Statewide PFAS  
Site Characterization Report  
King Salmon, Alaska

**Vicinity Map**

March 2022

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**Figure 1**



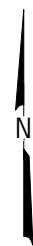
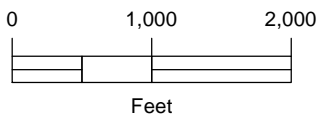
NOTE:  
See Table 1 through Table 5 for Analytical Results.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**LEGEND**

- Monitoring Well and Soil Boring
- Monitoring Well Cluster and Soil Boring
- Surface Water Sample
- Surface Soil Sample
- Streams
- Building

- Areas of known AFFF use**
- DOT&PF AFFF Use Area
  - Air Force AFFF Use Area
  - Mutual Aid AFFF Response



DOT&PF Statewide PFAS  
Site Characterization Report  
King Salmon, Alaska

**SAMPLE LOCATIONS**

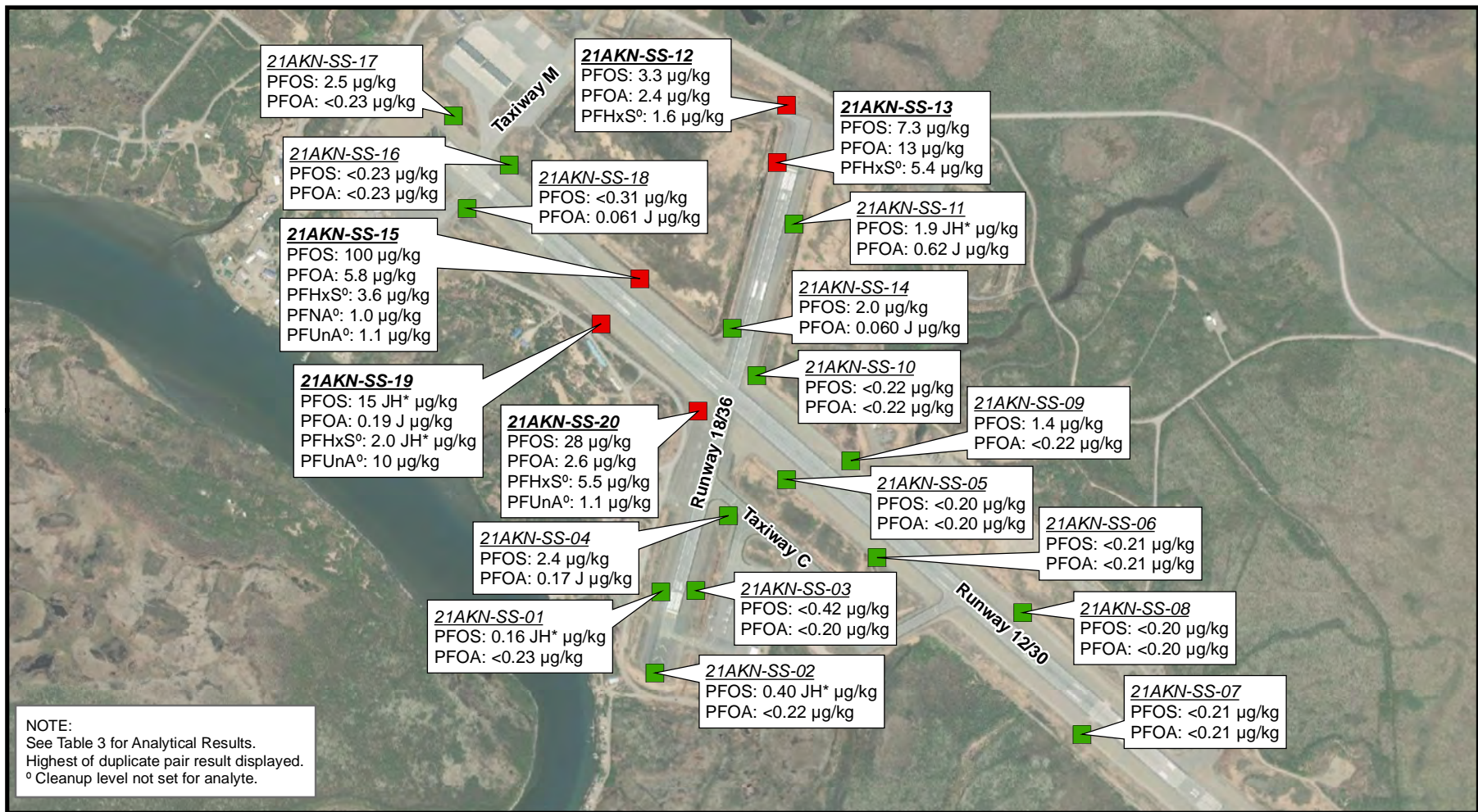
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**Figure 2**

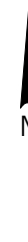
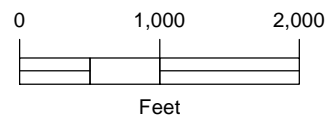
**Figure 2**



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**LEGEND**

- PFAS Analyte(s) Do Not Exceed DEC Cleanup Level
- PFAS Analyte(s) Exceed DEC Cleanup Level



DOT&PF Statewide PFAS  
Site Characterization Report  
King Salmon, Alaska

**SURFACE SOIL  
PFAS SAMPLE RESULTS**

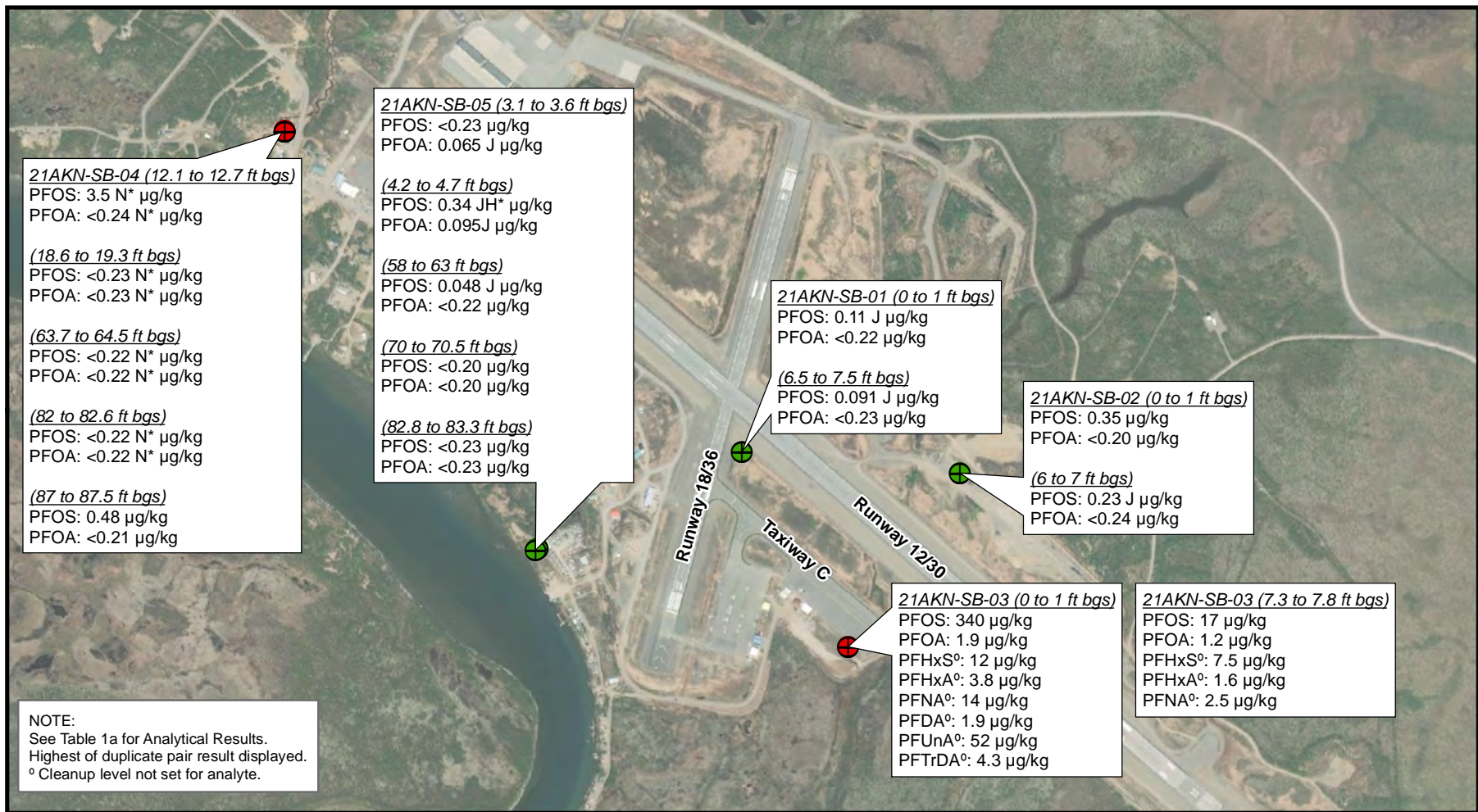
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**Figure 3**

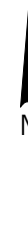
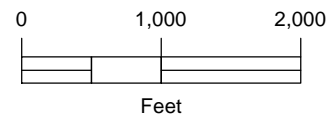
**Figure 3**



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**LEGEND**

- PFAS Analyte(s) Do Not Exceed DEC Cleanup Level
- PFAS Analyte(s) Exceed DEC Cleanup Levels



DOT&PF Statewide PFAS  
 Site Characterization Report  
 King Salmon, Alaska

**SOIL BORING  
 PFAS SAMPLE RESULTS**

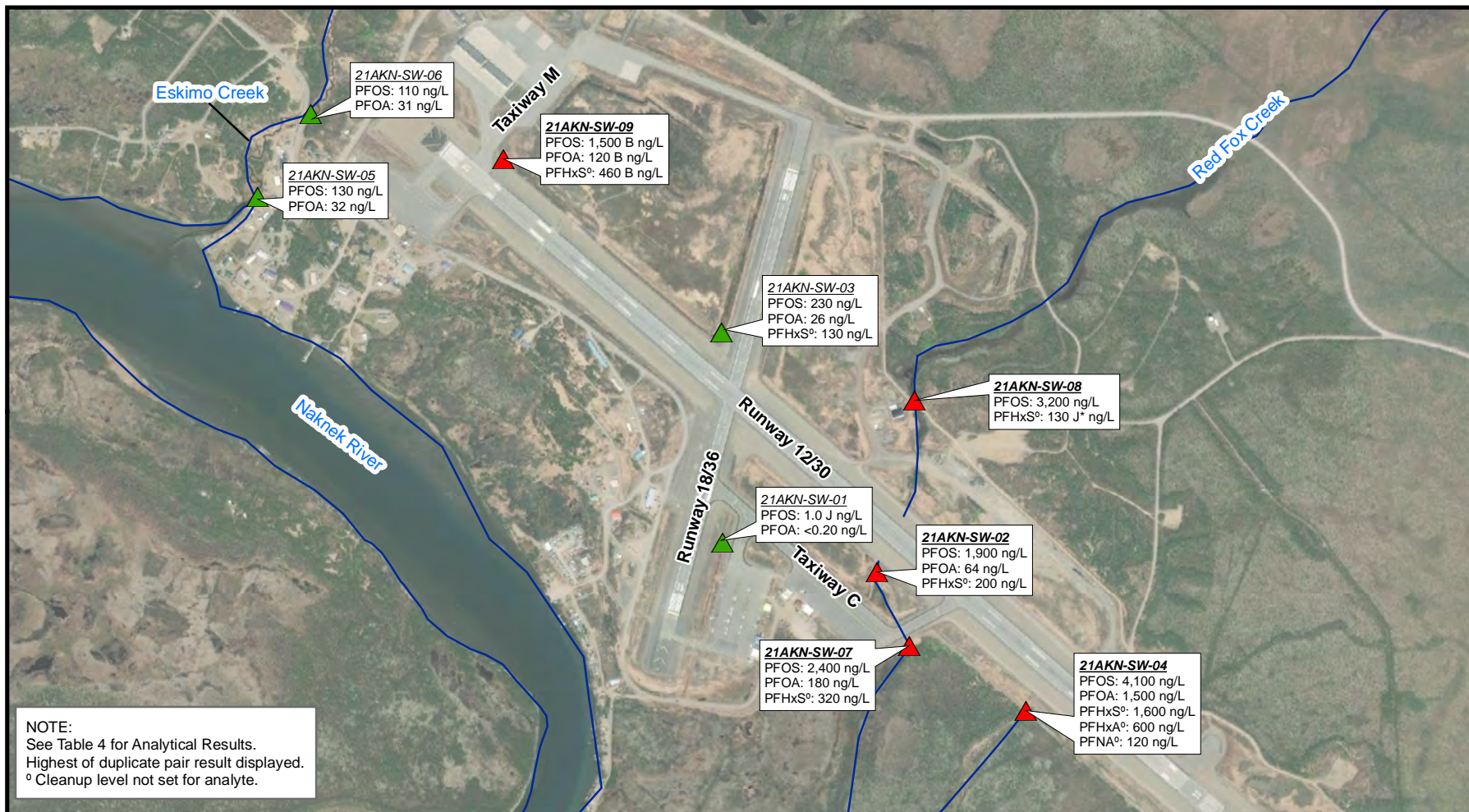
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**Figure 4**

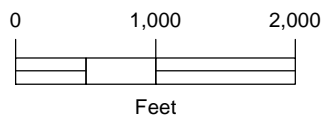
**Figure 4**



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**LEGEND**

- ▲ PFAS Analyte(s) Do Not Exceed DEC Cleanup Level
- ▲ PFAS Analyte(s) Exceed DEC Cleanup Level
- Creeks and Rivers



DOT&PF Statewide PFAS  
Site Characterization Report  
King Salmon, Alaska

**SURFACE WATER  
PFAS SAMPLE  
RESULTS**

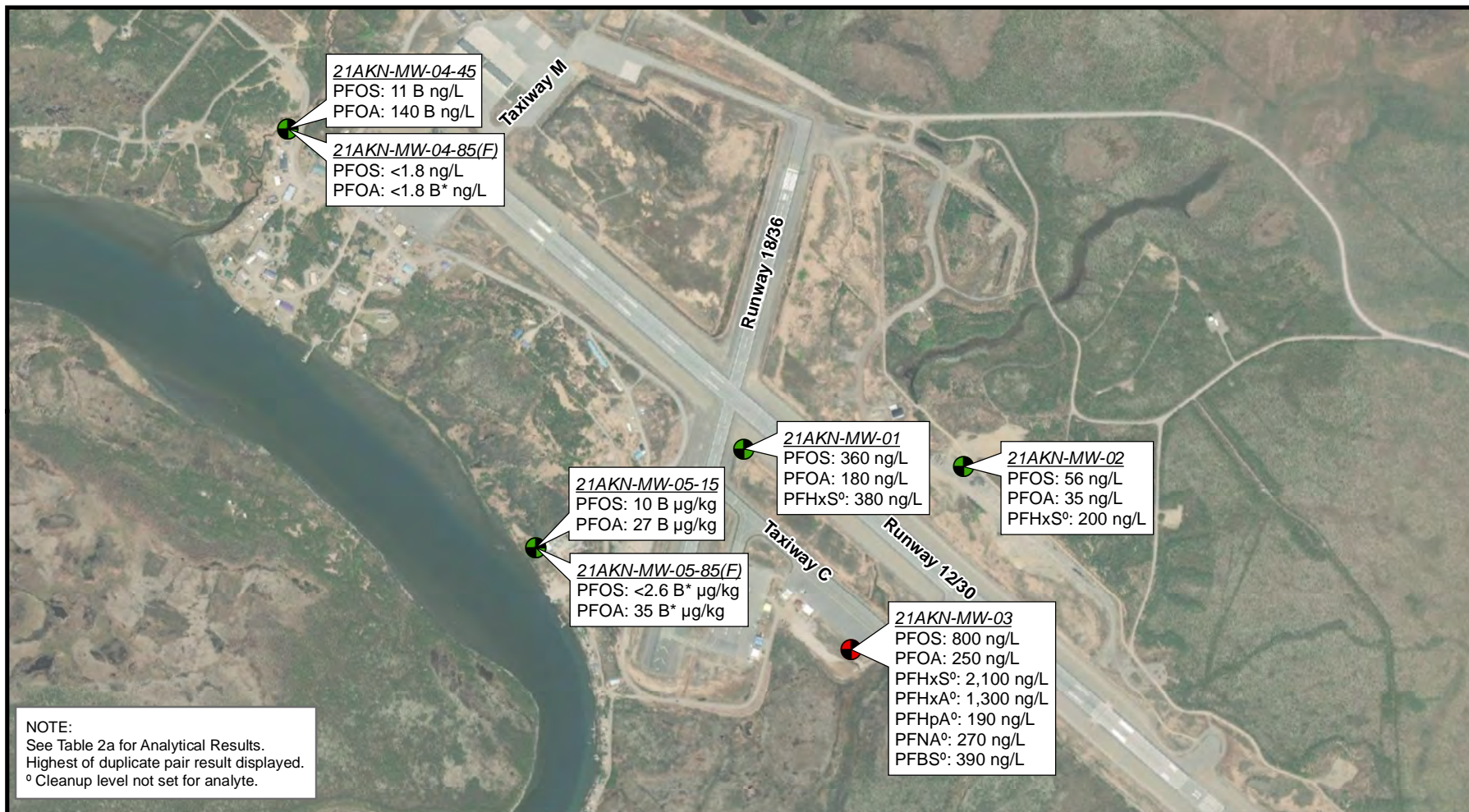
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**Figure 5**

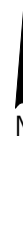
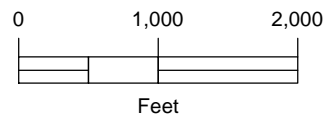
**Figure 5**



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**LEGEND**

-  PFAS Analyte(s) Do Not Exceed DEC Cleanup Level
-  PFAS Analyte(s) Exceed DEC Cleanup Level



DOT&PF Statewide PFAS  
Site Characterization Report  
King Salmon, Alaska

**MONITORING WELL  
PFAS SAMPLE RESULTS**

March 2022

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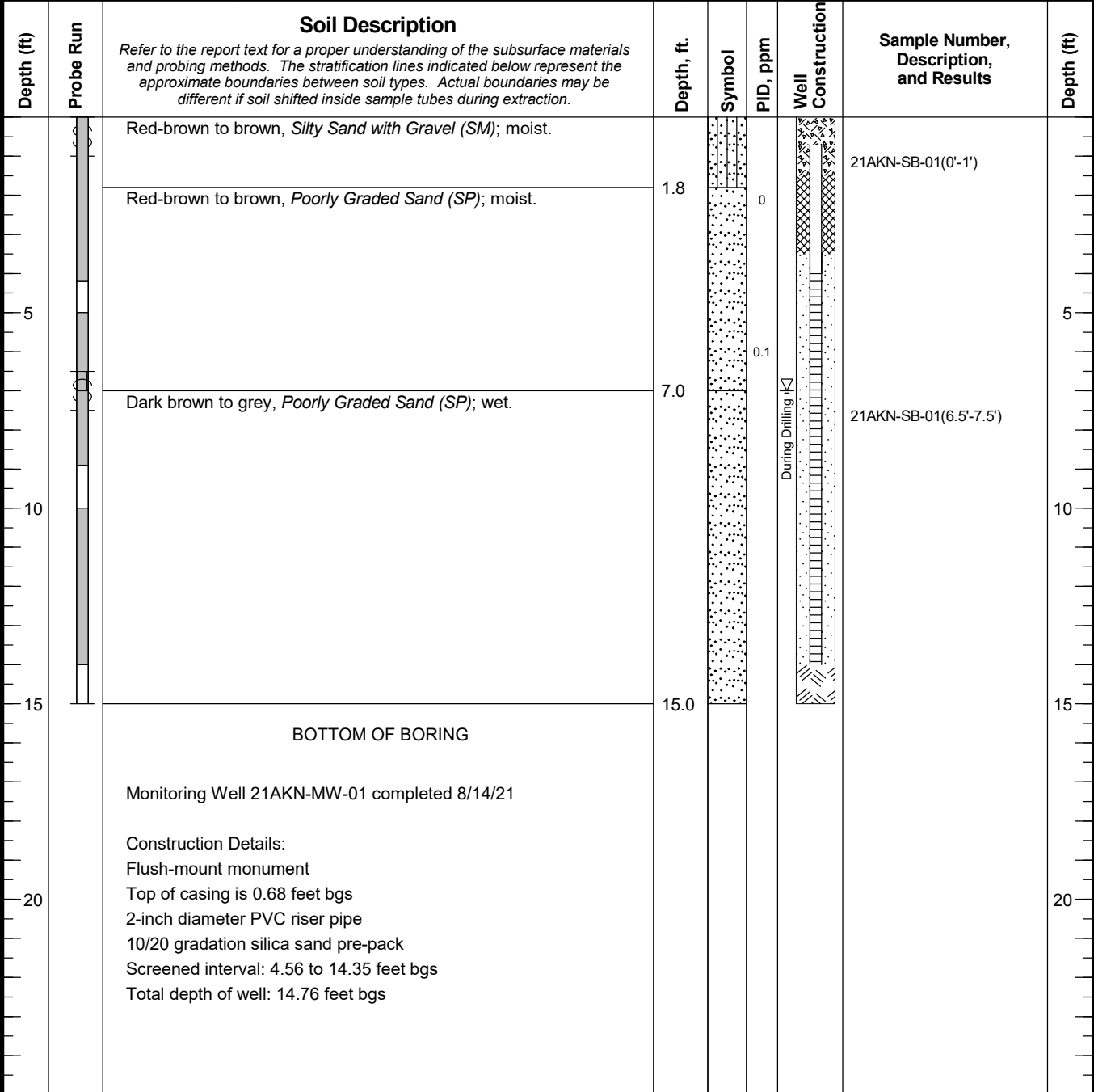
**Figure 6**

Appendix A  
Boring Logs

APPENDIX A: BORING LOGS

# LOG OF BORING

Date Started	8/14/21	Location	Fire Training Area A
Date Completed	8/14/21	Ground Elevation:	NA
Total Depth (ft)	15.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska, Inc.
		Hole Diameter:	4.5 inches



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

- |   |   |  |
|---|---|--|
| 2" Plastic Tube - No Soil Recovery<br>2" Plastic Tube with Soil Recovery<br>Run No. | Piezometer Screen and Sand Filter<br>Ground Water Level ATD |  |
|---|---|--|

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-01

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

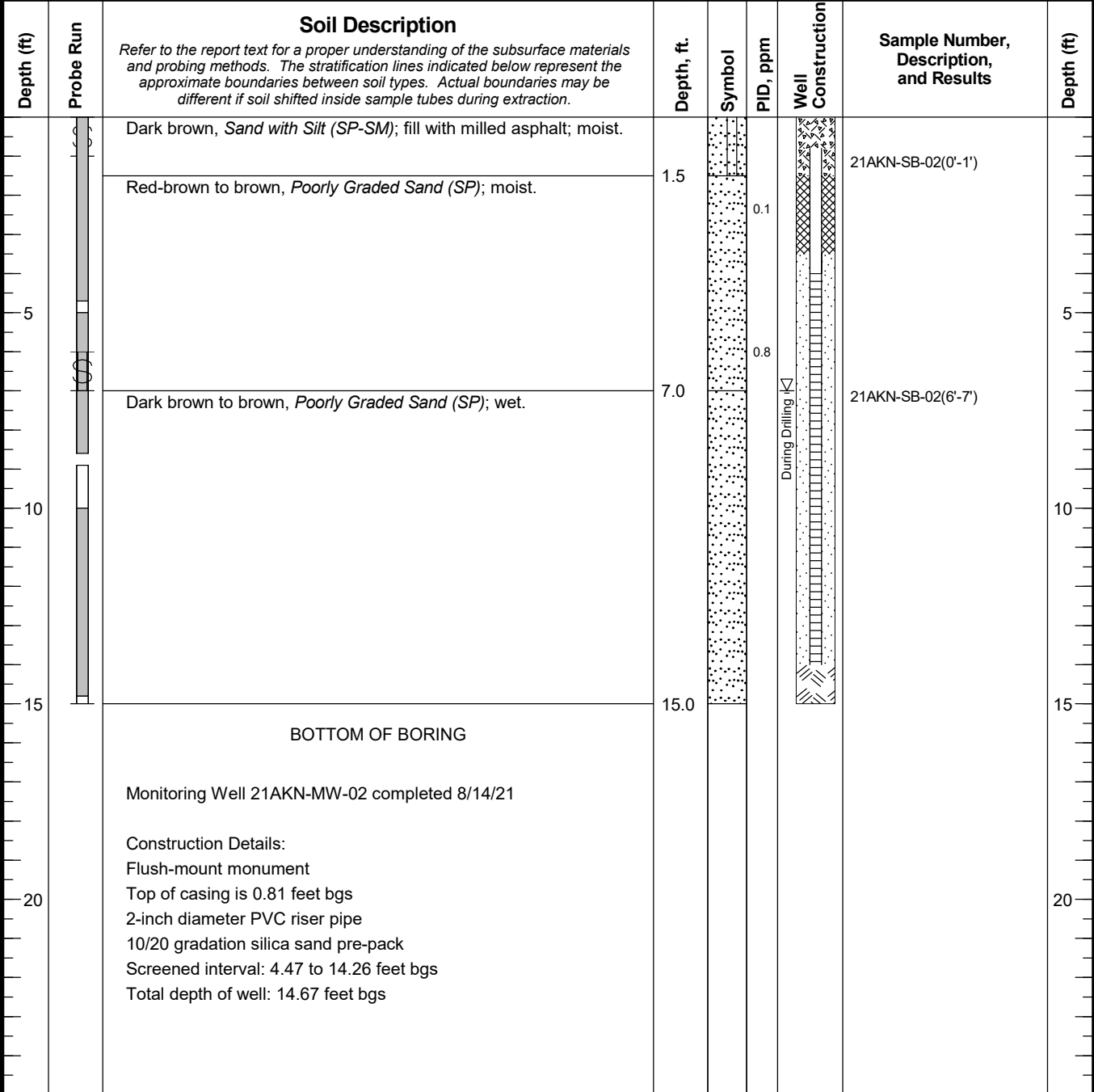
**Figure 1**

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21  
Log: VTY/JLD Rev: VTY



# LOG OF BORING





Date Started	8/14/21	Location	Fire Training Area B	Ground Elevation:	NA
Date Completed	8/14/21			Typical Run Length	5 feet
Total Depth (ft)	15.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 inches



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

- |   |   |
|---|---|
|  2" Plastic Tube - No Soil Recovery<br> 2" Plastic Tube with Soil Recovery<br>Run No. |  Piezometer Screen and Sand Filter<br> Ground Water Level ATD |
|---|---|

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-02

November 2021

102582-011

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**Figure 2**

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21  
Typ: VTY  
Log: VTY/JLD  
Rev:

# LOG OF BORING

Date Started	8/14/21	Location	Fire Training Area C
Date Completed	8/14/21	Ground Elevation:	NA
Total Depth (ft)	15.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska, Inc.
		Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		<b>Soil Description</b> <i>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.</i>						
		Red-brown to dark grey, <i>Silt to Sandy Silt (ML)</i> ; moist.					21AKN-SB-03(0'-1')	
5			5.5		1.6			5
		Brown, <i>Poorly Graded Sand (SP)</i> ; moist.						
		Brown, <i>Poorly Graded Sand with Silt (SP-SM)</i> ; wet.	7.0		1.6		21AKN-SB-03(7.3'-7.8')	
		Dark brown, <i>Peat (PT)</i> ; moist.	9.3					
10			10.0					10
		Brown to dark brown, <i>Poorly Graded Sand (SP)</i> ; wet.						
15			15.0					15
		<b>BOTTOM OF BORING</b>						
		Monitoring Well 21AKN-MW-03 completed 8/14/21						
		Construction Details: Flush-mount monument Top of casing is 0.69 feet bgs 2-inch diameter PVC riser pipe 10/20 gradation silica sand pre-pack Screened interval: 4.75 to 14.54 feet bgs Total depth of well: 14.95 feet bgs						

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

2" Plastic Tube - No Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube with Soil Recovery	Ground Water Level ATD

Run No.

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-03

November 2021

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**Figure 3**

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21  
Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/16/21	Location	AC Store	Ground Elevation:	NA
Date Completed	8/21/20			Typical Run Length	5 feet
Total Depth (ft)	45.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		Red-brown, <i>Poorly Graded Sand with Silt (SP-SM)</i> ; moist; foam insulation from 7.2 to 7.4 ft bgs.						
		Brown, <i>Poorly Graded Sand (SP)</i> ; moist.	7.4					
		Brown, <i>Silt (ML)</i> ; moist.	8.5					
		Dark brown, <i>Poorly Graded Sand (SP)</i> ; moist.	8.9					
		Brown, <i>Silt (ML)</i> ; moist.	11.0					
		Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet.	13.5					
		Dark brown to brown, <i>Poorly Graded Sand (SP)</i> ; wet.	15.0					
		Gray, <i>Well Graded Sand (SW)</i> ; wet.	19.5					

CONTINUED NEXT PAGE

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

2" Plastic Tube with Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

Run No.

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-04-45

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 5**  
Sheet 1 of 3

GEOPROBE WELL 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/16/21	Location	AC Store	Ground Elevation:	NA
Date Completed	8/21/20			Typical Run Length	5 feet
Total Depth (ft)	45.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description <i>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.</i>	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
30		Gray, Poorly Graded Sand (SP); wet.	25.0	[Symbol]		[Well Construction]		30
35			36.0	[Symbol]		[Well Construction]		35
40		Gray, Well Graded Sand (SW); wet.	37.4	[Symbol]		[Well Construction]		40
45		Gray, Poorly Graded Sand (SP); wet.	45.0	[Symbol]		[Well Construction]		45
		BOTTOM OF BORING						
		Monitoring Well 21AKN-MW-04-45 completed 8/22/21						
		Construction Details: Stickup monument						

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

2" Plastic Tube with Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

Run No. 3

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-04-45

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 5**  
Sheet 2 of 3

GEOPROBE WELL 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/16/21	Location	AC Store	Ground Elevation:	NA
Date Completed	8/21/20			Typical Run Length	5 feet
Total Depth (ft)	45.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 inches





Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		<p><i>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.</i></p> <p>Top of casing is 2.53 feet above ground                      2-inch diameter PVC riser pipe                      10/20 gradation silica sand pre-pack                      Screened interval: 39.72 to 44.50 feet bgs                      Total depth of well: 44.91 feet bgs</p>						

Log: VTY/JLD Rev: VTY VTY  
 GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21

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

- |  |   |
|--|---|
|  2" Plastic Tube - No Soil Recovery |  Piezometer Screen and Sand Filter |
|  2" Plastic Tube with Soil Recovery |  Ground Water Level ATD            |
- Run No.

AKN Site Characterization King Salmon, Alaska	
<b>LOG OF BORING 21AKN-SB-04-45</b>	
November 2021	102582-011
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure 5</b> Sheet 3 of 3

# LOG OF BORING

Date Started	8/16/21	Location	AC Store	Ground Elevation:	NA
Date Completed	8/18/21			Typical Run Length	5 feet
Total Depth (ft)	95.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		Red-brown, <i>Poorly Graded Sand with Silt (SP-SM)</i> ; moist; foam insulation from 7.2 to 7.4 ft bgs.			0			
		Brown, <i>Poorly Graded Sand (SP)</i> ; moist.	7.4		0			
		Brown, <i>Silt (ML)</i> ; moist.	8.5					
		Dark brown, <i>Poorly Graded Sand (SP)</i> ; moist.	8.9					
		Brown, <i>Silt (ML)</i> ; moist.	11.0		0			
		Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet.	13.5			During Drilling		
		Dark brown to brown, <i>Poorly Graded Sand (SP)</i> ; wet.	15.0					
		Gray, <i>Well Graded Sand (SW)</i> ; wet.	19.5					

CONTINUED NEXT PAGE

### 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

2" Plastic Tube with Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

Run No. 3

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-04-85

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 4**  
Sheet 1 of 5

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/16/21	Location	AC Store	Ground Elevation:	NA
Date Completed	8/18/21			Typical Run Length	5 feet
Total Depth (ft)	95.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 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 Sand (SP); wet.	25.0					
30								30
35								35
		Gray, Well Graded Sand (SW); wet.	36.0					
		Gray, Poorly Graded Sand (SP); wet.	37.4					
40								40
45								45

CONTINUED NEXT PAGE

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

- |   |   |
|---|---|
|  2" Plastic Tube - No Soil Recovery<br> 2" Plastic Tube with Soil Recovery<br>Run No. |  Piezometer Screen and Sand Filter<br> Ground Water Level ATD |
|---|---|

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-04-85

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 4**  
Sheet 2 of 5

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/16/21	Location	AC Store
Date Completed	8/18/21	Ground Elevation:	NA
Total Depth (ft)	95.0	Typical Run Length	5 feet
Drilling Company:		Hole Diameter:	
GeoTek Alaska, Inc.		4.5 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, Well Graded Sand (SW); wet.	50.5					
55								55
60								60
		Gray, Sandy Silt with Gravel (ML); wet.	64.0					
65								65
		Gray, Sandy Lean Clay with Gravel (CL); moist.	66.8					
		Gray, Silty Gravel with Sand (GM); wet.	69.0					
70								70
		Gray, Silt (ML); moist.	70.8					
		Gray, Silty Gravel with Sand (GM); wet.	73.2					
		Gray, Silt (ML); moist.	74.2					

**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**

2" Plastic Tube - No Soil Recovery 2" Plastic Tube with Soil Recovery Run No.	Piezometer Screen and Sand Filter Ground Water Level ATD	
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AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-04-85

November 2021
102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 4**  
Sheet 3 of 5

Typ: VTY Rev: Log: VTY/JLD  
 GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21



# LOG OF BORING

Date Started	8/16/21	Location	AC Store
Date Completed	8/18/21	Ground Elevation:	NA
Total Depth (ft)	95.0	Typical Run Length	5 feet
Drilling Company:		Hole Diameter:	
GeoTek Alaska, Inc.		4.5 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 Sand (SP), wet.	75.3					
		Gray, Sandy Lean Clay (CL); moist.	77.2					
		Gray, Sandy Silt with Gravel (ML); moist.	78.5					
80								80
		Gray, Poorly Graded Sand (SP); wet.	82.0					
		Gray, Poorly Graded Gravel with Sand (GP); wet.	82.5					
85								85
		Gray, Silty Sand (SM); wet to 91.2 ft bgs, moist below.	85.0					
90								90
95								95
		BOTTOM OF BORING	95.0					
		Monitoring Well 21AKN-MW-04-85 completed 8/20/21						
		Construction Details: Stickup monument						

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

	2" Plastic Tube - No Soil Recovery		Piezometer Screen and Sand Filter
	2" Plastic Tube with Soil Recovery		Ground Water Level ATD

Run No. 3

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-04-85

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 4**  
Sheet 4 of 5

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/16/21	Location	AC Store	Ground Elevation:	NA
Date Completed	8/18/21			Typical Run Length	5 feet
Total Depth (ft)	95.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 inches





Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		<p><b>Soil Description</b></p> <p><i>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.</i></p>						
105		Top of casing is 2.77 feet above ground 2-inch diameter PVC riser pipe 10/20 gradation silica sand pre-pack Screened interval: 79.16 to 83.94 feet bgs Total depth of well: 84.35 feet bgs						105
110								110
115								115
120								120

Log: VTY/JLD Rev: VTY  
 Typ: VTY  
 GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21

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

- |  |   |
|--|---|
|  2" Plastic Tube - No Soil Recovery |  Piezometer Screen and Sand Filter |
|  2" Plastic Tube with Soil Recovery |  Ground Water Level ATD            |
- Run No.

AKN Site Characterization King Salmon, Alaska	
<b>LOG OF BORING 21AKN-SB-04-85</b>	
November 2021	102582-011
<b>SHANNON &amp; WILSON, INC.</b> Geotechnical and Environmental Consultants	<b>Figure 4</b> Sheet 5 of 5

# LOG OF BORING





Date Started	8/26/21	Location	Charlie's Sport Shop	Ground Elevation:	NA
Date Completed	8/26/21			Typical Run Length	5 feet
Total Depth (ft)	15.0	Drilling Company:	GeoTek Alaska, Inc.	Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		Brown, Poorly Graded Sand with Silt (SP-SM); moist to 3.6 ft bgs, wet below.				During Drilling 		
		Dark brown, Peat (PT); moist.	3.8					
5		Dark brown, Silty Sand with Gravel (SM); wet.	4.1					5
		Gray, Well Graded Sand with Gravel (SW); wet.	5.3					
		BOTTOM OF BORING	15.0					
		Monitoring Well 21AKN-MW-05-15 completed 8/26/21						
		Construction Details: Flush-mount monument Top of casing is 0.5 feet bgs 2-inch diameter PVC riser pipe 10/20 gradation silica sand pre-pack Screened interval: 10.27 to 15.05 feet bgs Total depth of well: 15.46 feet bgs						

### 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

 2" Plastic Tube - No Soil Recovery	 Piezometer Screen and Sand Filter
 2" Plastic Tube with Soil Recovery	 Ground Water Level ATD

Run No.

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-05-15

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 7**

GEOPROBE WELL 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: Typ: VTY

# LOG OF BORING

Date Started	8/23/21	Location	Charlie's Sport Shop
Date Completed	8/27/21	Ground Elevation:	NA
Total Depth (ft)	85.0	Drilling Company:	GeoTek Alaska, Inc.
		Typical Run Length	5 feet
		Hole Diameter:	4.5 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Well Construction	Sample Number, Description, and Results	Depth (ft)
		<b>Soil Description</b> <i>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.</i>						
		Brown, <i>Poorly Graded Sand with Silt (SP-SM)</i> ; moist to 3.6 ft bgs, wet below.			0.3			
		Dark brown, <i>Peat (PT)</i> ; moist.	3.8				21AKN-SB-05(3.1'-3.6')	
5		Dark brown, <i>Silty Sand with Gravel (SM)</i> ; wet.	4.1				21AKN-SB-05(4.2'-4.7')	5
		Gray, <i>Well Graded Sand with Gravel (SW)</i> ; wet.	5.3					
10								10
15		Gray, <i>Silty Sand (SM)</i> ; wet.	15.0					15
20								20
		Gray, <i>Silt (ML)</i> ; moist.	22.0					
		Gray, <i>Lean Clay (CL)</i> ; moist.	23.5					

CONTINUED NEXT PAGE

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

2" Plastic Tube with Soil Recovery Run No.	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-05-83

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 6**  
Sheet 1 of 4

GEOPROBE WELL 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/23/21	Location	Charlie's Sport Shop
Date Completed	8/27/21	Ground Elevation:	NA
Total Depth (ft)	85.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska, Inc.
		Hole Diameter:	4.5 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, Silt with Sand (ML); moist.	25.5					
		Gray, Poorly Graded Sand (SP); wet.	31.1					
		Gray, Silt (ML); moist.	32.8					
		Gray, Poorly Graded Sand (SP); wet.	33.3					
		Gray, Lean Clay (CL); moist.	35.4					
		Gray, Silty Sand (SM); wet.	36.3					
		Gray, Sandy Silt (ML); moist.	37.8					
		Gray, Silty Sand (SM); wet to 39.5 ft bgs, moist below.	38.2					
		Gray, Lean Clay (CL); moist.	47.4					
		Gray, Silty Sand (SM); moist.	48.2					

CONTINUED NEXT PAGE

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

2" Plastic Tube with Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

Run No.

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-05-83

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 6**  
Sheet 2 of 4

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/23/21	Location	Charlie's Sport Shop
Date Completed	8/27/21	Ground Elevation:	NA
Total Depth (ft)	85.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska, Inc.
		Hole Diameter:	4.5 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, Lean Clay with Sand (CL); moist.	50.4					
55								55
		Gray, Poorly Graded Sand (SP), wet.	57.8					
60								60
		Gray, Silty Sand (SM); wet to 64.4 ft bgs, moist below.	62.8				21AKN-SB-05(58'63')	
65								65
		Gray, Silty Sand with Gravel (SM); moist.	68.3					
70								70
		Gray, Well Graded Sand with Silt and Gravel (SW); wet.	70.0				21AKN-SB-05(70'-70.5')	
		Gray, Poorly Graded Sand with Silt and Gravel (SP); wet.	72.0					

CONTINUED NEXT PAGE

### 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

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| 2" Plastic Tube - No Soil Recovery | Piezometer Screen and Sand Filter |
| 2" Plastic Tube with Soil Recovery | Ground Water Level ATD            |
- Run No.

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-05-83

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 6**  
Sheet 3 of 4

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

# LOG OF BORING

Date Started	8/23/21	Location	Charlie's Sport Shop
Date Completed	8/27/21	Ground Elevation:	NA
Total Depth (ft)	85.0	Typical Run Length	5 feet
		Drilling Company:	GeoTek Alaska, Inc.
		Hole Diameter:	4.5 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, Well Graded Sand with Silt (SW); wet.	75.6	•••••				
		Gray, Poorly Graded Sand with Silt (SP); wet.	77.8	•••••				
80								80
		Gray, Lean Clay (CL); moist.	81.3	//				
		Gray, Poorly Graded Sand with Silt (SP); wet.	81.5	•••••				
		Gray, Silty Sand with Gravel (SM); wet.	83.3	□□□□			21AKN-SB-05(82.8'-83.3')	
85		BOTTOM OF BORING	84.5					85
		Monitoring Well 21AKN-MW-05-83 completed 8/27/21						
		Construction Details: Flush-mount monument Top of casing is 0.37 feet bgs 2-inch diameter PVC riser pipe 10/20 gradation silica sand pre-pack Screened interval: 77.92 to 82.70 feet bgs Total depth of well: 83.11 feet bgs						
90								90
95								95

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

2" Plastic Tube with Soil Recovery	Piezometer Screen and Sand Filter
2" Plastic Tube - No Soil Recovery	Ground Water Level ATD

Run No. 3

AKN Site Characterization  
King Salmon, Alaska

## LOG OF BORING 21AKN-SB-05-83

November 2021

102582-011

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**Figure 6**  
Sheet 4 of 4

GEOPROBE WELL: 102582-011.GPJ 21-20447.GPJ 11/12/21 Log: VTY/JLD Rev: VTY

Appendix B

# Field Notes

## CONTENTS

- Field Activities Daily Logs
- Soil Sample Collection Logs
- Surface Water Sample Logs
- Monitoring Well Construction Details
- Well Development Logs
- Monitoring Well Sampling Logs



FIELD ACTIVITIES DAILY LOG

Date 8/13/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: Arrival and preparation

Description of daily activities and events:

0400: VTY head to airport in FBX

0545: meet JLD @ airport in ANC

1040: VTY and JLD arrive @ AKN, wait for bags and get rental car

1130: drive to Antler Inn to check in

1230: meet with Floyd (airport manager) to go over plan and drive to drilling locations

1500: unable to find drilling location @ Charlie's Sports Shop, requested a more detailed map from MXJ

1800: meet drillers and discuss plan for following day

1700: unpack and sort equipment and samples

prepare for following day

1800: end of day

Visitors on site: n/a

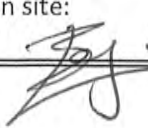
Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast, drizzling occasionally 50°F

Important telephone calls: n/a

Personnel on site: VTY, JLD

Signature: 

Date: 8/13/21

MX

FIELD ACTIVITIES DAILY LOG

Date 08/14/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: MW installation onsite

Description of daily activities and events:

0615 start of day, prepare equipment

0700 VTY and JLD arrive @ DOT office to meet with drillers; plan for day discussed with DOT; safety meeting

0730 arrive @ driller's staging area and drive over with rig to Red River Gate

0800 park drill rig @ Red River Gate, drillers leave to get food and fuel

0845 back on site, drive over to Fire Training Area B

0900 drillers leave to pick up more equipment; VTY and JLD calibrate PID

1100 #21AKN-MW-02 complete

1300 21AKN-MW-01 complete

1500 21AKN-MW-03 complete, demob and plan for next day

1615 end of day

Visitors on site: N/A


Changes from plans/specifications and other special orders and important decisions:

N/A

Weather conditions: overcast, 50°F

Important telephone calls: N/A

Personnel on site: VTY, JLD

Signature: 

Date: 8/14/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/15/21

Sheet 1 of 1

Project No. 1032582-0.11

Project Name: AKN PFAS Characterization

Field activity subject: Surface soil and water collection

Description of daily activities and events:

- 0700: prepare for day calibrate YSI
- 0730: Jack to Floyd about escort for the day
- 0830: meet Floyd @ DOT office, start driving around runways to collect surface water and soil samples
- 1350: back @ Soetake Cabins to plan rest of the day, talk to Michael and discuss about plan for tomorrow
- 1520: go to Charlie's to look for drilling location, discuss moving it to middle of post yard with Mike
- 1600: look for downstream location of Red Fox Creek
- 1620: sample culvert outside fence, but unable to find culvert for Red Fox Creek (will consult with Floyd tomorrow)
- 1700: drive to AC store to scout out drilling location, talk to store's manager and permission to drill is ~~not~~ confirmed
- 1730: collect downstream sample of Eskimo Creek
- 1750: collect upstream sample of Eskimo Creek
- 1810: ~~upload~~ upload and start preparing samples for shipment
- 2000: paperwork and prep of ~~site~~ equipment
- 2100: end of day

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast, 50°F

Important telephone calls: n/a

Personnel on site: JKL

Signature: 

Date: 8/15/21

JKL

FIELD ACTIVITIES DAILY LOG

Date 8/16/21  
Sheet 1 of 1  
Project No. 102582-011

Project Name: AKN AFAS Characterization

Field activity subject: KW Installation

Description of daily activities and events:

0700: prepare for day's work calibrate JSI, pack up car  
0800: meet with drillers to discuss plan for day  
0800: meet with Floyd to collect samples from  
Red Fox Creek  
0945: ship samples to Anchorage and Sacramento  
1145: drillers ready with mobilization to AC store  
1200: ~~start~~ safety meeting  
1230: start drilling deep well @ AC store  
1800: drill ends for day at 50ft depth  
1830: back @ cabins, unpack and go over papers  
1900: end of day

Visitors on site: n/a


Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast + afternoon rain, 50°F

Important telephone calls: n/a

Personnel on site: VTY, JLD

Signature: 

Date: 8/16/21



FIELD ACTIVITIES DAILY LOG

Date 8/17/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AXN PFAS Characterization

Field activity subject: MW borings

Description of daily activities and events:

0630 prepare for day, calibrate PID

0730 meet with drillers, safety meeting

0800 drillers move over 5 ft. and drill shallow boring to 25 ft.

1200 drillers moved back to deeper boring and advance it to 80 ft. logs, Aquatard B ended @ 64.5 ft. Aquatard B still @ 80 ft.

1730 drilling done for day, pack up site

1800 back @ cabins, unpack and store samples away, finish up paperwork

1830 end of day

Visitors on site: n/a


Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast, 50°F

Important telephone calls: n/a

Personnel on site: UY, SLD

Signature: 

Date: 8/17/21

UY

FIELD ACTIVITIES DAILY LOG

Date 8/18/21

Sheet 1 of 1

Project No. 102582-01

Project Name: AKN PFAS Characterization

Field activity subject: nw boring

Description of daily activities and events:

- 0630 prepare for day, calibrate PID and PSI
- 0730 meet drillers and have safety meeting
- 0800 advance boring to 95 ft. bgs (SB-04 deep); casing left at 85 ft. bgs, drillers unable to proceed any deeper; screen will be set 80-85 ft bgs due to well saturated gravels there; fine sand and dry silt below it
- 1530 JLD stays with drillers, VTY makes residence calls
- 1600 VTY goes to collect sample from Wells Fargo Bld.
- 1700 VTY back @ drice site, drilling finished for day, discuss plan forward
- 1730 VTY samples Eddie's Fireplace Inn
- 1815 VTY back @ cabins, unpack and store samples in cooler
- 1830 end of day

Visitors on site: n/a


Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: partly cloudy, 60°F

Important telephone calls: n/a

Personnel on site: VTY, JLD

Signature: 

Date: 8/18/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/19/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS characterization

Field activity subject: Residential sampling

Description of daily activities and events:

0730 prepare COC and samples for shipment  
0830 calibrate YSI and prepare for residential sampling  
0900 sample @ the Sockeye Saloon  
1000 sample @ the Antlers Inn  
1030 store samples; end of day

Visitors on site: n/a


Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast, 50°F

Important telephone calls: n/a

Personnel on site: VTY

Signature: 

Date: 8/19/21

VTY

FIELD ACTIVITIES DAILY LOG

Date ~~8/20/21~~ 8/20/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: MW installation

Description of daily activities and events:

- 0700 prepare for day, calibrate JSI
- 0730 meet with directors, discuss plan and have safety meeting
- 0800 finish paperwork and organize escort and drum storage with DOT
- 0830 update MXJ on progress
- 0900 VTY and JLD on site, directors have started setting the deeper well @ AC store
- 1400 21AKN MW-04-85 completed, drillers unable to proceed with shallower well due to broken hose
- 1430 back in cabins, unpack and finish paperwork
- 1500 end of day

SPEC ONE

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: ~~overcast~~, sunny, partly sunny 60°F

Important telephone calls: n/a

Personnel on site: VTY, JLD

Signature: 

Date: 8/20/21

VTY



FIELD ACTIVITIES DAILY LOG

Date 8/21/21

Sheet 1 of 1

Project No. 102582011

Project Name: AKN PFAS characterization

Field activity subject: MW development

Description of daily activities and events:

0700: prepare for day

0730: meet with drillers and give instructions to proceed to 45 ft. on slatlower well @ AC store

0800: pack for development

0830: meet with Olat (DOT escort) @ DOT office

1030: 21 AKN-MW-02 development complete

1200: 21 AKN-MW-01 development complete

1500: 21 AKN-MW-03 development complete

1515: go by AC store to check on completed MWs, ask drillers to fill with more concrete around MWs due to the potential for water pooling

1530: back @ cabins, unpack and finish paperwork

1600: end of day

Visitors on site: n/a


Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast with showers, 50°F

Important telephone calls: n/a

Personnel on site: VTY, JLD

Signature: 

Date: 8/21/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/22/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: MW development

Description of daily activities and events:

0800: prepare for day of sampling

0830: talk to DOT about escort

0845: unable to find trip blank, get to Mike about sending us one; sampling left for different day

0900: start developing 21AKN-MW-04-85

1330: start developing 21AKN-MW-04-45

1530: development of PAC store wells complete;

back @ cabins -> unpack -> finish paperwork

1600: end of day

Visitors on site: n/a

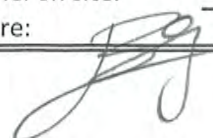
Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast, 50°F

Important telephone calls: n/a

Personnel on site: VTY, JLD

Signature: 

Date: 8/22/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/23/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS characterization

Field activity subject: nw drilling

Description of daily activities and events:

- 0730: prepare for day check with drillers
- 0800: pack samples for shipping
- 0830: talk to Bristol Bay Electric, they confirm marking activities has been completed
- 0900: VTY @ Alaska Air Cargo to drop samples off for shipping to West America, Sacramento
- 1000: meet drillers @ Charlie's Sport Shop and determine drilling location; drilling set up starts
- 1230: 21AKN-SB-05 started
- 1700: 21AKN-SB-05 drilled down to 50 ft. bgs; ~~drillers~~ drillers finish for day
- 1730: VTY and JLD unpack and finish paperwork;
- 1800: end of day

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: rain, 50°F

Important telephone calls: n/a

Personnel on site: VTY, JLD

Signature: 

Date: 8/23/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/24/20

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: NW drilling

Description of daily activities and events:

0730: prepare for drilling;

0800: VM and JLD arrive on site, drillers have continued driving casing to 50ft;

1300: sampled continuously down to 70ft. bgs; drillers change over to hammer to drive casing down to 70 ft. bgs;

1530: tri-cone rod gets stuck inside casing, drillers start working on solution

1730: end of day; troubleshooting will continue tomorrow

Visitors on site: n/a


Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast + showers, 50°F

Important telephone calls: n/a

Personnel on site: VM, JLD

Signature: 

Date: 8/24/20

VM

FIELD ACTIVITIES DAILY LOG

Date 8/25/21

Sheet 1 of 1

Project No. \_\_\_\_\_

Project Name: AKN PFAS characterization

Field activity subject: \_\_\_\_\_

Description of daily activities and events:

0730: discuss plan for day with JLD and prepare for day

0800: VY and JLD arrive @ DOT drum storage location and start filtering 3 full drums with development water from wells on airport;

1240: filtering complete, get to Floyd about an escort in the afternoon for sampling;

1300: back in cabins to prepare for sampling;

1400: meet with Greg (DOT escort) to start sampling the three wells @ airport fenced area

1800: sampling complete; equipment blank collected;

1815: back in cabins; unpack and store samples in coolers on deck with ice;

1830: end of day

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast + rain showers, 40-50°F

Important telephone calls: n/a

Personnel on site: VY, JLD

Signature: [Handwritten Signature]

Date: 8/25/21

VY

**FIELD ACTIVITIES DAILY LOG**

Date 8/26/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: PW drilling and installation

Description of daily activities and events:

- 0645: talk to Dave about plan for day
- 0700: talk to Mike about depth of shallow well
- 0800: JLD with drillers to install shallow well @ Charlie's Sports Shop
- 0830: VTY prepares water samples for shipment to SGS
- 0930: VTY @ airport to ship samples
- 1000: VTY talk to Tom Hering, who would like sampling @ his property; foam was used to put out a fire nearby.
- 1020: JLD informs VTY that Mitch (driller helper) has cut his finger open; drillers head over to clinic in Natick
- 1040: VTY drops JLD off in cabin to contact Mandy (corporate safety officer)
- 1100: VTY filters/purge water from sampling the three well on the airport
- 1300: VTY and JLD set up for sampling @ AC store wells; JLD pit probe can't calibrate;
- 1400: VTY requests a new JLD shipped out;
- 1430: VTY meet David who finishes the shallow well @ Charlie's Sport Shop; Mitch is flying home and a new driller helper is coming in this afternoon.
- 1500: VTY back @ cabins;
- 1515: VTY drops JLD @ airport
- 1530: VTY transfers development water from AC store wells in drums on truck;
- 1630: VTY starts filtering water in these drums @ DOT drum storage area
- 1945: VTY back in cabin; end of day

Visitors on site: Tom Hering, resident from Lot 10


Changes from plans/specifications and other special orders and important decisions:

na

Weather conditions: overcast, 50°F

Important telephone calls: multiple with MX 5 and <sup>1 with</sup> CBD

Personnel on site: VTY and JLD

Signature: 

Date: 8/26/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/27/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: New boring and installation

Description of daily activities and events:

- 0700 - prepare for day
- 0730 - meet drillers @ site; safety meeting; continue deep well boring
- 1130 - pause boring @ 80 ft.; drillers go to yard for more equipment and take lunch; VTY talks to Mike about desired well depth and additional residential samples;
- 1145 - VTY talks to Tom Hering and sets up an appointment for tomorrow; VTY next talks to Dave Lax and he requests an appointment right away; VTY starts preparing for residential sample; pH probe on ISU malfunctioning;
- 1230 - VTY meets Dave Lax @ the old Quinaat hotel property; now has 3 cabins for seasonal employees of the Sockeye Saloon - they use the well as water supply; VTY lunches and collects sample
- 1400 - back @ Charlie's; drillers advance boring to 85 ft. bgs and start setting a well;
- 1830 - deep well set in place, VTY leaves site;
- 1840 - back in cabin, unpack and finish paperwork
- 1900 - end of day;

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions:

sampled the old Quinaat Hotel property and will sample lot 10

Weather conditions: mostly sunny and windy, 50°F

Important telephone calls: with MXS, Tom Hering and Dave Lax

Personnel on site: VTY

Signature: [Handwritten Signature]

Date: 8/27/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/28/21

Sheet 1 of 1

Project No. 102582

Project Name: AKN PFAS Characterization

Field activity subject: MW Development and Sampling

Description of daily activities and events:

- 0800: drillers start cleaning up site @ Charlie's
- 1000: VTY starts setting up for development
- 1130: 21AKN-MW-05-15 developed
- 1200: VTY @ Alaska Air cargo to pick up new ISI;
- 1230: VTY prepares for sampling and does a confidence check on ISI (all parameters in range)
- 1300: VTY sets up for sampling on site;
- 1415: 21AKN-MW-05-15 sampled;
- 1430: VTY start development of 21AKN-MW-05-85;
- 1630: finish developing and sampling @ both wells @ Charlie's pack up;
- 1900: back @ cabin; store samples away; end of day

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: sunny, 60°F

Important telephone calls: n/a

Personnel on site: VTY

Signature:

*[Handwritten signature]*

Date: 8/28/21

VTY



FIELD ACTIVITIES DAILY LOG

Date 8/29/21

Sheet 1 of 1

Project No. 102582-011

Project Name: AKN PFAS Characterization

Field activity subject: nw sampling

Description of daily activities and events:

1100: prepare for day, calibrate YSI;  
 1200: VTY @ DOT to meet with Escort;  
 1300: VTY and escort drive to East end of runway to collect sample from shaft providing access to a culvert intersection;  
 1400: VTY @ wells by AC store; set up for sampling;  
 1520: 21AKN-MW-04-45 sampled;  
 1700: 21AKN-MW-04-85 sampled; start packing up;  
 1800: back @ cabin; store samples away; unpack; finish paperwork;  
 1900: end of day

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions: n/a

Weather conditions: Sunny, 60°F

Important telephone calls: n/a

Personnel on site: VTY

Signature:

Date: 8/29/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/30/21

Sheet 1 of 1

Project No. 102582-01

Project Name: AKN PFAS Characterization

Field activity subject: \_\_\_\_\_

Description of daily activities and events:

0730: prepare for day, calibrate YSI;

0830: VTY arrives @ Lot #10, to sample Tom Heiny's house well

1000: VTY back in cabin, prepare samples for shipment;

1200: VTY @ Alaska Air Cargo, ships samples;

1230: VTY pumps development water from drums by AC store into drums on car;

1330: VTY @ drum storage area behind DOT building to filter AC store development water; Mega Monsoon pump does not start; troubleshooting;

1430: ~~filtering~~ filtering restarted.

1630: VTY goes to Alaska Air Cargo to pick up shipment of extra sample jars and to be present while cargo staff opens up sample cooler dropped off earlier; inspection goes smoothly;

1800: VTY goes to wells @ Charlie's; starts pumping development water from drums on ground onto drums on truck;

1930: VTY starts filtering those drums; pump goes @ ~ 0.75 gal/min; VTY works on labeling drums, drum log and drum sampling in the mean time;

0000: 4 drums finished filtering; pack up

8/31 0030: end of day

Visitors on site: n/a


Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: overcast, 50°F

Important telephone calls: n/a

Personnel on site: VTY

Signature: 

Date: 8/30/21

VTY

FIELD ACTIVITIES DAILY LOG

Date 8/3/12

Sheet 1 of 1

Project No. 102582-01

Project Name: AKN PFAS characterization

Field activity subject: finish-up tasks

Description of daily activities and events:

0800: prepare for day

0830: VM @ DOT drum storage area; start filtering drilling and decon water;

1100: ~~drum~~ filtering complete; clean up site and store GAC buckets and hoses in DOT building;

1130: start packing and preparing samples for shipment;

1330: arrive @ Alaska Air Cargo to send equipment back to Fairbanks and ship last batch of samples;

1430: drive to landfill to dispose of sampling waste;

1530: back @ airport to check in;

1540: fuel up truck and return it;

1640: flight departs King Salmon;

2030: arrive @ Fairbanks Airport;

Visitors on site: n/a

Changes from plans/specifications and other special orders and important decisions:

n/a

Weather conditions: partly cloudy, 55°F

Important telephone calls: n/a

Personnel on site: VM

Signature:

Date: 8/3/12

VM

FIELD ACTIVITIES DAILY LOG

Date 10/28/21

Sheet 1 of 1

Project No. 102582-011

Project Name: King Salmon DOT+PF PFAS

Field activity subject: IDW Management

Description of daily activities and events:

0800 RLW arrive a DOT Maintenance station, DOT staff (Olaf) says Floyd still out plowing and will return later.

0930 RLW meet w/ Floyd, 11 drums w/ filtered purge water stored outside behind MS. RLW, Floyd, + DOT staff move drums onto pallets w/ a forklift. Drums moved into trucks + taken to on-site location described in email.

Drums (11) dumped @ on-site location near gravel source. 2"-3" ice on surface of every drum

Soil drum contains a bag of surface soil, bucket of soil borings/cuttings from SB-01, -02, + 03, bucket w/ unknown labels (bucket frozen to drum), 3 soil jars labeled 21AKN-SB-05 (2-2.2') ~~38.5'-39'~~, 21AKN-SB-105, 21AKN SB 3-05 (38.5'-39) and bucket w/ drum precipitate. No sample collected

1200 Drum disposal complete. Drums stored in garage/warehouse on-site (where de-icing is stored)

12100 Arrive @ FAI

Visitors on site:

Changes from plans/specifications and other special orders and important decisions:

NO soil sample from drum.

Weather conditions: 30°F, slight wind, overcast

Important telephone calls:

Personnel on site:

Signature:

RLW

[Handwritten signature]

Date: 10/28/21

VTY

4

SOIL SAMPLE COLLECTION LOG

Project Number: 102582-04 Project Name: AKN PFAS Characterization Page 1 of 1  
 Date: 8/14/21 - 8/27/21  
 Sampler: VTY

Sample Number	Location	Sample Date	Sample Time	Depth (ft)	Sample Type	PID Reading	Analyses
21AKN-SB-02(0'-1')	Fire Training Area B	8/14/21	09:40	0-1	ES	0.1	PFAS, GRC, DRO, REC, PAH, STX
21AKN-SB-02(6'-7')	— // —		10:00	6-7	ES	0.8	
21AKN-SB-01(0'-1')	Fire Training Area A		11:50	0-1	ES	0.0	
21AKN-SB-01(6.5'-7.5')	— // —		12:05	6.5-7.5	ES	0.1	
21AKN-SB-10(6.5'-7.5')	Dup of 21AKN-SB-01(6.5'-7.5')		11:55	6.5-7.5	DUP	0.1	
21AKN-SB-03(0'-1')	Fire Training Area C		13:50	0-1	ES	1.6	
21AKN-SB-03(7.3'-7.8')	— // —		13:55	7.3-7.8	ES	1.6	
21AKN-SB-04(38.6'-39.3')	AC Store - deep boring	8/16/21	16:35	38.6-39.3	ES	—	PFAS x 18
21AKN-SB-04(12.1'-12.7')	AC Store - shallow boring	8/17/21	05:45	12.1-12.7	ES	0.1	PFAS   bottom of A aquifer
21AKN-SB-04(18.6'-19.3')	AC Store - shallow boring		03:50	18.6-19.3	ES	—	PFAS   top of B aquifer
21AKN-SB-04(63.7'-64.5')	AC store - deep boring		14:40	63.7-64.5	ES	—	PFAS   bottom of B aquifer
21AKN-SB-04(82'-82.6')	AC store - deep boring	8/18/21	10:20	82-82.6	ES	—	PFAS   top of C aquifer
21AKN-SB-04(87'-87.5')	AC store - deep boring	8/19/21	08:30	87-87.5	ES	—	PFAS   bottom? of C aquifer
21AKN-SB-05(3.1'-3.6')	Charlie's - deep boring	8/23/21	13:01	3.1-3.6	ES	—	PFAS   bottom of Aquifer
21AKN-SB-05(4.2'-4.7')	Charlie's - deep boring		12:55	4.2-4.7	ES	—	PFAS   top of B aquifer
<del>21AKN-SB-05(12.1'-12.7')</del>	<del>Charlie's - deep boring</del>	<del>8/23/21</del>	<del>13:05</del>	<del>12.1-12.7</del>	<del>ES</del>	<del>—</del>	<del>PFAS   bottom of B aquifer</del>
<del>21AKN-SB-05(18.6'-19.3')</del>	<del>Charlie's - shallow boring</del>	<del>8/23/21</del>	<del>03:50</del>	<del>18.6-19.3</del>	<del>ES</del>	<del>—</del>	<del>PFAS   top of B aquifer</del>
<del>21AKN-SB-05(63.7'-64.5')</del>	<del>Charlie's - deep boring</del>	<del>8/23/21</del>	<del>14:40</del>	<del>63.7-64.5</del>	<del>ES</del>	<del>—</del>	<del>PFAS   bottom of B aquifer</del>
<del>21AKN-SB-05(82'-82.6')</del>	<del>Charlie's - deep boring</del>	<del>8/23/21</del>	<del>10:20</del>	<del>82-82.6</del>	<del>ES</del>	<del>—</del>	<del>PFAS   top of C aquifer</del>
21AKN-SB-05(58'-63')	Charlie's - deep boring	8/24/21	10:30	58-63	ES	—	PFAS   bottom of B aquifer
21AKN-SB-105(58'-63')	Dup of 21AKN-SB-05(58'-63')		10:20	58-63	DUP	—	—
21AKN-SB-05(70'-70.5')	Charlie's deep boring	8/27/21	10:30	70-70.5	ES	—	PFAS   top of C aquifer
21AKN-SB-05(82.8'-83.3')	Charlie's deep boring		14:40	82.8-83.3	ES	—	PFAS   bottom of well

Sample Type FS = Field screening measurement only ES = Environmental sample FD = Field duplicate TB = Trip blank

VTY

## Surface SOIL SAMPLE COLLECTION LOG

Project Number: 102582      Project Name: AKN PFAS Characterization      Page 1 of 1

Date: 8-15-21

Sampler: VTY / JLD

Sample Number	Location	Sample Date	Sample Time	Depth (ft)	Sample Type	PID Reading	Analyses
21AKN-SS-01	DK Brown silt w/ sand	8-15-21	0849		SS	0.0	PFAS x 18
21AKN-SS-02	DK Brown silt w/ sand		0900		SS	0.1	
21AKN-SS-03	DK Brown Sand w/ silt - num. roots		0908			0.1	
21AKN-SS-04	Brown Sand w/ silt & gravel - occa. roots		0917			0.0	
21AKN-SS-05	Brown Sand w/ silt & gravel		0953			0.0	
21AKN-SS-06	Brown coarse Sand w/ silt & gravel		10:04			0.0	
21AKN-SS-07	SAME AS ABOVE		10:31			0.0	
21AKN-SS-08	Lt. Brown silt w/ gravel & trace sand		10:43			0.0	
21AKN-SS-09	DK. Brown silt w/ sand & gravel		10:55			0.0	
21AKN-SS-10a	SAME AS ABOVE		10:45			<del>0.0</del>	*DUP OF SS-09*
21AKN-SS-10	Red-brown & Lt. grey silt w/ sand		11:10			0.0	
21AKN-SS-11	Brown silt w/ sand & gravel		11:18			0.0	
21AKN-SS-12	SAME AS ABOVE		11:33			0.3	
21AKN-SS-13	SAME AS ABOVE		11:41			0.1	
21AKN-SS-14	SAME AS ABOVE		11:52			0.2	
21AKN-SS-15	DK. Gray silt w/ num roots & organics		12:17			0.2	
21AKN-SS-16	Brown sand w/ silt & gravel		12:37			0.0	
21AKN-SS-17	Brown silt w/ sand		12:52			10.9	
21AKN-SS-17a	SAME AS ABOVE		12:42			—	*DUP OF SS-17*
21AKN-SS-18	Brown Sand w/ silt		13:12			0.3	
21AKN-SS-19	DK. brown sand w/ silt		13:20			0.3	
21AKN-SS-20	Brown silt w/ sand		13:30			0.1	

Sample Type FS = Field screening measurement only    ES = Environmental sample    FD = Field duplicate    TB = Trip blank

VTY

### SURFACE WATER SAMPLE LOG

Date: 8-15-21 Project: AKN 102582-011

Field Investigators: JLD / VTY

Name of Water Body: SW-01

Location of Water Body: Intersection of N/S runway & Taxiway C

Type of Water Body: Culvert/standing

Sample Location: Mid. water body

Sample Number: 21AKN-SW-01

Sample Time: 09:30

Method of Collection: Solo Cup

\* Duplicate @ 09:20  
21AKN-SW-101

Temperature (°C): 10.5

pH: 6.91

Conductivity: 46.9

DO (mg/l): 52.1

Turbidity (NTU): - clear

Appearance: Clear

Analyses requested: PFAS x 18

Comments:

Product Observed?	Yes	<input type="radio"/>	<input checked="" type="radio"/> No
Product Collected?	Yes	<input type="radio"/>	<input checked="" type="radio"/> No

Checked By: VTY

VTY

SURFACE WATER SAMPLE LOG

Date: 8-15-21 Project: 102582-0M

Field Investigators: YD/VTY

Name of Water Body: SW-02

Location of Water Body: Fox creek S. of 1230

Type of Water Body: Culvert / creek

Sample Location: middle

Sample Number: 21AKN-SW-02 Sample Time: 10:12

Method of Collection: Grab

Temperature (°C): 8.8

pH: 6.75

Conductivity: 118.0

DO (mg/l): 74.8

Turbidity (NTU): -

Appearance: Clear w/ red hue

ORP: 160.2

Analyses requested: PFAS x 18

Comments:

Product Observed?	Yes	<input checked="" type="radio"/> No
Product Collected?	Yes	<input checked="" type="radio"/> No

Checked By: VTY

VTY

Handwritten mark on the right margin.



SURFACE WATER SAMPLE LOG

Date: 8-15-21 Project: 102582-011

Field Investigators: JLD/VTY

Name of Water Body: NW Intersection Main Runways

Location of Water Body: Surface Water SW-03

Type of Water Body: Water (standing) in ditch

Sample Location: middle

Sample Number: 21AKN-SW-03 Sample Time: 12:30

Method of Collection: Grab

Temperature (°C): 10.7

pH: 6.67

Conductivity: 118.0

DO (mg/l): 25.0

Turbidity (NTU): Clear

Appearance: Clear

Analyses requested:

Comments:

Product Observed?	Yes	<input checked="" type="radio"/> No	
Product Collected?	Yes	<input checked="" type="radio"/> No	

Checked By: VTY

VTY

### SURFACE WATER SAMPLE LOG

Date: 8-15-21	Project: 102582-011
Field Investigators: JLD / VTY	
Name of Water Body: Surface Water SW-04	
Location of Water Body: Culvert outside fence SE of Long Runway	
Type of Water Body: running water in channel	
Sample Location: center of channel	
Sample Number: 21AKN-SW-04	Sample Time: 16:21
Method of Collection: Grab	
Temperature (°C): 5.6	
pH: 6.67	
Conductivity: 142.3	
DO (mg/l): 23.0	
Turbidity (NTU): clear w/ red hue	
Appearance: " " "	
Analyses requested: PFAS x 18	
Comments:	
Product Observed?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Organic Sheen
Product Collected?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Checked By: VTY	







SURFACE WATER SAMPLE LOG

Date:	8/16/21	Project:	102582-011
Field Investigators:	JLD/VY		
Name of Water Body:	SW-08		
Location of Water Body:	upstream location of Red Fox Creek		
Type of Water Body:	culvert / creek		
Sample Location:	middle		
Sample Number:	21AKN-SW-08	Sample Time:	0900
Method of Collection:	grab		
Temperature (°C):	11.5		
pH:	6.40		
Conductivity:	174.7		
DO (mg/l):	11.3		
Turbidity (NTU):	clear		
Appearance:	red / orange staining		
Analyses requested:	PFAS x 18		
Comments:			
Product Observed?	Yes	<input checked="" type="radio"/> No	
Product Collected?	Yes	<input checked="" type="radio"/> No	

Checked By: VY

### SURFACE WATER SAMPLE LOG

Date: 8/29/21	Project: 102582-011		
Field Investigators: VTY			
Name of Water Body: 21AKN-SW-09			
Location of Water Body: intersection of 10-21 and Taxiway M			
Type of Water Body: shaft connecting culverts			
Sample Location: middle of water body			
Sample Number: 21AKN-SW-09	Sample Time: 1350		
Method of Collection: per. pump			
Temperature (°C): 9.48			
pH: 6.53			
Conductivity: 198			
DO (mg/l): 9.50			
Turbidity (NTU): clear			
Appearance: clear			
Analyses requested: PFAS x 18			
Comments:			
Product Observed?	Yes	<input checked="" type="radio"/> No	
Product Collected?	Yes	<input checked="" type="radio"/> No	
Checked By: VTY			

## MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>21AKN-MW-01</u>	Date Installed <u>8-14-21</u>
Project Name <u>AKN-PFAS-CHARACTERIZATION</u>	Logged By <u>JAMES DUTT</u>
Project Number <u>102582-011</u>	Driller <u>GEOTEK AK</u>

### I. TOP SECTION (CASING)

Initial Pipe Length 10.0'  
 Cutoff Length 6.3'  
 Add-on Length —

**Total Length** 3.7

### IV. WELL DATA

Pipe Type: PVC  SS  Other \_\_\_\_\_  
 Diameter: 2"  4"  Other \_\_\_\_\_  
 Slot Size: 0.01  0.02  Other \_\_\_\_\_  
 Joint Pin End: Up  Down  Type \_\_\_\_\_

### II. MID SECTION (CASING)

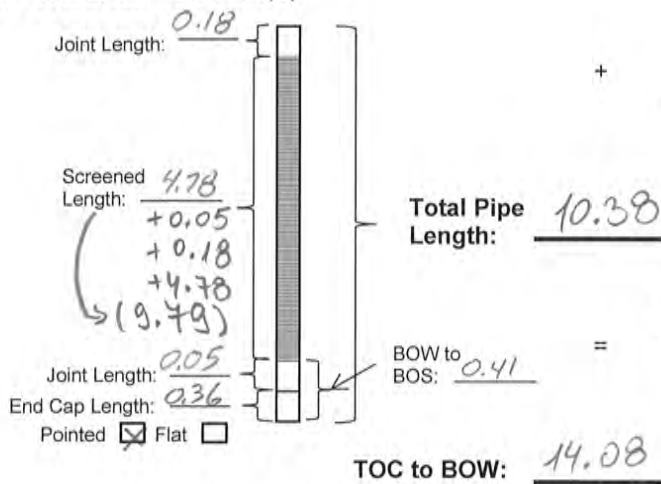
Number of Blank Sections —  
 Length of Section(s): \_\_\_\_\_


**Sum of Lengths:** —

### V. BACKFILL

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)		
CEM_PB	<u>1.5</u>	<u>6.5 (0.0')</u>
*SLUF_PB/FIL_PB		
BCH_PB	<u>3.5</u>	<u>1.5</u>
*SLUF_PB/FIL_PB		
BGR_PB		
*SLUF_PB/FIL_PB	<u>4.0</u>	<u>3.5'</u>
*SLUF_PS/FIL_PS	<u>14.0</u>	<u>4.0'</u>
*SLUF/FIL (No Pipe)		
*SLUF_PB/FIL_PB		
Filter Pack Type or Gradation	<u>20/40 SAND (Pre pack)</u>	

### III. SCREENED SECTION(S)



### VI. MONUMENTS

Stickup  Flushmount  Flush  
 TOM to GS \_\_\_\_\_  
 TOM to TOC -0.68  
 ^TOC to GS -0.68  
 Lock type no lock

### VII. MOISTURE CONTENT

Depth to Water Below GS 6.50

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1		
Seasonal 2		
Permafrost 1		
Permafrost 2		

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- \* Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

### VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 14.08  
 - BOW to BOS 0.41  
**= TOC to BOS** 13.67  
 TOC to BOS 13.67  
 - Screened Length 9.79  
**= TOC to TOS** 3.88

TOC to BOW	<u>14.08</u>
+TOC to GS	<u>0.68</u>
<b>BOW bgs</b>	<u>14.76</u>
TOC to TOS	<u>3.88</u>
+TOC to GS	<u>0.68</u>
<b>TOS bgs</b>	<u>4.56</u>
TOC to BOS	<u>13.67</u>
+TOC to GS	<u>0.68</u>
<b>BOS bgs</b>	<u>14.35</u>



### MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>21AKN-MW-02</u>	Date Installed <u>8-14-21</u>
Project Name <u>AKN-PEAS-CHARACTERIZATION</u>	Logged By <u>JAMES DUTT</u>
Project Number <u>102582-011</u>	Driller <u>GEOTEK AK / DAVE</u>

#### I. TOP SECTION (CASING)

Initial Pipe Length 10.0'  
 Cutoff Length 6.52  
 Add-on Length -

**Total Length** 3.48

#### II. MID SECTION (CASING)

Number of Blank Sections NA  
 Length of Section(s):


**Sum of Lengths:**                     

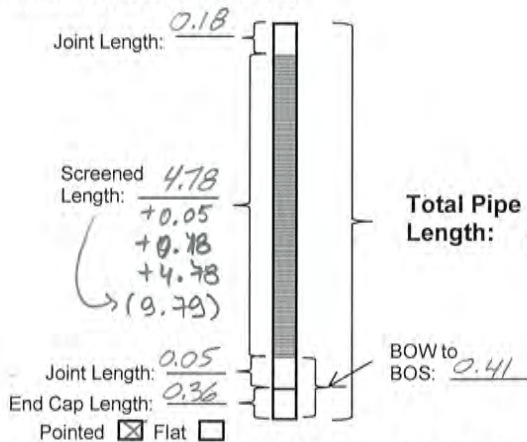
#### IV. WELL DATA

Pipe Type: PVC  SS  Other                       
 Diameter: 2"  4"  Other                       
 Slot Size: 0.01  0.02  Other                       
 Joint Pin End: Up  Down  Type                     

#### V. BACKFILL

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)	<u>0.8</u>	<u>0.0</u>
CEM_PB	<u>1.5</u>	<u><del>6.5 (0.0)</del> 0.8</u>
*SLUF_PB/FIL_PB		
BCH_PB	<u>3.5</u>	<u>1.5</u>
*SLUF_PB/FIL_PB		
BGR_PB		
*SLUF_PB/FIL_PB	<u>4.0</u>	<u>3.5</u>
*SLUF_PS/FIL_PS	<u>14.0</u>	<u>4.0</u>
*SLUF/FIL (No Pipe)		
*SLUF_PB/FIL_PB		
Filter Pack Type or Gradation	<u>20/40 SAND 10% PEAK</u>	

#### III. SCREENED SECTION(S)



#### VI. MONUMENTS

Stuckup  Flushmount  MOARIS INDUSTRIES  
 TOM to GS Flush 8" width / 3-Hole / 10" SLOTT  
 TOM to TOC -0.81 METAL  
 ^TOC to GS -0.81 SCRT  
 Lock type no lock

#### VII. MOISTURE CONTENT

Depth to Water Below GS 6.24

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1		
Seasonal 2		
Permafrost 1		
Permafrost 2		

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- \* Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

#### VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 13.86  
 - BOW to BOS 0.41  
 = **TOC to BOS** 13.45

TOC to BOS 13.45  
 - Screened Length 9.79  
 = **TOC to TOS** 3.66

TOC to BOW	<u>13.86</u>
+TOC to GS	<u>0.81</u>
<b>BOW bgs</b>	<u>14.67</u>
TOC to TOS	<u>3.66</u>
+TOC to GS	<u>0.81</u>
<b>TOS bgs</b>	<u>4.47</u>
TOC to BOS	<u>13.45</u>
+TOC to GS	<u>0.81</u>
<b>BOS bgs</b>	<u>14.26</u>

3/8" Holeplug  
Bentonite chips

16/30 Filter sand  
 SHANNON & WILSON, INC.

VM

### MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>21AKN-MW-03</u>	Date Installed <u>8-14-21</u>
Project Name <u>AKN-PEAS-CHARACTERIZATION</u>	Logged By <u>JAMES DUTT</u>
Project Number <u>102582-01</u>	Driller <u>GEOTEK AK/DAVE</u>

**I. TOP SECTION (CASING)**

Initial Pipe Length 10.0'  
 Cutoff Length 6.12  
 Add-on Length -  
**Total Length** 3.88

**IV. WELL DATA**

Pipe Type: PVC  SS  Other \_\_\_\_\_  
 Diameter: 2"  4"  Other \_\_\_\_\_  
 Slot Size: 0.01  0.02  Other \_\_\_\_\_  
 Joint Pin End: Up  Down  Type \_\_\_\_\_

**II. MID SECTION (CASING)**

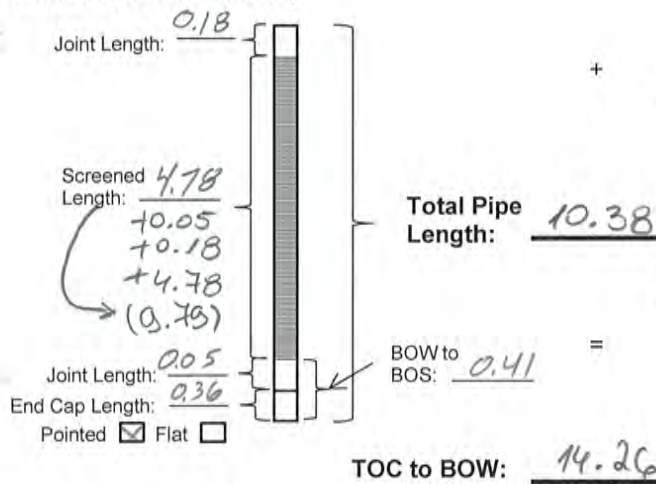
Number of Blank Sections -  
 Length of Section(s): \_\_\_\_\_


Sum of Lengths: -

**V. BACKFILL**

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)		
CEM_PB	<u>1.5</u>	<u>65 (0.0')</u>
*SLUF_PB/FIL_PB		
BCH_PB	<u>3.5</u>	<u>1.5'</u>
*SLUF_PB/FIL_PB		
BGR_PB		
*SLUF_PB/FIL_PB	<u>4.0</u>	<u>3.5'</u>
*SLUF_PS/FIL_PS	<u>14.0</u>	<u>4.0'</u>
*SLUF/FIL (No Pipe)		
*SLUF_PB/FIL_PB		
Filter Pack Type or Gradation	<u>20/40 SAND PRE-PACK</u>	

**III. SCREENED SECTION(S)**



**VI. MONUMENTS**

Stuckup  Flushmount   
 TOM to GS flush  
 TOM to TOC -0.69  
 ^TOC to GS -0.69  
 Lock type no pack

**VII. MOISTURE CONTENT**

Depth to Water Below GS 6.20  
 Frozen Soil Below GS  
 Bottom Top  
 Seasonal 1 \_\_\_\_\_  
 Seasonal 2 \_\_\_\_\_  
 Permafrost 1 \_\_\_\_\_  
 Permafrost 2 \_\_\_\_\_

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- \* Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

**VIII. CALCULATIONS BELOW GROUND SURFACE**

TOC to BOW 14.26  
 - BOW to BOS 0.41  
**= TOC to BOS** 13.85  
 TOC to BOS 13.85  
 - Screened Length 9.79  
**= TOC to TOS** 4.06

TOC to BOW	<u>14.26</u>
+TOC to GS	<u>0.69</u>
<b>BOW bgs</b>	<u>14.95</u>
TOC to TOS	<u>4.06</u>
+TOC to GS	<u>0.69</u>
<b>TOS bgs</b>	<u>4.75</u>
TOC to BOS	<u>13.85</u>
+TOC to GS	<u>0.69</u>
<b>BOS bgs</b>	<u>14.54</u>

## MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>21AKN-MW-04-45</u>	Date Installed <u>8-22-21</u>
Project Name <u>AKN PFAS Characterization</u>	Logged By <u>James Ditt</u>
Project Number <u>102582-011</u>	Driller <u>8-21-20</u>

### I. TOP SECTION (CASING)

Initial Pipe Length 10  
 Cutoff Length 7.93  
 Add-on Length       
**Total Length** 2.07

### IV. WELL DATA

Pipe Type: PVC  SS  Other       
 Diameter: 2"  4"  Other       
 Slot Size: 0.01  0.02  Other       
 Joint Pin End: Up  Down  Type     

### II. MID SECTION (CASING)

Number of Blank Sections 4  
 Length of Section(s):

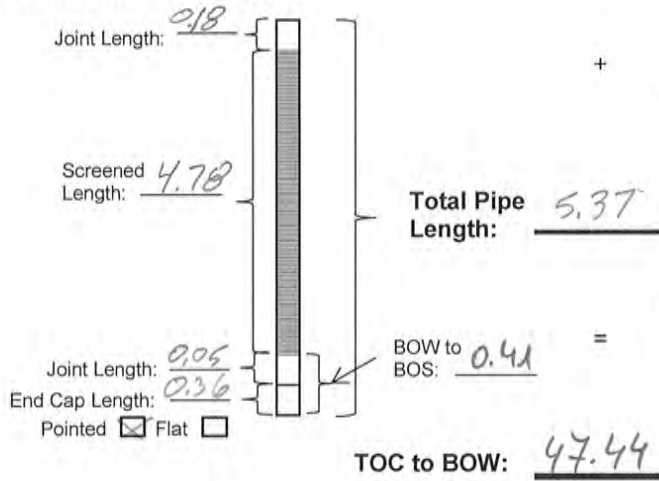
<u>4x 10ft</u>			

**Sum of Lengths:** 40

### V. BACKFILL

	Depth Below GS		
	Bottom	Top	
CEM (No Pipe)			
CEM_PB	<u>1</u>	<u>0</u>	
*SLUF_PB/FIL_PB			
BCH_PB			
*SLUF_PB/FIL_PB	<u>7</u>	<u>1</u>	Pea Gravel
BGR_PB	<u>19</u>	<u>7</u>	Pea-Plug
*SLUF_PB/FIL_PB	<u>38</u>	<u>19</u>	Nat. Collapse
*SLUF_PS/FIL_PB	<u>40</u>	<u>38</u>	Sand Pack
*SLUF/FIL (No Pipe)			
*SLUF_PB/FIL_PB	<u>45</u>	<u>40</u>	sand pack
Filter Pack Type or Gradation	<u>20/40 SAND PRE-PACK</u>		

### III. SCREENED SECTION(S)



### VI. MONUMENTS

Stickup  Flushmount   
 TOM to GS 3.18  
 TOM to TOC 0.65  
 ^TOC to GS 2.53  
 Lock type Master Lock 2001

### VII. MOISTURE CONTENT

Depth to Water Below GS 14.68

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1		
Seasonal 2		
Permafrost 1		
Permafrost 2		

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- \* Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

### VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 47.44  
 - BOW to BOS 0.41  
**= TOC to BOS** 47.03  
 TOC to BOS 47.03  
 - Screened Length 4.78  
**= TOC to TOS** 42.25

TOC to BOW	<u>47.44</u>
- TOC to GS	<u>2.53</u>
<b>BOW bgs</b>	<u>44.91</u>
TOC to TOS	<u>42.25</u>
- TOC to GS	<u>2.53</u>
<b>TOS bgs</b>	<u>39.72</u>
TOC to BOS	<u>47.03</u>
- TOC to GS	<u>2.53</u>
<b>BOS bgs</b>	<u>44.50</u>

4/9/2020

VW

BOW @ 45'  
 Sand to 38'  
 collapse 39-19'  
 19'-7' Pea Plug (casted Bentonite)  
 7'-GS Pea gravel

SHANNON & WILSON, INC.

Well No.

21AKN-MW-04-45

### MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>21AKN-MW-04-85</u>	Date Installed <u>8-20-21</u>
Project Name <u>ACN PFAS Characterization</u>	Logged By <u>JAMES DUTT</u>
Project Number <u>102582-011</u>	Driller <u>Geotek AK - Dave</u>

#### I. TOP SECTION (CASING)

Initial Pipe Length 10  
 Cutoff Length 8.25  
 Add-on Length -  
**Total Length** 1.75

#### IV. WELL DATA

Pipe Type: PVC  SS  Other \_\_\_\_\_  
 Diameter: 2"  4"  Other \_\_\_\_\_  
 Slot Size: 0.01  0.02  Other \_\_\_\_\_  
 Joint Pin End: Up  Down  Type \_\_\_\_\_

#### II. MID SECTION (CASING)

Number of Blank Sections 8  
 Length of Section(s):

<u>8 x 10 FT</u>	

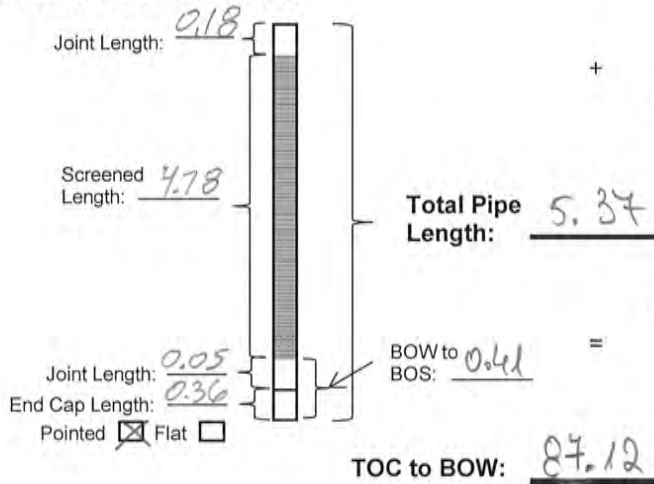
Sum of Lengths: 80

#### V. BACKFILL

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)		
CEM_PB	<u>1</u>	<u>0</u>
*SLUF_PB/FIL_PB	<u>-</u>	<u>-</u>
BCH PB	<u>-</u>	<u>-</u>
*SLUF_PB/FIL_PB	<u>15</u>	<u>1</u>
BGR PB	<u>77</u>	<u>15</u>
*SLUF_PB/FIL_PB	<u>79</u>	<u>77</u>
*SLUF_PS/FIL_PS	<u>85</u>	<u>79</u>
SLUF/FIL (No Pipe)	<u>95</u>	<u>85</u>
*SLUF_PB/FIL_PB	<u>-</u>	<u>-</u>
Filter Pack Type or Gradation	<u>20/40 SAND PAF-PACK</u>	

*pea gravel per plug*

#### III. SCREENED SECTION(S)



#### VI. MONUMENTS

Stuckup  Flushmount   
 TOM to GS 3.27  
 TOM to TOC 0.50  
 ^TOC to GS 2.77  
 Lock type Master Lock 2001

#### VII. MOISTURE CONTENT

Depth to Water Below GS 13.83

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1		
Seasonal 2		
Permafrost 1		
Permafrost 2		

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- \* Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

#### VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 87.12  
 - BOW to BOS 0.41  
**= TOC to BOS** 86.71  
 TOC to BOS 86.71  
 - Screened Length 4.78  
**= TOC to TOS** 81.93

TOC to BOW	<u>87.12</u>
- TOC to GS	<u>2.77</u>
<b>BOW bgs</b>	<u>84.35</u>
TOC to TOS	<u>81.93</u>
- TOC to GS	<u>2.77</u>
<b>TOS bgs</b>	<u>79.16</u>
TOC to BOS	<u>86.71</u>
- TOC to GS	<u>2.77</u>
<b>BOS bgs</b>	<u>83.94</u>

- 5-FT Screen  
 - During collapsed 95-85  
 as casing was pulled

- Screened 84-79  
 - Sand pack 79-77  
 - Pel-Plug 77-60  
 60-15  
 15-

16-30 Filter Sand

Well No. 21AKN-MW-04-8

### MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>21AKN-MW-05-83</u>	Date Installed <u>8/27/21</u>
Project Name <u>AKN PFAS characterization</u>	Logged By <u>VTT</u>
Project Number <u>102582-011</u>	Driller <u>GeoTek - David North</u>

#### I. TOP SECTION (CASING)

Initial Pipe Length 10  
 Cutoff Length 2.63  
~~Add-on Length~~  
**Total Length** 7.37

#### IV. WELL DATA

Pipe Type: PVC  SS  Other \_\_\_\_\_  
 Diameter: 2"  4"  Other \_\_\_\_\_  
 Slot Size: 0.01  0.02  Other \_\_\_\_\_  
 Joint Pin End: Up  Down  Type \_\_\_\_\_

#### II. MID SECTION (CASING)

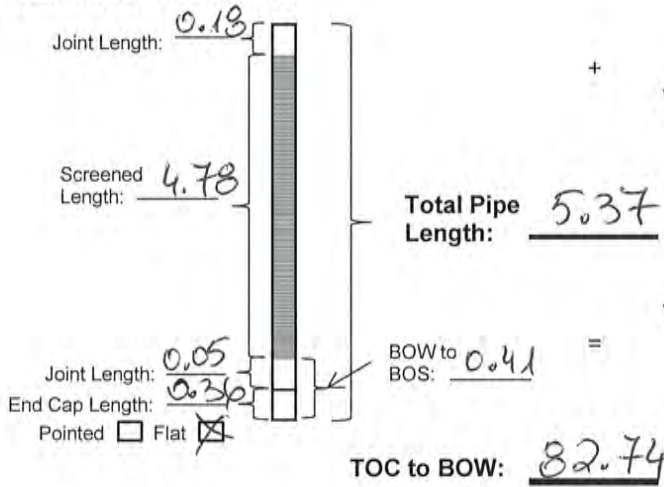
Number of Blank Sections 7 x 10  
 Length of Section(s):


Sum of Lengths: 70

#### V. BACKFILL

	Bottom	Top	
CEM (No Pipe)	<u>0.54</u>	<u>0</u>	
CEM_PB	<u>1.5</u>	<u>0.5</u>	+ per gravel
BCH - PB SLUF_PB/FIL_PB	<u>3.9</u>	<u>1.5</u>	chips
BCH_PB	<u>58</u>	<u>39</u>	pellets
*SLUF_PB/FIL_PB	<u>62</u>	<u>58</u>	
BGR_PB	<u>75</u>	<u>62</u>	pellets
*SLUF_PB/FIL_PB	<u>78</u>	<u>75</u>	
*SLUF_PS/FIL_PS	<u>83</u>	<u>78</u>	
*SLUF/FIL (No Pipe)	<u>86</u>	<u>83</u>	
*SLUF_PB/FIL_PB	-	-	
Filter Pack Type or Gradation	<u>20/40 sand</u>		

#### III. SCREENED SECTION(S)



#### VI. MONUMENTS

Stuckup  Flushmount  flush  
 TOM to GS \_\_\_\_\_  
 TOM to TOC -0.37  
 ^TOC to GS -0.37  
 Lock type no lock

#### VII. MOISTURE CONTENT

Depth to Water Below GS 1.35  
 Frozen Soil Below GS  
 Bottom \_\_\_\_\_ Top \_\_\_\_\_  
 Seasonal 1 \_\_\_\_\_  
 Seasonal 2 \_\_\_\_\_  
 Permafrost 1 \_\_\_\_\_  
 Permafrost 2 \_\_\_\_\_

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- \* Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

#### VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW	<u>82.74</u>
+ TOC to GS	<u>0.37</u>
<b>BOW bgs</b>	<u>83.11</u>
TOC to TOS	<u>77.55</u>
+ TOC to GS	<u>0.37</u>
<b>TOS bgs</b>	<u>77.92</u>
TOC to BOS	<u>82.33</u>
+ TOC to GS	<u>0.37</u>
<b>BOS bgs</b>	<u>82.70</u>

## MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. <u>21AXN-MW-05-15</u>	Date Installed <u>8/26/21</u>
Project Name <u>102582-011</u>	Logged By <u>VJY</u>
Project Number <u>ALN PFAS characterization</u>	Driller <u>Cartek</u>

### I. TOP SECTION (CASING)

Initial Pipe Length 10  
 Cutoff Length 0.401  
 Add-on Length —  
**Total Length** 9.59

### IV. WELL DATA

Pipe Type: PVC  SS  Other \_\_\_\_\_  
 Diameter: 2"  4"  Other \_\_\_\_\_  
 Slot Size: 0.01  0.02  Other \_\_\_\_\_  
 Joint Pin End: Up  Down  Type \_\_\_\_\_

### II. MID SECTION (CASING)

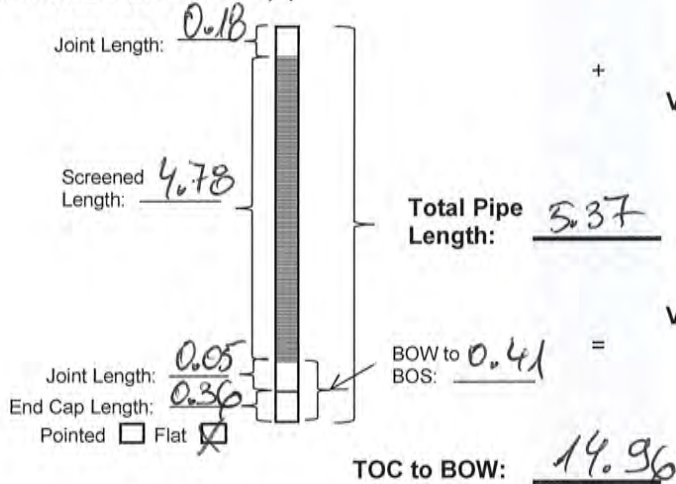
Number of Blank Sections n/a  
 Length of Section(s): \_\_\_\_\_


Sum of Lengths: —

### V. BACKFILL

	Depth Below GS	
	Bottom	Top
CEM (No Pipe)	<u>0.5</u>	<u>0</u>
CEM_PB	<u>15</u>	<u>0.5</u>
*SLUF_PB/FIL_PB		
BCH_PB		
*SLUF_PB/FIL_PB		
<del>BGR_PB</del>	<u>8</u>	<u>1.5</u>
*SLUF_PB/FIL_PB	<u>10</u>	<u>8</u>
*SLUF_PS/FIL_PS	<u>15</u>	<u>10</u>
*SLUF/FIL (No Pipe)		
*SLUF_PB/FIL_PB		
Filter Pack Type or Gradation	<u>20/40 sand</u>	

### III. SCREENED SECTION(S)



### VI. MONUMENTS

Stickup  Flushmount  flush  
 TOM to GS \_\_\_\_\_  
 TOM to TOC -0.5  
 ^TOC to GS -0.5  
 Lock type no lock

### VII. MOISTURE CONTENT

Depth to Water Below GS 3.55

	Frozen Soil Below GS	
	Bottom	Top
Seasonal 1		
Seasonal 2		
Permafrost 1		
Permafrost 2		

- BCH = Bentonite Chips (gINT code)
- BGR = Bentonite Grout (gINT code)
- bgs = Below Ground Surface
- BOS = Bottom of Screen
- BOW = Bottom of Well
- CEM = Cement (gINT code)
- FIL = Sand Pack (gINT code)
- GS = Ground Surface
- SLUF = Natural Collapse/ Pea Gravel (gINT code)
- SS = Stainless Steel
- TOC = Top of Casing
- TOM = Top of Monument
- TOS = Top of Screen
- PB = Blank Pipe (gINT code)
- PS = Slotted Pipe (gINT code)
- \* Circle filter-pack type
- ^ Flushmount = Negative Number
- Stickup = Positive Number

### VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW 14.96  
 - BOW to BOS 0.41  
 = TOC to BOS 14.55  
 TOC to BOS 14.55  
 - Screened Length 4.78  
 = TOC to TOS 9.77

TOC to BOW	<u>14.96</u>
+ TOC to GS	<u>0.50</u>
<b>BOW bgs</b>	<u>15.46</u>
TOC to TOS	<u>9.77</u>
+ TOC to GS	<u>0.50</u>
<b>TOS bgs</b>	<u>10.27</u>
TOC to BOS	<u>14.55</u>
+ TOC to GS	<u>0.50</u>
<b>BOS bgs</b>	<u>15.05</u>

## WELL DEVELOPMENT LOG

Owner-Client AKN DOT  
 Location AKN  
 Weather overcast, 50°F  
 Development Personnel VTY, JLD

Well No. 21AKN-MW-01  
 Project No. 1025B2-011  
 Date 8/21/21

Diameter and Type of Casing: 2" PVC  
 Total Depth of Well **Before** Development (feet below top of casing): 13.87  
 Depth to Water **Before** Development (feet below top of casing): 6.50  
 Depth to Screen Top and Bottom (from Construction Log): Top: 4.56 Bottom: 14.35

### Development Details

Feet of water in well 7.37 Time pumping started 1035  
 Gallons per foot 0.17 Flow rate (gal/min) 0.95  
 Gallons in well 1.25 Flow-rate measurement method: 8 oz bottle  
 Surge method surge and purge  
 Pump used Head Monsoon Time pumping ended 1130  
 Tubing used (ft) Tri Poly 20 ft. Gallons Pumped 52.25  
 Disposal: BAC → drum

Depth to Water **After** Development (feet below top of casing): 6.52  
 Total Depth of Well **After** Development (feet below top of casing): 14.05

### Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
1038	turbid, grey → surging	1118	cloudy → surging
1042	slightly turbid → surging	1119	turbid, brown
1047	slightly turbid → surging	1125	cloudy
1053	lowered 1 ft. → very turbid	1130	clear
1058	slightly turbid → surging		
1101	turbid, brown		
1106	slightly turbid → surging		
1107	v. turbid, brown		
1112	slightly turbid → surging		
1113	turbid, brown		

NOTES: clearing up ~ 5 min after surging

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

VTY

## WELL DEVELOPMENT LOG

Owner-Client AKN DOT  
 Location AKN  
 Weather overcast, 45°F  
 Development Personnel VTY, JLD

Well No. 21AKN-MW-02  
 Project No. 102582-011  
 Date 10/21/21

Diameter and Type of Casing: 2" PVC  
 Total Depth of Well **Before** Development (feet below top of casing): 13.84  
 Depth to Water **Before** Development (feet below top of casing): 6.24  
 Depth to Screen Top and Bottom (from Construction Log): Top: 4.47 Bottom: 14.26

### Development Details

Feet of water in well <u>7.6</u>	Time pumping started <u>0905</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>0.8</u>
Gallons in well <u>1.3</u>	Flow-rate measurement method: <u>6 oz bottle</u>
Surge method <u>surge and purge</u>	Time pumping ended <u>1015</u>
Pump used <u>Mega Monsoon</u>	Gallons Pumped <u>53</u>
Tubing used (ft) <u>TRW Poly 2017</u>	Disposal: <u>GAC and drum</u>

Depth to Water **After** Development (feet below top of casing): 6.27  
 Total Depth of Well **After** Development (feet below top of casing): 13.83

### Observations

Time	Water Clarity (Visual)		Time	Water Clarity (Visual)
0908	turbid brown			
0918	<del>turbid brown</del> turbid			
0928	turbid brown			
0938	turbid brown			
0945	turbid brown			
0950	turbid brown			
1000	clear			

NOTES: clears up for ~ 10 min after surging

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	<u>2</u>	3	4	6	8
Gallons per lineal foot	0.08	<u>0.17</u>	0.38	0.66	1.5	2.6

VTY



## WELL DEVELOPMENT LOG

Owner-Client <u>AKN DOT</u>	Well No. <u>21AKN-MW-03</u>
Location <u>AKN</u>	Project No. <u>102582-011</u>
Weather <u>overcast, 55°F</u>	Date <u>8/21/21</u>
Development Personnel <u>VY, JLD</u>	

Diameter and Type of Casing: 2" PVC

Total Depth of Well **Before** Development (feet below top of casing): 14.24

Depth to Water **Before** Development (feet below top of casing): 6.20

Depth to Screen Top and Bottom (from Construction Log): Top: 4.75 Bottom: 14.54

### Development Details

Feet of water in well <u>8.04</u>	Time pumping started <u>1330</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>0.7</u>
Gallons in well <u>1.37</u>	Flow-rate measurement method: <u>8 oz bottles</u>
Surge method <u>surge and purge</u>	Time pumping ended <u>1445</u>
Pump used <u>Mega Monsoon</u>	Gallons Pumped <u>52.5</u>
Tubing used (ft) <u>Tru Poly 20ft.</u>	Disposal: <u>GAC → drum</u>

Depth to Water **After** Development (feet below top of casing): 6.31

Total Depth of Well **After** Development (feet below top of casing): 14.24

### Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
1332	v. turbid, dark brown	1415	surging; turbid, brown
1335	slightly turbid → surging	1416	slightly turbid, brown → surging
1336	v. turbid	1435	cloudy; brown line
1340	clear → surging (lowered)	1445	clear
1341	chocolate brown turbid		
1351	slightly turbid → surging		
1352	turbid, brown		
1358	slightly turbid → surging		
1359	lowered to bottom, v. turbid		
1408	turbid		

NOTES: \_\_\_\_\_

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

## WELL DEVELOPMENT LOG

Owner-Client <u>DOT &amp; PF, AKN</u>	Well No. <u>21AKN-MW-04-45</u>
Location <u>AC Store</u>	Project No. <u>102582-011</u>
Weather <u>overcast</u>	Date <u>8/22/21</u>
Development Personnel <u>VJY, JLD</u>	

Diameter and Type of Casing: 2" PVC

Total Depth of Well **Before** Development (feet below top of casing): 47.44

Depth to Water **Before** Development (feet below top of casing): 14.68

Depth to Screen Top and Bottom (from Construction Log): Top: 33.72 Bottom: 44.50

### Development Details

Feet of water in well <u>32.76</u>	Time pumping started <u>1325</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>0.65</u>
Gallons in well <u>5.57</u>	Flow-rate measurement method: <u>8 oz bottle</u>
Surge method <u>surge and purge</u>	Time pumping ended <u>1550</u>
Pump used <u>Mega Monsoon</u>	Gallons Pumped <u>55</u>
Tubing used (ft) <u>Trl Poly 60ft.</u>	Disposal: <u>GAC → drum</u>

Depth to Water **After** Development (feet below top of casing): 14.76

Total Depth of Well **After** Development (feet below top of casing): 47.44

### Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
1330	v. turbid brown	1421	v. turbid brown
1340	turbid brown → surging	1435	turbid brown
1342	v. turbid brown	1440	slightly turbid
1350	slightly turbid → surging	1450	cloudy
1351	v. turbid brown		
1405	slightly turbid → surging		
1407	turbid brown		
1413	slightly turbid brown → surge		
1414	v. turbid brown		
1420	slightly turbid → surging		

NOTES: \_\_\_\_\_

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

VJY

## WELL DEVELOPMENT LOG

Owner-Client <u>DOT RPF, AKN</u>	Well No. <u>21AKN-MW-04-85</u>
Location <u>AC Store</u>	Project No <u>102582-011</u>
Weather <u>rain, 50°F</u>	Date <u>8/22/21</u>
Development Personnel <u>VTY, JLD</u>	

Diameter and Type of Casing: 2" PVC

Total Depth of Well **Before** Development (feet below top of casing): 87.85

Depth to Water **Before** Development (feet below top of casing): 13.83

Depth to Screen Top and Bottom (from Construction Log): Top: 79.16 Bottom: 83.94

### Development Details

Feet of water in well <u>74.02</u>	Time pumping started <u>0940</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>0.6</u>
Gallons in well <u>12.5</u>	Flow-rate measurement method: <u>8 oz cup</u>
Surge method <u>surge and purge</u>	Time pumping ended <u>1310</u>
Pump used <u>Mega Monsoon</u>	Gallons Pumped <u>110</u>
Tubing used (ft) <u>1/2" Poly 100 ft.</u>	Disposal: <u>GAC -&gt; drum</u>

Depth to Water **After** Development (feet below top of casing): 13.75 (and coming up)

Total Depth of Well **After** Development (feet below top of casing): 87.95

### Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
0940	v. turbid, grey	1140	turbid, grey
0950	v. turbid, grey -> surging	1310	turbid, grey
1007	turbid, grey		
1010	turbid, grey -> surging		
1012	v. turbid, grey		
1020	turbid, grey		
1040	turbid, grey -> surging		
1050	v. turbid, grey		
1100	car battery died		
1130	pump restarted; v. turbid, grey		

NOTES: 10:10 water @ 18.40

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

## WELL DEVELOPMENT LOG

Owner-Client <u>AKN DOT</u>	Well No. <u>21AKN-MW-05-15</u>
Location <u>Charlie's Sport Shop</u>	Project No. <u>102582-011</u>
Weather <u>clear 40°F</u>	Date <u>8/28/21</u>
Development Personnel <u>VTT</u>	

Diameter and Type of Casing: 2" PVC

Total Depth of Well **Before** Development (feet below top of casing): 14.55

Depth to Water **Before** Development (feet below top of casing): 3.55

Depth to Screen Top and Bottom (from Construction Log): Top: 10.27 Bottom: 15.05

### Development Details

Feet of water in well <u>11</u>	Time pumping started <u>1030</u>
Gallons per foot <u>0.17</u>	Flow rate (gal/min) <u>0.625</u>
Gallons in well <u>1.87</u>	Flow-rate measurement method: <u>8oz bottle</u>
Surge method <u>surge and purge</u>	Time pumping ended <u>1140</u>
Pump used <u>Mega Henscon</u>	Gallons Pumped <u>44</u>
Tubing used (ft) <u>Tri Poly 20ft.</u>	Disposal: <u>GAC → drum</u>

Depth to Water **After** Development (feet below top of casing): 3.56

Total Depth of Well **After** Development (feet below top of casing): 14.57

### Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
1035	turbid → surging	1110	slightly turbid, grey → surging
1036	v. turbid, grey	1111	turbid, grey
1042	cloudy, grey → surging	1121	cloudy
1043	turbid, grey	1140	clear
1047	cloudy, grey → lower and surge		
1048	v. turbid, grey		
1057	clear → surging		
1058	turbid, grey		
1105	slightly turbid, grey → lower and surge		
1106	v. turbid, grey		

NOTES: \_\_\_\_\_

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

## WELL DEVELOPMENT LOG

Owner-Client DOT AKN Well No. 21AKN-MW-05-83  
 Location AKN, Charlie's Sport Shop Project No. 102583-011  
 Weather sunny 60°F Date 8/28/21  
 Development Personnel VY

Diameter and Type of Casing: 2" pvc  
 Total Depth of Well **Before** Development (feet below top of casing): 83.35  
 Depth to Water **Before** Development (feet below top of casing): 1.35  
 Depth to Screen Top and Bottom (from Construction Log): Top: 77.92 Bottom: 82.70

### Development Details

Feet of water in well 82.00 Time pumping started 1450  
 Gallons per foot ~~0.17~~ 0.17 Flow rate (gal/min) 0.65  
 Gallons in well 13.94 Flow-rate measurement method: 8 oz bottle  
 Surge method surge & purge  
 Pump used Mega Monsoon Time pumping ended 1718  
 Tubing used (ft) Tau Poly 100ft. Gallons Pumped 96  
 Disposal: GAC → drum

Depth to Water **After** Development (feet below top of casing): 0.51  
 Total Depth of Well **After** Development (feet below top of casing): 83.55

### Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)
1450	v. turbid, grey	1545	turbid → surge
1500	v. turbid, grey → surge	1547	v. turbid, grey
1505	v. turbid	1620	turbid → surge
1515	v. turbid	1623	v. turbid, grey
1520	turbid → surge (+ lower)	1653	turbid
1521	v.v. turbid	1703	turbid
1525	turbid → surge	1716	turbid
1526	v. turbid		
1531	turbid → lower → surge		
1532	v.v. turbid		

NOTES: 0.37 TOC to TOM

### WELL CASING VOLUMES

Diameter of Well (ID-inches)	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

## MONITORING WELL SAMPLING LOG

Owner/Client AKN DOT  
 Location AKN  
 Sampling Personnel VY JLD  
 Weather Conditions rain Air Temp. (°F) 50

Project No. 102582-011  
 Date 8/25/21  
 Well 21AKN-MW-01  
 Time started 1420  
 Time completed 1535

Sample No. 21AKN-MW-01 Time 1508  
 Duplicate 21AKN-MW-101 Time 1458  
 Equipment Blank 21AKN-EB-03 Time 1800

Purging Method Mega Monsoon  
 Pumping Start 1440  
 Purge Rate (gal./min.) 0.3  
 Pumping End 1508  
 Pump Set Depth Below MP (ft.) 12  
 Tubing (ft.) 20

Diameter and Type of Casing 2" PVC  
 Approximate Total Depth of Well Below MP (ft.) 15  
 Measured Total Depth of Well Below MP (ft.) 14.05  
 Depth to Water Below MP (ft.) 6.55  
 Depth to Ice (if frozen) Below MP (ft.) -  
 Feet of Water in Well 7.5  
 Gallons per foot 0.17  
 Gallons in Well 1.275  
 Purge Water Volume (gal.) 8  
 Purge Water Disposal GAC -> drum

Monument Condition good  
 Casing Condition good

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup Flushmount

Top-of-casing to monument (ft.) 0.68  
 Monument to ground surface (ft.) flush

- Lock present and operational n/a
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes 3.8 gal for 3 well volumes

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

VY

JLD

Well No.  
21AKN-MW-01

# MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI pro plus D      Circle: Parameters stabilized      >3 Well volume purged  
 Sample Observations \_\_\_\_\_  
 Notes \_\_\_\_\_

## FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 0.2 °C]	Dissolved Oxygen (mg/L) [± 10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10mV]	Turbidity (±10%)
1447	7.9	11.1	138.8	6.30	219.3	clear
1450	8.7	11.7	144.8	6.28	215.4	
1453	8.5	10.7	148.0	6.30	212.1	
1456	7.9	13.0	145.0	6.30	211.5	
1459	7.9	14.1	141.8	6.32	210.9	
1502	7.8	15.0	140.9	6.33	209.4	↓
1505	8.0	15.4	140.5	6.35	209.1	↓
1508	sample					

Laboratory SGS ; Test America

Analysis	Sample Containers	Preservatives
<input type="checkbox"/> PFCs WS-LC-0025	<del>2x250 ml</del>	<del>none</del>
<input checked="" type="checkbox"/> PFAS/PFOA WS-LC-0025	2x250 mL	none
<input checked="" type="checkbox"/> DRO AK 102 /RRO	2x250mL amber	HCl
<input checked="" type="checkbox"/> GRO	2x40mL vial	HCC
<input checked="" type="checkbox"/> BTEX	2x40mL vial	HCC
<input checked="" type="checkbox"/> PAH	2x250mL amber	none

VY

VY

# MONITORING WELL SAMPLING LOG

Owner/Client AKN DOT  
 Location AKN  
 Sampling Personnel VTY, JLD  
 Weather Conditions rain Air Temp. (°F) 50

Project No. 102582-011  
 Date 8/25/21  
 Well 21AKN-MW-02  
 Time started 1545  
 Time completed 1645

Sample No. 21AKN-MW-02 Time 1618  
 Duplicate — Time —  
 Equipment Blank 21AKN-EB-03 Time 1800

Pump Mega Hanson  
 Purging Method portable / dedicated pump  
 Pumping Start 1600  
 Purge Rate (gal./min.) 0.1  
 Pumping End 1618  
 Pump Set Depth Below MP (ft.) 12  
 KuriTec Tubing (ft.) —  
 TruPoly Tubing (ft.) 20

Diameter and Type of Casing 2" PVC  
 Approximate Total Depth of Well Below MP (ft.) 15  
 Measured Total Depth of Well Below MP (ft.) 13.83  
 Depth to Water Below MP (ft.) 6.27  
 Depth to Ice (if frozen) Below MP (ft.) —  
 Feet of Water in Well 7.56  
 Gallons per foot 0.17  
 Gallons in Well 1.3  
 Purge Water Volume (gal.) 1.8  
 Purge Water Disposal GAC → drum

Monument Condition good  
 Casing Condition good  
 Wiring Condition —  
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount  
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.81 Datalogger type n/a  
 Monument to ground surface (ft.) flush Datalogger serial # n/a  
 Measured cable length (ft.) n/a

- Lock present and operational n/a
- Well name legible on outside of well
- Evidence of frost-jacking —

Notes \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

VTY

Well No.  
21AKN-MW-02



### MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI Pro D Circle one: Parameters stabilized or >3 well volumes purged

Sample Observations \_\_\_\_\_

Notes \_\_\_\_\_

#### FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1603	7.6	29.9	77.5	6.35	230.9	clear
1606	7.8	28.7	78.1	6.33	227.6	clear
1609	7.9	27.7	78.3	6.32	225.3	clear
1612	7.9	27.9	78.0	6.32	224.0	clear
1615	8.0	28.3	78.2	6.32	222.3	clear
1618	sample					

Laboratory SGS

Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/> PFASx18	2x 250mL	none	<input type="checkbox"/>
<input checked="" type="checkbox"/> DRORRO	2x 250mL amber	HCC	<input type="checkbox"/>
<input checked="" type="checkbox"/> GRO	3x 40 mL voa	HCC	<input type="checkbox"/>
<input checked="" type="checkbox"/> BTX	3x 40 mL voa	HCC	<input type="checkbox"/>
<input checked="" type="checkbox"/> PAH	2x 250 mL amber	none	<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

V14

# MONITORING WELL SAMPLING LOG

Owner/Client AKN DOT  
 Location AKN  
 Sampling Personnel VTY JLD  
 Weather Conditions overcast Air Temp. (°F) 50

Project No. 102582-011  
 Date 8/25/21  
 Well 21AKN-MW-03  
 Time started 1650  
 Time completed 1730

Sample No. 21AKN-MW-03 Time 1720  
 Duplicate — Time —  
 Equipment Blank 21AKN-EB-03 Time 1800

Pump Mega Monsoon  
 Purging Method portable / dedicated pump  
 Pumping Start 1705  
 Purge Rate (gal./min.) 0.1  
 Pumping End 1720  
 Pump Set Depth Below MP (ft.) 12.5  
 KuriTec Tubing (ft.) —  
 TruPoly Tubing (ft.) 20

Diameter and Type of Casing 2" PVC  
 Approximate Total Depth of Well Below MP (ft.) 15  
 Measured Total Depth of Well Below MP (ft.) 14.25  
 Depth to Water Below MP (ft.) 6.22  
 Depth to Ice (if frozen) Below MP (ft.) —  
 Feet of Water in Well 8.03  
 Gallons per foot 0.17  
 Gallons in Well 1.36  
 Purge Water Volume (gal.) 1.5  
 Purge Water Disposal GAC → drum

Monument Condition good  
 Casing Condition good  
 Wiring Condition —  
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount  
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.69 Datalogger type n/a  
 Monument to ground surface (ft.) Flush Datalogger serial # n/a  
 Measured cable length (ft.) n/a

- Lock present and operational n/a
- Well name legible on outside of well
- Evidence of frost-jacking —

Notes \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

VTY

Well No.  
21AKN-MW-03

# MONITORING WELL SAMPLING LOG

Field Parameter Instrument  
Sample Observations  
Notes

YSI D

Circle one: Parameters stabilized or >3 well volumes purged

## FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1705	7.3	2.7	193.2	6.05	131.0	clear, brown stain
1708	7.7	2.4	193.0	6.09	122.0	↓
1711	7.8	2.2	192.7	6.11	116.2	
1714	7.9	2.1	193.1	6.13	110.8	
1717	7.9	2.1	193.2	6.13	109.1	
1720	sample					

Laboratory SGS

Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/> PFASx18	2x 250ml	none	<input type="checkbox"/>
<input checked="" type="checkbox"/> GRO	3x 40ml vial	HCl	<input type="checkbox"/>
<input checked="" type="checkbox"/> DRO/RRO	2x 250ml amber	HCl	<input type="checkbox"/>
<input checked="" type="checkbox"/> BTEX	3x 40ml vial	HCl	<input type="checkbox"/>
<input checked="" type="checkbox"/> PAH	2x 250ml amber	none	<input type="checkbox"/>
			<input type="checkbox"/>

VTY

# MONITORING WELL SAMPLING LOG

Owner/Client AKN DOT  
 Location Charlie's Sport Shop  
 Sampling Personnel VY  
 Weather Conditions sunny Air Temp. (°F) 50°F

Project No. 21AKN-MW-05-15  
 Date 8/28/21  
 Well 1025B2-011  
 Time started 1300  
 Time completed 1430

Sample No. 21AKN-MW-05-15 Time 1411  
 Duplicate 21AKN-MW-105-15 Time 1401  
 Equipment Blank 21AKN-~~105~~EB-03 Time 1800 on 8/25/21

Pump Mega Monsoon  
 Purging Method portable / dedicated pump  
 Pumping Start 1335 → 1338  
 Purge Rate (gal./min.) 1 → 0.1  
 Pumping End 1412  
 Pump Set Depth Below MP (ft.) 12  
 KuriTec Tubing (ft.) -  
 TruPoly Tubing (ft.) 20

Diameter and Type of Casing 2" PVC  
 Approximate Total Depth of Well Below MP (ft.) 15  
 Measured Total Depth of Well Below MP (ft.) 14.57  
 Depth to Water Below MP (ft.) 3.56  
 Depth to Ice (if frozen) Below MP (ft.) None  
 Feet of Water in Well 11.01  
 Gallons per foot 0.17  
 Gallons in Well 1.87  
 Purge Water Volume (gal.) 3 + 3.4  
 Purge Water Disposal GAC → drum

Monument Condition good  
 Casing Condition good  
 Wiring Condition (dedicated pumps) /

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount  
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) - 0.5  
 Monument to ground surface (ft.) flesh

Datalogger type n/a  
 Datalogger serial # n/a  
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking no

Notes purged for 3 min @ 1 gal/min to clear

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4"	2"	3"	4"	6"	8"
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

VY

Well No.  
21AKN-MW-05-15

## MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI (rental) Circle one: Parameters stabilized or >3 well volumes purged  
 Sample Observations \_\_\_\_\_  
 Notes \_\_\_\_\_

### FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1338	7.22	<del>1.10</del> 1.10	643	6.35	-6.8	clear ↓
1341	8.34	0.99	658	6.42	-19.3	
1344	8.45	0.87	656	6.46	-30.7	
1347	8.59	0.83	661	6.47	-33.6	
1350	8.62	0.73	669	6.47	-36.8	
1353	8.81	0.66	671	6.47	-34.2	
1356	8.87	0.61	676	6.47	-26.7	
1359	8.69	0.57	678	6.47	-26.7	
1402	8.71	0.47	677	6.47	-28.1	
1405	8.61	0.48	679	6.48	-28.8	
1408	8.61	0.47	678	6.48	-29.4	
1411	sample					

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS x18	2x250ml	—	<input checked="" type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

VY

## MONITORING WELL SAMPLING LOG

Owner/Client AKN DOT & PF  
 Location AKN  
 Sampling Personnel VTY  
 Weather Conditions Sunny Air Temp. (°F) 60°

Project No. 102582-011  
 Date 8/28/21  
 Well 21AKN-MW-05-83  
 Time started 1700  
 Time completed 1800

Sample No. 21AKN-MW-05-83 Time 1748  
 Duplicate — Time —  
 Equipment Blank 21AKN-EB-03 Time 1800 on 8/25/21  
 Filtered sample 21AKN-MW-05-83 F@ 1750

Pump Mega Monsoon  
 Purging Method portable / dedicated pump  
 Pumping Start 1718  
 Purge Rate (gal./min.) 0.1  
 Pumping End 1750

Diameter and Type of Casing 2" pvc  
 Approximate Total Depth of Well Below MP (ft.) 83  
 Measured Total Depth of Well Below MP (ft.) 83.55  
 Depth to Water Below MP (ft.) 0.51  
 Depth to Ice (if frozen) Below MP (ft.) —  
 Feet of Water in Well 83.04  
 Gallons per foot 0.17  
 Gallons in Well 14.12  
 Purge Water Volume (gal.) 3.2  
 Purge Water Disposal GAC -> drum

Pump Set Depth Below MP (ft.) 81  
 KuriTec Tubing (ft.) —  
 TruPoly Tubing (ft.) 100

Monument Condition good  
 Casing Condition good  
 Wiring Condition /  
 (dedicated pumps)

Measuring Point (MP) Top of Casing (TOC)

Monument type: Stickup / Flushmount  
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) -0.37  
 Monument to ground surface (ft.) Flush

Datalogger type n/a  
 Datalogger serial # n/a  
 Measured cable length (ft.) n/a

- Lock present and operational n/a
- Well name legible on outside of well yes
- Evidence of frost-jacking n/a

Notes \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

VTY

Well No.  
21AKN-MW-05-83

## MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI rental Circle one: Parameters stabilized or >3 well volumes purged  
 Sample Observations \_\_\_\_\_  
 Notes \_\_\_\_\_

### FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)	
1718	5.69	0.31	113	8.35	-89.0	turbid	
1721	6.82	1.84	113	8.32	-123.3	 ↓	
1724	6.86	1.11	118	8.31	-131.5		
1727	6.88	0.80	111	8.30	-134.5		
1730	6.73	0.65	117	8.33	-135.0		
1733	6.92	0.53	112	8.35	-162.8		
1736	6.95	0.51	112	8.37	-166.4		
1739	7.07	0.39	113	8.36	-161.7		
1742	6.93	0.38	114	8.37	-166.3		
1745	6.85	0.36	114	8.37	-163.6		
1748	sample						
1750	Filtered sample						

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFAS x 18	2x 250ml		<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

VY

# MONITORING WELL SAMPLING LOG

Owner/Client AKN DOT & PF 45  
 Location AC store / AKN  
 Sampling Personnel VTY  
 Weather Conditions sunny Air Temp. (°F) 60

Project No. 102582-011  
 Date 8/29/21  
 Well 21AKN-MW-04-45  
 Time started 1400  
 Time completed 1530

Sample No. 21AKN-MW-04-45 Time 1519  
 Duplicate \_\_\_\_\_ Time \_\_\_\_\_  
 Equipment Blank 21AKN-EB-03 Time 1800 on 8/25/21

Pump Mega Monsoon  
 Purging Method portable / dedicated pump  
 Pumping Start 1440  
 Purge Rate (gal./min.) 0.1  
 Pumping End 1520  
 Pump Set Depth Below MP (ft.) 43  
 KuriTec Tubing (ft.) —  
 TruPoly Tubing (ft.) 55  
 Diameter and Type of Casing 2" PVC  
 Approximate Total Depth of Well Below MP (ft.) 45  
 Measured Total Depth of Well Below MP (ft.) 47.43  
 Depth to Water Below MP (ft.) 14.55  
 Depth to Ice (if frozen) Below MP (ft.) —  
 Feet of Water in Well 32.88  
 Gallons per foot 0.17  
 Gallons in Well 5.6  
 Purge Water Volume (gal.) 6.6  
 Purge Water Disposal GAC -> drum

Monument Condition good  
 Casing Condition good  
 Wiring Condition (dedicated pumps) /

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount  
 Measurement method: Rod & level / Tape measure  
 Top-of-casing to monument (ft.) 0.65 Datalogger type n/a  
 Monument to ground surface (ft.) 3.18 Datalogger serial # n/a  
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking n/a

Notes ran for ~4 min @ 1 gal/min to clear

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1/4	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

VTY

Well No.  
21AKN-MW-04-45



## MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI rental Circle one: Parameters stabilized or >3 well volumes purged  
 Sample Observations \_\_\_\_\_  
 Notes \_\_\_\_\_

### FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1446	5.26	4.06	235	6.73	49.3	↓ clear
1449	5.42	1.28	236	6.96	37.7	
1452	5.41	0.88	236	7.25	24.6	
1458	5.49	0.56	240	7.54	-9.4	
1504	5.97	0.44	236	7.64	-35.8	
1507	6.17	0.40	241	7.68	-47.8	
1510	6.15	0.40	241	7.68	-52.0	
1513	6.22	0.39	242	7.70	-54.2	
1516	6.19	0.37	242	7.73	-53.5	
1519	sample					

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFASx18	2x250ml	—	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

V99

## MONITORING WELL SAMPLING LOG

Owner/Client AKN DOT & PF  
 Location AKN AC store  
 Sampling Personnel VTY  
 Weather Conditions sunny Air Temp. (°F) 60°

Project No. 102582-011  
 Date 8/23/21  
 Well 21AKN-MW-04-85  
 Time started 1600  
 Time completed 1700

Sample No. 21AKN-MW-04-85 Time 1653  
 Duplicate \_\_\_\_\_ Time \_\_\_\_\_  
 Equipment Blank 21AKN-EB-03 Time 1800 on 8/25/21  
 Filtered sample 21AKN-MW-04-85F @ 1655

Pump Mega Monsoon  
 Purging Method portable / dedicated pump Diameter and Type of Casing 2" PVC  
 Pumping Start 1621 Approximate Total Depth of Well Below MP (ft.) 85  
 Purge Rate (gal./min.) 0.1 Measured Total Depth of Well Below MP (ft.) 87.75  
 Pumping End 1655 Depth to Water Below MP (ft.) 13.51  
 Pump Set Depth Below MP (ft.) 85 Depth to Ice (if frozen) Below MP (ft.) 74.24  
 KuriTec Tubing (ft.) \_\_\_\_\_ Feet of Water in Well →  
 TruPoly Tubing (ft.) 100 Gallons per foot 0.17  
 Gallons in Well 12.6  
 Purge Water Volume (gal.) 7.9  
 Purge Water Disposal GAC > drum

Monument Condition good  
 Casing Condition good  
 Wiring Condition \_\_\_\_\_  
 (dedicated pumps) \_\_\_\_\_

Measuring Point (MP) Top of Casing (TOC) Monument type: Stickup / Flushmount  
 Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.) 0.50 Datalogger type n/a  
 Monument to ground surface (ft.) 3.27 Datalogger serial # n/a  
 Measured cable length (ft.) n/a

- Lock present and operational
- Well name legible on outside of well
- Evidence of frost-jacking none

Notes ran for ~ 5 min @ 1 gal/min to clear (not much improvement)

### WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1 1/4	(2)	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

*VTY*

Well No.  
21AKN-MW-04-85

## MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI rentac Circle one: Parameters stabilized or >3 well volumes purged  
 Sample Observations \_\_\_\_\_  
 Notes \_\_\_\_\_

### FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1626	5.80	3.29	232	8.85	-62.4	turbid                 ↓
1629	5.71	2.03	231	8.90	-64.9	
1632	5.91	1.31	232	8.93	-70.1	
1635	5.85	1.06	232	8.95	-73.6	
1638	5.89	1.34	233	8.96	-75.9	
1641	5.76	1.10	232	8.97	-77.4	
1644	5.87	0.90	233	8.98	-81.5	
1647	5.73	1.00	232	8.98	-82.5	
1650	5.88	0.92	232	8.99	-84.5	
1653	sample					
1655	filtered sample					

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
<input checked="" type="checkbox"/>	PFASx18	2x 250mL	—	<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

VAX

Appendix C

# Analytical Results

## CONTENTS

- TestAmerica Laboratories, Sacramento and SGS North America, Inc. laboratory reports
- DEC laboratory data review checklists (LDRCs)

## Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1215191**

Project Name/Site: **102582-011 AKN PFAS**

Project Contact: **Michael Jaramillo**

Refer to sample receipt form for information on sample condition.

**21AKN-SB-01(0'-1') (1215191001) PS**

8270D - The LOQs are elevated due to sample dilution. The sample was diluted due to the dark color of the extract.

**21AKN-SB-03(0'-1') (1215191006) PS**

8270D SIM - The PAH LOQs are elevated due to sample dilution. The sample was diluted due to the dark color of the extract.

**MB for HBN 1824204 [XXX/45393] (1630486) MB**

8270D SIM - PAH MB surrogate recovery for 2-methylnphthalene-d10 does not meet QC criteria. Surrogate recovery criteria is met in all associated batch QC and samples.

**1215191003(1632506MS) (1632507) MS**

8260D - MS recovery for Trichlorofluoromethane does not meet QC criteria. See LCS for accuracy requirements.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/01/2021 4:39:55PM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>8270D SIM (PAH)</b>				
1215191004	21AKN-SB-02(0'-1')	XMS12850	Benzo[b]Fluoranthene	RP
1633244	CCV for HBN 1824852 [XMS/12859	XMS12859	Benzo[b]Fluoranthene	RP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
21AKN-SB-01(0'-1')	1215191001	08/14/2021	08/16/2021	Soil/Solid (dry weight)
21AKN-SB-01(6.5'-7.5')	1215191002	08/14/2021	08/16/2021	Soil/Solid (dry weight)
21AKN-SB-101(6.5'-7.5')	1215191003	08/14/2021	08/16/2021	Soil/Solid (dry weight)
21AKN-SB-02(0'-1')	1215191004	08/14/2021	08/16/2021	Soil/Solid (dry weight)
21AKN-SB-02(6'-7')	1215191005	08/14/2021	08/16/2021	Soil/Solid (dry weight)
21AKN-SB-03(0'-1')	1215191006	08/14/2021	08/16/2021	Soil/Solid (dry weight)
21AKN-SB-03(7.3'-7.8')	1215191007	08/14/2021	08/16/2021	Soil/Solid (dry weight)
Trip Blank	1215191008	08/14/2021	08/16/2021	Soil/Solid (dry weight)

Method

8270D SIM (PAH)  
 AK102  
 AK103  
 AK101  
 SM21 2540G  
 SW8260D

Method Description

8270 PAH SIM Semi-Volatiles GC/MS  
 Diesel/Residual Range Organics  
 Diesel/Residual Range Organics  
 Gasoline Range Organics (S)  
 Percent Solids SM2540G  
 Volatile Organic Compounds (S) FIELD EXT



### Detectable Results Summary

Client Sample ID: **21AKN-SB-01(0'-1')**

Lab Sample ID: 1215191001

**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	38.0	mg/kg
Residual Range Organics	334	mg/kg
Gasoline Range Organics	1.79J	mg/kg

**Volatile Fuels**

Client Sample ID: **21AKN-SB-01(6.5'-7.5')**

Lab Sample ID: 1215191002

**Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	1.65J	mg/kg

Client Sample ID: **21AKN-SB-101(6.5'-7.5')**

Lab Sample ID: 1215191003

**Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	1.48J	mg/kg

Client Sample ID: **21AKN-SB-02(0'-1')**

Lab Sample ID: 1215191004

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Anthracene	0.159J	mg/kg
Benzo(a)Anthracene	0.323	mg/kg
Benzo[a]pyrene	0.359	mg/kg
Benzo[b]Fluoranthene	0.493	mg/kg
Benzo[g,h,i]perylene	0.317	mg/kg
Benzo[k]fluoranthene	0.130J	mg/kg
Chrysene	0.499	mg/kg
Fluoranthene	0.898	mg/kg
Indeno[1,2,3-c,d] pyrene	0.215J	mg/kg
Phenanthrene	0.600	mg/kg
Pyrene	0.709	mg/kg
Diesel Range Organics	302	mg/kg
Residual Range Organics	3250	mg/kg
Gasoline Range Organics	1.41J	mg/kg

**Semivolatile Organic Fuels**

**Volatile Fuels**

Client Sample ID: **21AKN-SB-02(6'-7')**

Lab Sample ID: 1215191005

**Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	2.03J	mg/kg

Client Sample ID: **21AKN-SB-03(0'-1')**

Lab Sample ID: 1215191006

**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	210	mg/kg
Residual Range Organics	1900	mg/kg
Gasoline Range Organics	1.71J	mg/kg

**Volatile Fuels**

Client Sample ID: **21AKN-SB-03(7.3'-7.8')**

Lab Sample ID: 1215191007

**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	9.05J	mg/kg
Residual Range Organics	118J	mg/kg
Gasoline Range Organics	1.50J	mg/kg

**Volatile Fuels**

Client Sample ID: **Trip Blank**

Lab Sample ID: 1215191008

**Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	1.00J	mg/kg



Results of 21AKN-SB-01(0'-1')

Client Sample ID: 21AKN-SB-01(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191001
Lab Project ID: 1215191

Collection Date: 08/14/21 11:50
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards with associated quality and detection data.

Batch Information

Analytical Batch: XMS12833
Analytical Method: 8270D SIM (PAH)
Analyst: LAW
Analytical Date/Time: 08/18/21 07:03
Container ID: 1215191001-A

Prep Batch: XXX45393
Prep Method: SW3550C
Prep Date/Time: 08/17/21 07:34
Prep Initial Wt./Vol.: 22.555 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-01(0'-1')

Client Sample ID: 21AKN-SB-01(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191001
Lab Project ID: 1215191

Collection Date: 08/14/21 11:50
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 08/19/21 21:07
Container ID: 1215191001-A

Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.037 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 08/19/21 21:07
Container ID: 1215191001-A

Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.037 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-01(0'-1')

Client Sample ID: 21AKN-SB-01(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191001
Lab Project ID: 1215191

Collection Date: 08/14/21 11:50
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and 4-Bromofluorobenzene (surr).

Batch Information

Analytical Batch: VFC15774
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 08/19/21 16:26
Container ID: 1215191001-B

Prep Batch: VXX37679
Prep Method: SW5035A
Prep Date/Time: 08/14/21 11:50
Prep Initial Wt./Vol.: 36.538 g
Prep Extract Vol: 30.256 mL



Results of 21AKN-SB-01(0'-1')

Client Sample ID: 21AKN-SB-01(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191001
Lab Project ID: 1215191

Collection Date: 08/14/21 11:50
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total).

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2-Dichloroethane-D4 (surr), 4-Bromofluorobenzene (surr), Toluene-d8 (surr).

Batch Information

Analytical Batch: VMS21095
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 08/24/21 15:31
Container ID: 1215191001-B

Prep Batch: VXX37700
Prep Method: SW5035A
Prep Date/Time: 08/14/21 11:50
Prep Initial Wt./Vol.: 36.538 g
Prep Extract Vol: 30.256 mL



**Results of 21AKN-SB-01(6.5'-7.5')**

Client Sample ID: **21AKN-SB-01(6.5'-7.5')**  
 Client Project ID: **102582-011 AKN PFAS**  
 Lab Sample ID: 1215191002  
 Lab Project ID: 1215191

Collection Date: 08/14/21 12:05  
 Received Date: 08/16/21 16:32  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):85.0  
 Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
2-Methylnaphthalene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Acenaphthene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Acenaphthylene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Anthracene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Benzo(a)Anthracene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Benzo[a]pyrene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Benzo[b]Fluoranthene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Benzo[g,h,i]perylene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Benzo[k]fluoranthene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Chrysene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Dibenzo[a,h]anthracene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Fluoranthene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Fluorene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Indeno[1,2,3-c,d] pyrene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Naphthalene	0.0116 U	0.0231	0.00577	mg/kg	1		08/18/21 07:24
Phenanthrene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
Pyrene	0.0144 U	0.0289	0.00722	mg/kg	1		08/18/21 07:24
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	90.9	58-103		%	1		08/18/21 07:24
Fluoranthene-d10 (surr)	92.2	54-113		%	1		08/18/21 07:24

**Batch Information**

Analytical Batch: XMS12833  
 Analytical Method: 8270D SIM (PAH)  
 Analyst: LAW  
 Analytical Date/Time: 08/18/21 07:24  
 Container ID: 1215191002-A

Prep Batch: XXX45393  
 Prep Method: SW3550C  
 Prep Date/Time: 08/17/21 07:34  
 Prep Initial Wt./Vol.: 22.921 g  
 Prep Extract Vol: 5 mL



Results of 21AKN-SB-01(6.5'-7.5')

Client Sample ID: 21AKN-SB-01(6.5'-7.5')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191002
Lab Project ID: 1215191

Collection Date: 08/14/21 12:05
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.0
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 08/19/21 18:01
Container ID: 1215191002-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.206 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 08/19/21 18:01
Container ID: 1215191002-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.206 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-01(6.5'-7.5')

Client Sample ID: 21AKN-SB-01(6.5'-7.5')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191002
Lab Project ID: 1215191

Collection Date: 08/14/21 12:05
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.0
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and Surrogates (4-Bromofluorobenzene).

Batch Information

Analytical Batch: VFC15774
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 08/19/21 16:44
Container ID: 1215191002-B

Prep Batch: VXX37679
Prep Method: SW5035A
Prep Date/Time: 08/14/21 12:05
Prep Initial Wt./Vol.: 40.07 g
Prep Extract Vol: 31.0013 mL





Results of 21AKN-SB-01(6.5'-7.5')

Client Sample ID: 21AKN-SB-01(6.5'-7.5')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191002
Lab Project ID: 1215191

Collection Date: 08/14/21 12:05
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.0
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total), and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS21095
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 08/24/21 15:47
Container ID: 1215191002-B

Prep Batch: VXX37700
Prep Method: SW5035A
Prep Date/Time: 08/14/21 12:05
Prep Initial Wt./Vol.: 40.07 g
Prep Extract Vol: 31.0013 mL



Results of 21AKN-SB-101(6.5'-7.5')

Client Sample ID: 21AKN-SB-101(6.5'-7.5')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191003
Lab Project ID: 1215191

Collection Date: 08/14/21 11:55
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12833
Analytical Method: 8270D SIM (PAH)
Analyst: LAW
Analytical Date/Time: 08/18/21 07:44
Container ID: 1215191003-A

Prep Batch: XXX45393
Prep Method: SW3550C
Prep Date/Time: 08/17/21 07:34
Prep Initial Wt./Vol.: 22.67 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-101(6.5'-7.5')

Client Sample ID: 21AKN-SB-101(6.5'-7.5')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191003
Lab Project ID: 1215191

Collection Date: 08/14/21 11:55
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 08/19/21 18:11
Container ID: 1215191003-A

Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.249 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 08/19/21 18:11
Container ID: 1215191003-A

Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.249 g
Prep Extract Vol: 5 mL



**Results of 21AKN-SB-101(6.5'-7.5')**

Client Sample ID: **21AKN-SB-101(6.5'-7.5')**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215191003  
Lab Project ID: 1215191

Collection Date: 08/14/21 11:55  
Received Date: 08/16/21 16:32  
Matrix: Soil/Solid (dry weight)  
Solids (%):85.6  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.48 J	4.44	1.33	mg/kg	1		08/19/21 17:02
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	114	50-150		%	1		08/19/21 17:02

**Batch Information**

Analytical Batch: VFC15774  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/19/21 17:02  
Container ID: 1215191003-B

Prep Batch: VXX37679  
Prep Method: SW5035A  
Prep Date/Time: 08/14/21 11:55  
Prep Initial Wt./Vol.: 40.559 g  
Prep Extract Vol: 30.8269 mL



**Results of 21AKN-SB-101(6.5'-7.5')**

Client Sample ID: **21AKN-SB-101(6.5'-7.5')**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215191003  
Lab Project ID: 1215191

Collection Date: 08/14/21 11:55  
Received Date: 08/16/21 16:32  
Matrix: Soil/Solid (dry weight)  
Solids (%):85.6  
Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.0111 U	0.0222	0.00692	mg/kg	1		08/25/21 14:47
Ethylbenzene	0.0222 U	0.0444	0.0138	mg/kg	1		08/25/21 14:47
o-Xylene	0.0222 U	0.0444	0.0138	mg/kg	1		08/25/21 14:47
P & M -Xylene	0.0444 U	0.0888	0.0266	mg/kg	1		08/25/21 14:47
Toluene	0.0222 U	0.0444	0.0138	mg/kg	1		08/25/21 14:47
Xylenes (total)	0.0665 U	0.133	0.0405	mg/kg	1		08/25/21 14:47
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	107	71-136		%	1		08/25/21 14:47
4-Bromofluorobenzene (surr)	99.6	55-151		%	1		08/25/21 14:47
Toluene-d8 (surr)	101	85-116		%	1		08/25/21 14:47

**Batch Information**

Analytical Batch: VMS21100  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 08/25/21 14:47  
Container ID: 1215191003-B

Prep Batch: VXX37709  
Prep Method: SW5035A  
Prep Date/Time: 08/14/21 11:55  
Prep Initial Wt./Vol.: 40.559 g  
Prep Extract Vol: 30.8269 mL



Results of 21AKN-SB-02(0'-1')

Client Sample ID: 21AKN-SB-02(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191004
Lab Project ID: 1215191

Collection Date: 08/14/21 09:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):93.3
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS12850
Analytical Method: 8270D SIM (PAH)
Analyst: CDM
Analytical Date/Time: 08/24/21 19:34
Container ID: 1215191004-A

Prep Batch: XXX45426
Prep Method: SW3550C
Prep Date/Time: 08/23/21 07:45
Prep Initial Wt./Vol.: 22.548 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-02(0'-1')

Client Sample ID: 21AKN-SB-02(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191004
Lab Project ID: 1215191

Collection Date: 08/14/21 09:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):93.3
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 08/19/21 21:47
Container ID: 1215191004-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.227 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 08/19/21 21:47
Container ID: 1215191004-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.227 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-02(0'-1')

Client Sample ID: 21AKN-SB-02(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191004
Lab Project ID: 1215191

Collection Date: 08/14/21 09:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):93.3
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and 4-Bromofluorobenzene (surr).

Batch Information

Analytical Batch: VFC15774
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 08/19/21 17:20
Container ID: 1215191004-B

Prep Batch: VXX37679
Prep Method: SW5035A
Prep Date/Time: 08/14/21 09:40
Prep Initial Wt./Vol.: 41.633 g
Prep Extract Vol: 27.7865 mL





Results of 21AKN-SB-02(0'-1')

Client Sample ID: 21AKN-SB-02(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191004
Lab Project ID: 1215191

Collection Date: 08/14/21 09:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):93.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total).

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2-Dichloroethane-D4 (surr), 4-Bromofluorobenzene (surr), Toluene-d8 (surr).

Batch Information

Analytical Batch: VMS21100
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 08/25/21 16:09
Container ID: 1215191004-B

Prep Batch: VXX37709
Prep Method: SW5035A
Prep Date/Time: 08/14/21 09:40
Prep Initial Wt./Vol.: 41.633 g
Prep Extract Vol: 27.7865 mL



Results of 21AKN-SB-02(6'-7')

Client Sample ID: 21AKN-SB-02(6'-7')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191005
Lab Project ID: 1215191

Collection Date: 08/14/21 10:00
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards.

Batch Information

Analytical Batch: XMS12859
Analytical Method: 8270D SIM (PAH)
Analyst: LAW
Analytical Date/Time: 08/28/21 20:31
Container ID: 1215191005-A

Prep Batch: XXX45415
Prep Method: SW3550C
Prep Date/Time: 08/20/21 11:11
Prep Initial Wt./Vol.: 22.752 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-02(6'-7')

Client Sample ID: 21AKN-SB-02(6'-7')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191005
Lab Project ID: 1215191

Collection Date: 08/14/21 10:00
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 08/19/21 18:21
Container ID: 1215191005-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.471 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 08/19/21 18:21
Container ID: 1215191005-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.471 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-02(6'-7')

Client Sample ID: 21AKN-SB-02(6'-7')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191005
Lab Project ID: 1215191

Collection Date: 08/14/21 10:00
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and Surrogates (4-Bromofluorobenzene).

Batch Information

Analytical Batch: VFC15774
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 08/19/21 17:38
Container ID: 1215191005-B

Prep Batch: VXX37679
Prep Method: SW5035A
Prep Date/Time: 08/14/21 10:00
Prep Initial Wt./Vol.: 32.52 g
Prep Extract Vol: 30.7785 mL



Results of 21AKN-SB-02(6'-7')

Client Sample ID: 21AKN-SB-02(6'-7')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191005
Lab Project ID: 1215191

Collection Date: 08/14/21 10:00
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total), and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS21100
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 08/25/21 15:20
Container ID: 1215191005-B

Prep Batch: VXX37709
Prep Method: SW5035A
Prep Date/Time: 08/14/21 10:00
Prep Initial Wt./Vol.: 32.52 g
Prep Extract Vol: 30.7785 mL



Results of 21AKN-SB-03(0'-1')

Client Sample ID: 21AKN-SB-03(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191006
Lab Project ID: 1215191

Collection Date: 08/14/21 13:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):90.7
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12859
Analytical Method: 8270D SIM (PAH)
Analyst: LAW
Analytical Date/Time: 08/28/21 21:12
Container ID: 1215191006-A

Prep Batch: XXX45415
Prep Method: SW3550C
Prep Date/Time: 08/20/21 11:11
Prep Initial Wt./Vol.: 22.646 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-03(0'-1')

Client Sample ID: 21AKN-SB-03(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191006
Lab Project ID: 1215191

Collection Date: 08/14/21 13:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):90.7
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 08/19/21 21:37
Container ID: 1215191006-A

Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.306 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 08/19/21 21:37
Container ID: 1215191006-A

Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.306 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-03(0'-1')

Client Sample ID: 21AKN-SB-03(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191006
Lab Project ID: 1215191

Collection Date: 08/14/21 13:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):90.7
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and Surrogates (4-Bromofluorobenzene).

Batch Information

Analytical Batch: VFC15774
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 08/19/21 17:56
Container ID: 1215191006-B

Prep Batch: VXX37679
Prep Method: SW5035A
Prep Date/Time: 08/14/21 13:40
Prep Initial Wt./Vol.: 35.093 g
Prep Extract Vol: 28.2744 mL





Results of 21AKN-SB-03(0'-1')

Client Sample ID: 21AKN-SB-03(0'-1')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191006
Lab Project ID: 1215191

Collection Date: 08/14/21 13:40
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):90.7
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total), and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS21100
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 08/25/21 15:36
Container ID: 1215191006-B

Prep Batch: VXX37709
Prep Method: SW5035A
Prep Date/Time: 08/14/21 13:40
Prep Initial Wt./Vol.: 35.093 g
Prep Extract Vol: 28.2744 mL



Results of 21AKN-SB-03(7.3'-7.8')

Client Sample ID: 21AKN-SB-03(7.3'-7.8')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191007
Lab Project ID: 1215191

Collection Date: 08/14/21 13:55
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):83.9
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards with associated quality and detection data.

Batch Information

Analytical Batch: XMS12859
Analytical Method: 8270D SIM (PAH)
Analyst: LAW
Analytical Date/Time: 08/28/21 20:51
Container ID: 1215191007-A

Prep Batch: XXX45415
Prep Method: SW3550C
Prep Date/Time: 08/20/21 11:11
Prep Initial Wt./Vol.: 22.886 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-03(7.3'-7.8')

Client Sample ID: 21AKN-SB-03(7.3'-7.8')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191007
Lab Project ID: 1215191

Collection Date: 08/14/21 13:55
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):83.9
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 08/19/21 19:59
Container ID: 1215191007-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.179 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16052
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 08/19/21 19:59
Container ID: 1215191007-A
Prep Batch: XXX45404
Prep Method: SW3550C
Prep Date/Time: 08/19/21 07:25
Prep Initial Wt./Vol.: 30.179 g
Prep Extract Vol: 5 mL



Results of 21AKN-SB-03(7.3'-7.8')

Client Sample ID: 21AKN-SB-03(7.3'-7.8')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191007
Lab Project ID: 1215191

Collection Date: 08/14/21 13:55
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):83.9
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Gasoline Range Organics and 4-Bromofluorobenzene (surr).

Batch Information

Analytical Batch: VFC15774
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 08/19/21 18:14
Container ID: 1215191007-B

Prep Batch: VXX37679
Prep Method: SW5035A
Prep Date/Time: 08/14/21 13:55
Prep Initial Wt./Vol.: 44.084 g
Prep Extract Vol: 32.1043 mL



Results of 21AKN-SB-03(7.3'-7.8')

Client Sample ID: 21AKN-SB-03(7.3'-7.8')
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215191007
Lab Project ID: 1215191

Collection Date: 08/14/21 13:55
Received Date: 08/16/21 16:32
Matrix: Soil/Solid (dry weight)
Solids (%):83.9
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, Xylenes (total), and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS21100
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 08/25/21 15:53
Container ID: 1215191007-B

Prep Batch: VXX37709
Prep Method: SW5035A
Prep Date/Time: 08/14/21 13:55
Prep Initial Wt./Vol.: 44.084 g
Prep Extract Vol: 32.1043 mL



**Results of Trip Blank**

Client Sample ID: **Trip Blank**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215191008  
Lab Project ID: 1215191

Collection Date: 08/14/21 09:40  
Received Date: 08/16/21 16:32  
Matrix: Soil/Solid (dry weight)  
Solids (%):  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.00 J	2.53	0.759	mg/kg	1		08/19/21 14:39
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	105	50-150		%	1		08/19/21 14:39

**Batch Information**

Analytical Batch: VFC15774  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/19/21 14:39  
Container ID: 1215191008-A

Prep Batch: VXX37679  
Prep Method: SW5035A  
Prep Date/Time: 08/14/21 09:40  
Prep Initial Wt./Vol.: 49.433 g  
Prep Extract Vol: 25 mL



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **102582-011 AKN PFAS**  
 Lab Sample ID: 1215191008  
 Lab Project ID: 1215191

Collection Date: 08/14/21 09:40  
 Received Date: 08/16/21 16:32  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.00630 U	0.0126	0.00394	mg/kg	1		08/25/21 14:30
Ethylbenzene	0.0127 U	0.0253	0.00789	mg/kg	1		08/25/21 14:30
o-Xylene	0.0127 U	0.0253	0.00789	mg/kg	1		08/25/21 14:30
P & M -Xylene	0.0253 U	0.0506	0.0152	mg/kg	1		08/25/21 14:30
Toluene	0.0127 U	0.0253	0.00789	mg/kg	1		08/25/21 14:30
Xylenes (total)	0.0380 U	0.0759	0.0231	mg/kg	1		08/25/21 14:30
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	108	71-136		%	1		08/25/21 14:30
4-Bromofluorobenzene (surr)	96.3	55-151		%	1		08/25/21 14:30
Toluene-d8 (surr)	99.6	85-116		%	1		08/25/21 14:30

### Batch Information

Analytical Batch: VMS21100  
 Analytical Method: SW8260D  
 Analyst: S.S  
 Analytical Date/Time: 08/25/21 14:30  
 Container ID: 1215191008-A

Prep Batch: VXX37709  
 Prep Method: SW5035A  
 Prep Date/Time: 08/14/21 09:40  
 Prep Initial Wt./Vol.: 49.433 g  
 Prep Extract Vol: 25 mL



**Method Blank**

Blank ID: MB for HBN 1824278 [SPT/11351]  
Blank Lab ID: 1630799

Matrix: Soil/Solid (dry weight)

QC for Samples:

1215191001, 1215191002, 1215191003, 1215191004, 1215191005, 1215191006, 1215191007

**Results by SM21 2540G**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

**Batch Information**

Analytical Batch: SPT11351  
Analytical Method: SM21 2540G  
Instrument:  
Analyst: TMM  
Analytical Date/Time: 8/17/2021 5:00:00PM

Print Date: 09/01/2021 4:40:06PM



## Duplicate Sample Summary

Original Sample ID: 1215191004

Duplicate Sample ID: 1630800

QC for Samples:

1215191001, 1215191002, 1215191003, 1215191004, 1215191005

Analysis Date: 08/17/2021 17:00

Matrix: Soil/Solid (dry weight)

## Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	93.3	94.2	%	0.93	(< 15 )

## Batch Information

Analytical Batch: SPT11351

Analytical Method: SM21 2540G

Instrument:

Analyst: TMM

Print Date: 09/01/2021 4:40:07PM

## Duplicate Sample Summary

Original Sample ID: 1215191005

Duplicate Sample ID: 1630801

QC for Samples:

1215191005, 1215191006, 1215191007

Analysis Date: 08/17/2021 17:00

Matrix: Soil/Solid (dry weight)

## Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	82.2	82.5	%	0.34	(< 15 )

## Batch Information

Analytical Batch: SPT11351

Analytical Method: SM21 2540G

Instrument:

Analyst: TMM

Print Date: 09/01/2021 4:40:07PM

## Method Blank

Blank ID: MB for HBN 1824417 [VXX/37679]  
Blank Lab ID: 1631424

Matrix: Soil/Solid (dry weight)

QC for Samples:

1215191001, 1215191002, 1215191003, 1215191004, 1215191005, 1215191006, 1215191007, 1215191008

## Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.03J	2.50	0.750	mg/kg
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	93	50-150		%

## Batch Information

Analytical Batch: VFC15774  
Analytical Method: AK101  
Instrument: Agilent 7890A PID/FID  
Analyst: MDT  
Analytical Date/Time: 8/19/2021 12:48:00PM

Prep Batch: VXX37679  
Prep Method: SW5035A  
Prep Date/Time: 8/19/2021 6:00:00AM  
Prep Initial Wt./Vol.: 50 g  
Prep Extract Vol: 25 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [VXX37679]  
 Blank Spike Lab ID: 1631425  
 Date Analyzed: 08/19/2021 12:12

Spike Duplicate ID: LCSD for HBN 1215191 [VXX37679]  
 Spike Duplicate Lab ID: 1631426  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191001, 1215191002, 1215191003, 1215191004, 1215191005, 1215191006, 1215191007, 1215191008

### Results by AK101

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	14.8	119	12.5	14.9	119	( 60-120 )	0.38	(< 20 )

### Surrogates

4-Bromofluorobenzene (surr)	1.25		86	1.25		102	( 50-150 )	17.40	
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### Batch Information

Analytical Batch: VFC15774  
 Analytical Method: AK101  
 Instrument: Agilent 7890A PID/FID  
 Analyst: MDT

Prep Batch: VXX37679  
 Prep Method: SW5035A  
 Prep Date/Time: 08/19/2021 06:00  
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL  
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 09/01/2021 4:40:13PM



### Method Blank

Blank ID: MB for HBN 1824641 [VXX/37700]

Blank Lab ID: 1632289

QC for Samples:

1215191001, 1215191002

Matrix: Soil/Solid (dry weight)

### Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.00625U	0.0125	0.00390	mg/kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/kg
o-Xylene	0.0125U	0.0250	0.00780	mg/kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/kg
Toluene	0.0125U	0.0250	0.00780	mg/kg
Xylenes (total)	0.0375U	0.0750	0.0228	mg/kg
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	102	71-136		%
4-Bromofluorobenzene (surr)	95.3	55-151		%
Toluene-d8 (surr)	102	85-116		%

### Batch Information

Analytical Batch: VMS21095

Analytical Method: SW8260D

Instrument: VRA Agilent GC/MS 7890B/5977A

Analyst: S.S

Analytical Date/Time: 8/24/2021 11:25:00AM

Prep Batch: VXX37700

Prep Method: SW5035A

Prep Date/Time: 8/24/2021 6:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Print Date: 09/01/2021 4:40:15PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [VXX37700]

Blank Spike Lab ID: 1632290

Date Analyzed: 08/24/2021 12:44

Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191001, 1215191002

## Results by SW8260D

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Benzene	0.750	0.752	100	( 77-121 )
Ethylbenzene	0.750	0.743	99	( 76-122 )
o-Xylene	0.750	0.758	101	( 77-123 )
P & M -Xylene	1.50	1.49	100	( 77-124 )
Toluene	0.750	0.760	101	( 77-121 )
Xylenes (total)	2.25	2.25	100	( 78-124 )
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	0.750		100	( 71-136 )
4-Bromofluorobenzene (surr)	0.750		90	( 55-151 )
Toluene-d8 (surr)	0.750		102	( 85-116 )

## Batch Information

Analytical Batch: VMS21095

Analytical Method: SW8260D

Instrument: VRA Agilent GC/MS 7890B/5977A

Analyst: S.S

Prep Batch: VXX37700

Prep Method: SW5035A

Prep Date/Time: 08/24/2021 06:00

Spike Init Wt./Vol.: 0.750 mg/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1632291  
 MS Sample ID: 1632292 MS  
 MSD Sample ID: 1632293 MSD

Analysis Date: 08/24/2021 15:16  
 Analysis Date: 08/24/2021 13:43  
 Analysis Date: 08/24/2021 13:59  
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1215191001, 1215191002

## Results by SW8260D

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.00595U	0.712	0.711	100	0.712	0.724	102	77-121	1.80	(< 20 )
Ethylbenzene	0.0118U	0.712	0.715	101	0.712	0.722	101	76-122	0.89	(< 20 )
o-Xylene	0.0118U	0.712	0.718	101	0.712	0.726	102	77-123	1.00	(< 20 )
P & M -Xylene	0.0237U	1.42	1.43	100	1.42	1.44	101	77-124	1.20	(< 20 )
Toluene	0.0118U	0.712	0.732	103	0.712	0.746	105	77-121	1.90	(< 20 )
Xylenes (total)	0.0356U	2.14	2.14	100	2.14	2.17	102	78-124	1.20	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4 (surr)		0.712	0.716	101	0.712	0.706	99	71-136	1.40	
4-Bromofluorobenzene (surr)		1.19	0.988	83	1.19	0.999	84	55-151	1.10	
Toluene-d8 (surr)		0.712	0.733	103	0.712	0.733	103	85-116	0.03	

## Batch Information

Analytical Batch: VMS21095  
 Analytical Method: SW8260D  
 Instrument: VRA Agilent GC/MS 7890B/5977A  
 Analyst: S.S  
 Analytical Date/Time: 8/24/2021 1:43:00PM

Prep Batch: VXX37700  
 Prep Method: Vol. Extraction SW8260 Field Extracted L  
 Prep Date/Time: 8/24/2021 6:00:00AM  
 Prep Initial Wt./Vol.: 52.69g  
 Prep Extract Vol: 25.00mL



### Method Blank

Blank ID: MB for HBN 1824688 [VXX/37709]  
Blank Lab ID: 1632504

Matrix: Soil/Solid (dry weight)

QC for Samples:  
1215191003, 1215191004, 1215191005, 1215191006, 1215191007, 1215191008

### Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.00625U	0.0125	0.00390	mg/kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/kg
o-Xylene	0.0125U	0.0250	0.00780	mg/kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/kg
Toluene	0.0125U	0.0250	0.00780	mg/kg
Xylenes (total)	0.0375U	0.0750	0.0228	mg/kg
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	107	71-136		%
4-Bromofluorobenzene (surr)	98	55-151		%
Toluene-d8 (surr)	100	85-116		%

### Batch Information

Analytical Batch: VMS21100  
Analytical Method: SW8260D  
Instrument: VQA 7890/5975 GC/MS  
Analyst: S.S  
Analytical Date/Time: 8/25/2021 11:34:00AM

Prep Batch: VXX37709  
Prep Method: SW5035A  
Prep Date/Time: 8/25/2021 6:00:00AM  
Prep Initial Wt./Vol.: 50 g  
Prep Extract Vol: 25 mL

Print Date: 09/01/2021 4:40:20PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [VXX37709]

Blank Spike Lab ID: 1632505

Date Analyzed: 08/25/2021 11:50

Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191003, 1215191004, 1215191005, 1215191006, 1215191007, 1215191008

## Results by SW8260D

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Benzene	0.750	0.781	104	( 77-121 )
Ethylbenzene	0.750	0.727	97	( 76-122 )
o-Xylene	0.750	0.751	100	( 77-123 )
P & M -Xylene	1.50	1.43	95	( 77-124 )
Toluene	0.750	0.757	101	( 77-121 )
Xylenes (total)	2.25	2.18	97	( 78-124 )
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	0.750		93	( 71-136 )
4-Bromofluorobenzene (surr)	0.750		94	( 55-151 )
Toluene-d8 (surr)	0.750		100	( 85-116 )

## Batch Information

Analytical Batch: VMS21100

Analytical Method: SW8260D

Instrument: VQA 7890/5975 GC/MS

Analyst: S.S

Prep Batch: VXX37709

Prep Method: SW5035A

Prep Date/Time: 08/25/2021 06:00

Spike Init Wt./Vol.: 0.750 mg/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1632506  
 MS Sample ID: 1632507 MS  
 MSD Sample ID: 1632508 MSD

Analysis Date: 08/25/2021 14:47  
 Analysis Date: 08/25/2021 13:08  
 Analysis Date: 08/25/2021 13:24  
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1215191003, 1215191004, 1215191005, 1215191006, 1215191007, 1215191008

## Results by SW8260D

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.00770U	0.925	0.966	104	0.925	0.950	103	77-121	1.70	(< 20 )
Ethylbenzene	0.0154U	0.925	0.901	98	0.925	0.883	96	76-122	2.00	(< 20 )
o-Xylene	0.0154U	0.925	0.929	100	0.925	0.915	99	77-123	1.40	(< 20 )
P & M -Xylene	0.0308U	1.85	1.76	95	1.85	1.74	94	77-124	1.60	(< 20 )
Toluene	0.0154U	0.925	0.931	101	0.925	0.914	99	77-121	1.80	(< 20 )
Xylenes (total)	0.0462U	2.77	2.69	97	2.77	2.65	96	78-124	1.50	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4 (surr)		0.925	0.862	93	0.925	0.864	93	71-136	0.18	
4-Bromofluorobenzene (surr)		1.54	1.24	80	1.54	1.22	79	55-151	1.30	
Toluene-d8 (surr)		0.925	0.922	100	0.925	0.927	100	85-116	0.47	

## Batch Information

Analytical Batch: VMS21100  
 Analytical Method: SW8260D  
 Instrument: VQA 7890/5975 GC/MS  
 Analyst: S.S  
 Analytical Date/Time: 8/25/2021 1:08:00PM

Prep Batch: VXX37709  
 Prep Method: Vol. Extraction SW8260 Field Extracted L  
 Prep Date/Time: 8/25/2021 6:00:00AM  
 Prep Initial Wt./Vol.: 40.56g  
 Prep Extract Vol: 25.00mL

## Method Blank

Blank ID: MB for HBN 1824204 [XXX/45393]  
 Blank Lab ID: 1630486

Matrix: Soil/Solid (dry weight)

QC for Samples:  
 1215191001, 1215191002, 1215191003

## Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
2-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthylene	0.0125U	0.0250	0.00625	mg/kg
Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo(a)Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo[a]pyrene	0.0125U	0.0250	0.00625	mg/kg
Benzo[b]Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Benzo[g,h,i]perylene	0.0125U	0.0250	0.00625	mg/kg
Benzo[k]fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Chrysene	0.0125U	0.0250	0.00625	mg/kg
Dibenzo[a,h]anthracene	0.0125U	0.0250	0.00625	mg/kg
Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Fluorene	0.0125U	0.0250	0.00625	mg/kg
Indeno[1,2,3-c,d] pyrene	0.0125U	0.0250	0.00625	mg/kg
Naphthalene	0.0100U	0.0200	0.00500	mg/kg
Phenanthrene	0.0125U	0.0250	0.00625	mg/kg
Pyrene	0.0125U	0.0250	0.00625	mg/kg
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	104*	58-103		%
Fluoranthene-d10 (surr)	104	54-113		%

## Batch Information

Analytical Batch: XMS12833  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: LAW  
 Analytical Date/Time: 8/18/2021 1:56:00AM

Prep Batch: XXX45393  
 Prep Method: SW3550C  
 Prep Date/Time: 8/17/2021 7:34:15AM  
 Prep Initial Wt./Vol.: 22.5 g  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [XXX45393]

Blank Spike Lab ID: 1630487

Date Analyzed: 08/18/2021 02:16

Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191001, 1215191002, 1215191003

## Results by 8270D SIM (PAH)

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
1-Methylnaphthalene	0.111	0.108	98	( 43-111 )
2-Methylnaphthalene	0.111	0.106	96	( 39-114 )
Acenaphthene	0.111	0.108	97	( 44-111 )
Acenaphthylene	0.111	0.106	95	( 39-116 )
Anthracene	0.111	0.104	94	( 50-114 )
Benzo(a)Anthracene	0.111	0.103	93	( 54-122 )
Benzo[a]pyrene	0.111	0.102	92	( 50-125 )
Benzo[b]Fluoranthene	0.111	0.107	96	( 53-128 )
Benzo[g,h,i]perylene	0.111	0.101	91	( 49-127 )
Benzo[k]fluoranthene	0.111	0.104	93	( 56-123 )
Chrysene	0.111	0.106	95	( 57-118 )
Dibenzo[a,h]anthracene	0.111	0.103	93	( 50-129 )
Fluoranthene	0.111	0.107	96	( 55-119 )
Fluorene	0.111	0.105	95	( 47-114 )
Indeno[1,2,3-c,d] pyrene	0.111	0.101	91	( 49-130 )
Naphthalene	0.111	0.107	96	( 38-111 )
Phenanthrene	0.111	0.107	97	( 49-113 )
Pyrene	0.111	0.106	95	( 55-117 )
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	0.111		98	( 58-103 )
Fluoranthene-d10 (surr)	0.111		97	( 54-113 )

## Batch Information

Analytical Batch: XMS12833

Analytical Method: 8270D SIM (PAH)

Instrument: SVA Agilent 780/5975 GC/MS

Analyst: LAW

Prep Batch: XXX45393

Prep Method: SW3550C

Prep Date/Time: 08/17/2021 07:34

Spike Init Wt./Vol.: 0.111 mg/Kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:

### Matrix Spike Summary

Original Sample ID: 1215171005  
 MS Sample ID: 1630488 MS  
 MSD Sample ID: 1630489 MSD

Analysis Date: 08/18/2021 2:57  
 Analysis Date: 08/18/2021 3:18  
 Analysis Date: 08/18/2021 3:38  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191001, 1215191002, 1215191003

### Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0187U	0.168	0.154	92	0.167	0.154	93	43-111	0.52	(< 20)
2-Methylnaphthalene	0.0187U	0.168	0.153	91	0.167	0.153	92	39-114	0.31	(< 20)
Acenaphthene	0.0187U	0.168	0.156	93	0.167	0.153	92	44-111	2.30	(< 20)
Acenaphthylene	0.0187U	0.168	0.159	95	0.167	0.154	93	39-116	3.60	(< 20)
Anthracene	0.0187U	0.168	0.154	92	0.167	0.151	91	50-114	2.40	(< 20)
Benzo(a)Anthracene	0.0187U	0.168	0.154	92	0.167	0.156	94	54-122	1.70	(< 20)
Benzo(a)pyrene	0.0187U	0.168	0.150	90	0.167	0.151	91	50-125	0.07	(< 20)
Benzo(b)Fluoranthene	0.0187U	0.168	0.154	92	0.167	0.154	93	53-128	0.25	(< 20)
Benzo(g,h,i)perylene	0.0187U	0.168	0.145	87	0.167	0.143	86	49-127	1.90	(< 20)
Benzo(k)fluoranthene	0.0187U	0.168	0.151	90	0.167	0.152	92	56-123	1.20	(< 20)
Chrysene	0.0187U	0.168	0.154	92	0.167	0.159	95	57-118	2.30	(< 20)
Dibenzo(a,h)anthracene	0.0187U	0.168	0.147	88	0.167	0.144	87	50-129	2.20	(< 20)
Fluoranthene	0.0187U	0.168	0.167	100	0.167	0.174	104	55-119	4.00	(< 20)
Fluorene	0.0187U	0.168	0.153	91	0.167	0.149	90	47-114	2.50	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0187U	0.168	0.145	87	0.167	0.142	85	49-130	2.30	(< 20)
Naphthalene	0.0150U	0.168	0.154	92	0.167	0.151	91	38-111	1.70	(< 20)
Phenanthrene	0.0187U	0.168	0.161	96	0.167	0.162	98	49-113	0.62	(< 20)
Pyrene	0.0187U	0.168	0.168	100	0.167	0.177	106	55-117	4.80	(< 20)
<b>Surrogates</b>										
2-Methylnaphthalene-d10 (surr)		0.168	0.156	93	0.167	0.153	92	58-103	1.60	
Fluoranthene-d10 (surr)		0.168	0.154	92	0.167	0.156	94	54-113	0.88	

### Batch Information

Analytical Batch: XMS12833  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: LAW  
 Analytical Date/Time: 8/18/2021 3:18:00AM

Prep Batch: XXX45393  
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml  
 Prep Date/Time: 8/17/2021 7:34:15AM  
 Prep Initial Wt./Vol.: 22.81g  
 Prep Extract Vol: 5.00mL



### Method Blank

Blank ID: MB for HBN 1824321 [XXX/45404]  
Blank Lab ID: 1630963

Matrix: Soil/Solid (dry weight)

QC for Samples:

1215191001, 1215191002, 1215191003, 1215191004, 1215191005, 1215191006, 1215191007

### Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/kg
<b>Surrogates</b>				
5a Androstane (surr)	92.4	60-120		%

### Batch Information

Analytical Batch: XFC16052  
Analytical Method: AK102  
Instrument: Agilent 7890B F  
Analyst: IVM  
Analytical Date/Time: 8/19/2021 4:52:00PM

Prep Batch: XXX45404  
Prep Method: SW3550C  
Prep Date/Time: 8/19/2021 7:25:56AM  
Prep Initial Wt./Vol.: 30 g  
Prep Extract Vol: 5 mL

Print Date: 09/01/2021 4:40:30PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [XXX45404]  
 Blank Spike Lab ID: 1630964  
 Date Analyzed: 08/19/2021 17:02

Spike Duplicate ID: LCSD for HBN 1215191 [XXX45404]  
 Spike Duplicate Lab ID: 1630965  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191001, 1215191002, 1215191003, 1215191004, 1215191005, 1215191006, 1215191007

### Results by AK102

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Diesel Range Organics	667	678	102	667	682	102	( 75-125 )	0.61	(< 20 )	
<b>Surrogates</b>										
5a Androstane (surr)	16.7		99	16.7		100	( 60-120 )	1.60		

### Batch Information

Analytical Batch: **XFC16052**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B F**  
 Analyst: **IVM**

Prep Batch: **XXX45404**  
 Prep Method: **SW3550C**  
 Prep Date/Time: **08/19/2021 07:25**  
 Spike Init Wt./Vol.: 667 mg/kg Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 667 mg/kg Extract Vol: 5 mL

Print Date: 09/01/2021 4:40:33PM

## Method Blank

Blank ID: MB for HBN 1824321 [XXX/45404]  
Blank Lab ID: 1630963

Matrix: Soil/Solid (dry weight)

QC for Samples:

1215191001, 1215191002, 1215191003, 1215191004, 1215191005, 1215191006, 1215191007

## Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	50.0U	100	43.0	mg/kg
<b>Surrogates</b>				
n-Triacontane-d62 (surr)	94.9	60-120		%

## Batch Information

Analytical Batch: XFC16052  
Analytical Method: AK103  
Instrument: Agilent 7890B F  
Analyst: IVM  
Analytical Date/Time: 8/19/2021 4:52:00PM

Prep Batch: XXX45404  
Prep Method: SW3550C  
Prep Date/Time: 8/19/2021 7:25:56AM  
Prep Initial Wt./Vol.: 30 g  
Prep Extract Vol: 5 mL

Print Date: 09/01/2021 4:40:35PM





### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [XXX45404]  
Blank Spike Lab ID: 1630964  
Date Analyzed: 08/19/2021 17:02

Spike Duplicate ID: LCSD for HBN 1215191 [XXX45404]  
Spike Duplicate Lab ID: 1630965  
Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191001, 1215191002, 1215191003, 1215191004, 1215191005, 1215191006, 1215191007

### Results by AK103

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	667	625	94	667	633	95	( 60-120 )	1.40	(< 20 )
<b>Surrogates</b>									
n-Triacontane-d62 (surr)	16.7		96	16.7		97	( 60-120 )	0.77	

### Batch Information

Analytical Batch: **XFC16052**  
Analytical Method: **AK103**  
Instrument: **Agilent 7890B F**  
Analyst: **IVM**

Prep Batch: **XXX45404**  
Prep Method: **SW3550C**  
Prep Date/Time: **08/19/2021 07:25**  
Spike Init Wt./Vol.: 667 mg/kg Extract Vol: 5 mL  
Dupe Init Wt./Vol.: 667 mg/kg Extract Vol: 5 mL

Print Date: 09/01/2021 4:40:37PM

## Method Blank

Blank ID: MB for HBN 1824412 [XXX/45415]  
 Blank Lab ID: 1631395

Matrix: Soil/Solid (dry weight)

QC for Samples:  
 1215191005, 1215191006, 1215191007

## Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
2-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthylene	0.0125U	0.0250	0.00625	mg/kg
Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo(a)Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo[a]pyrene	0.0125U	0.0250	0.00625	mg/kg
Benzo[b]Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Benzo[g,h,i]perylene	0.0125U	0.0250	0.00625	mg/kg
Benzo[k]fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Chrysene	0.0125U	0.0250	0.00625	mg/kg
Dibenzo[a,h]anthracene	0.0125U	0.0250	0.00625	mg/kg
Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Fluorene	0.0125U	0.0250	0.00625	mg/kg
Indeno[1,2,3-c,d] pyrene	0.0125U	0.0250	0.00625	mg/kg
Naphthalene	0.0100U	0.0200	0.00500	mg/kg
Phenanthrene	0.0125U	0.0250	0.00625	mg/kg
Pyrene	0.0125U	0.0250	0.00625	mg/kg
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	92	58-103		%
Fluoranthene-d10 (surr)	94.7	54-113		%

## Batch Information

Analytical Batch: XMS12849  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: LAW  
 Analytical Date/Time: 8/24/2021 12:28:00AM

Prep Batch: XXX45415  
 Prep Method: SW3550C  
 Prep Date/Time: 8/20/2021 11:11:14AM  
 Prep Initial Wt./Vol.: 22.5 g  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [XXX45415]

Blank Spike Lab ID: 1631396

Date Analyzed: 08/24/2021 00:49

Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191005, 1215191006, 1215191007

## Results by 8270D SIM (PAH)

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
1-Methylnaphthalene	0.111	0.0986	89	( 43-111 )
2-Methylnaphthalene	0.111	0.0989	89	( 39-114 )
Acenaphthene	0.111	0.102	92	( 44-111 )
Acenaphthylene	0.111	0.100	90	( 39-116 )
Anthracene	0.111	0.0994	89	( 50-114 )
Benzo(a)Anthracene	0.111	0.0999	90	( 54-122 )
Benzo[a]pyrene	0.111	0.0966	87	( 50-125 )
Benzo[b]Fluoranthene	0.111	0.100	90	( 53-128 )
Benzo[g,h,i]perylene	0.111	0.0979	88	( 49-127 )
Benzo[k]fluoranthene	0.111	0.0961	87	( 56-123 )
Chrysene	0.111	0.104	94	( 57-118 )
Dibenzo[a,h]anthracene	0.111	0.0984	89	( 50-129 )
Fluoranthene	0.111	0.102	92	( 55-119 )
Fluorene	0.111	0.0970	87	( 47-114 )
Indeno[1,2,3-c,d] pyrene	0.111	0.0984	89	( 49-130 )
Naphthalene	0.111	0.0966	87	( 38-111 )
Phenanthrene	0.111	0.0987	89	( 49-113 )
Pyrene	0.111	0.104	94	( 55-117 )
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	0.111		93	( 58-103 )
Fluoranthene-d10 (surr)	0.111		97	( 54-113 )

## Batch Information

Analytical Batch: XMS12849

Analytical Method: 8270D SIM (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: LAW

Prep Batch: XXX45415

Prep Method: SW3550C

Prep Date/Time: 08/20/2021 11:11

Spike Init Wt./Vol.: 0.111 mg/Kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1215218019  
 MS Sample ID: 1631397 MS  
 MSD Sample ID: 1631398 MSD

Analysis Date: 08/24/2021 3:13  
 Analysis Date: 08/24/2021 3:33  
 Analysis Date: 08/24/2021 3:54  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191005, 1215191006, 1215191007

## Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0141J	0.124	0.125	89	0.125	0.134	96	43-111	7.30	(< 20)
2-Methylnaphthalene	0.0171J	0.124	0.129	89	0.125	0.138	96	39-114	6.70	(< 20)
Acenaphthene	0.0140U	0.124	0.104	83	0.125	0.113	90	44-111	8.20	(< 20)
Acenaphthylene	0.0140U	0.124	0.104	84	0.125	0.109	87	39-116	4.60	(< 20)
Anthracene	0.0140U	0.124	0.103	82	0.125	0.109	87	50-114	6.10	(< 20)
Benzo(a)Anthracene	0.0140U	0.124	0.106	85	0.125	0.112	89	54-122	5.50	(< 20)
Benzo(a)pyrene	0.0140U	0.124	0.0960	77	0.125	0.102	81	50-125	5.80	(< 20)
Benzo(b)Fluoranthene	0.00743J	0.124	0.100	75	0.125	0.107	79	53-128	6.20	(< 20)
Benzo(g,h,i)perylene	0.0140U	0.124	0.0819	66	0.125	0.0862	69	49-127	5.20	(< 20)
Benzo(k)fluoranthene	0.0140U	0.124	0.0919	74	0.125	0.0975	78	56-123	6.00	(< 20)
Chrysene	0.0140U	0.124	0.114	92	0.125	0.122	97	57-118	6.30	(< 20)
Dibenzo(a,h)anthracene	0.0140U	0.124	0.0895	72	0.125	0.0941	75	50-129	5.00	(< 20)
Fluoranthene	0.0133J	0.124	0.119	85	0.125	0.127	90	55-119	6.40	(< 20)
Fluorene	0.0140U	0.124	0.102	82	0.125	0.110	88	47-114	7.50	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0140U	0.124	0.0860	69	0.125	0.0910	73	49-130	5.70	(< 20)
Naphthalene	0.0112J	0.124	0.114	83	0.125	0.121	87	38-111	5.70	(< 20)
Phenanthrene	0.0147J	0.124	0.122	86	0.125	0.134	96	49-113	9.70	(< 20)
Pyrene	0.0114J	0.124	0.119	86	0.125	0.128	92	55-117	7.40	(< 20)
<b>Surrogates</b>										
2-Methylnaphthalene-d10 (surr)		0.124	0.104	83	0.125	0.112	90	58-103	7.80	
Fluoranthene-d10 (surr)		0.124	0.102	82	0.125	0.110	87	54-113	7.40	

## Batch Information

Analytical Batch: XMS12849  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: LAW  
 Analytical Date/Time: 8/24/2021 3:33:00AM

Prep Batch: XXX45415  
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml  
 Prep Date/Time: 8/20/2021 11:11:14AM  
 Prep Initial Wt./Vol.: 22.65g  
 Prep Extract Vol: 5.00mL

## Method Blank

Blank ID: MB for HBN 1824472 [XXX/45426]

Blank Lab ID: 1631670

QC for Samples:

1215191004

Matrix: Soil/Solid (dry weight)

## Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
2-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthylene	0.0125U	0.0250	0.00625	mg/kg
Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo(a)Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo[a]pyrene	0.0125U	0.0250	0.00625	mg/kg
Benzo[b]Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Benzo[g,h,i]perylene	0.0125U	0.0250	0.00625	mg/kg
Benzo[k]fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Chrysene	0.0125U	0.0250	0.00625	mg/kg
Dibenzo[a,h]anthracene	0.0125U	0.0250	0.00625	mg/kg
Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Fluorene	0.0125U	0.0250	0.00625	mg/kg
Indeno[1,2,3-c,d] pyrene	0.0125U	0.0250	0.00625	mg/kg
Naphthalene	0.0100U	0.0200	0.00500	mg/kg
Phenanthrene	0.0125U	0.0250	0.00625	mg/kg
Pyrene	0.0125U	0.0250	0.00625	mg/kg
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	98.7	58-103		%
Fluoranthene-d10 (surr)	94.3	54-113		%

## Batch Information

Analytical Batch: XMS12848  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: CDM  
 Analytical Date/Time: 8/24/2021 5:47:00PM

Prep Batch: XXX45426  
 Prep Method: SW3550C  
 Prep Date/Time: 8/23/2021 7:45:41AM  
 Prep Initial Wt./Vol.: 22.5 g  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1215191 [XXX45426]

Blank Spike Lab ID: 1631671

Date Analyzed: 08/24/2021 18:08

Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191004

## Results by 8270D SIM (PAH)

### Blank Spike (mg/kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	0.111	0.104	94	(43-111)
2-Methylnaphthalene	0.111	0.103	92	(39-114)
Acenaphthene	0.111	0.105	95	(44-111)
Acenaphthylene	0.111	0.102	92	(39-116)
Anthracene	0.111	0.107	96	(50-114)
Benzo(a)Anthracene	0.111	0.104	93	(54-122)
Benzo[a]pyrene	0.111	0.104	93	(50-125)
Benzo[b]Fluoranthene	0.111	0.107	96	(53-128)
Benzo[g,h,i]perylene	0.111	0.107	97	(49-127)
Benzo[k]fluoranthene	0.111	0.109	98	(56-123)
Chrysene	0.111	0.104	94	(57-118)
Dibenzo[a,h]anthracene	0.111	0.110	99	(50-129)
Fluoranthene	0.111	0.104	94	(55-119)
Fluorene	0.111	0.106	95	(47-114)
Indeno[1,2,3-c,d] pyrene	0.111	0.107	97	(49-130)
Naphthalene	0.111	0.101	91	(38-111)
Phenanthrene	0.111	0.110	99	(49-113)
Pyrene	0.111	0.103	93	(55-117)

### Surrogates

2-Methylnaphthalene-d10 (surr)	0.111		98	(58-103)
Fluoranthene-d10 (surr)	0.111		94	(54-113)

## Batch Information

Analytical Batch: XMS12848

Analytical Method: 8270D SIM (PAH)

Instrument: SVA Agilent 780/5975 GC/MS

Analyst: CDM

Prep Batch: XXX45426

Prep Method: SW3550C

Prep Date/Time: 08/23/2021 07:45

Spike Init Wt./Vol.: 0.111 mg/Kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:



### Matrix Spike Summary

Original Sample ID: 1215347001  
 MS Sample ID: 1631672 MS  
 MSD Sample ID: 1631673 MSD

Analysis Date: 08/24/2021 18:28  
 Analysis Date: 08/24/2021 18:49  
 Analysis Date: 08/24/2021 19:09  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1215191004

### Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0171U	0.151	0.123	82	0.151	0.129	86	43-111	4.70	(< 20)
2-Methylnaphthalene	0.0171U	0.151	0.120	80	0.151	0.129	86	39-114	7.10	(< 20)
Acenaphthene	0.0171U	0.151	0.125	83	0.151	0.131	87	44-111	4.10	(< 20)
Acenaphthylene	0.0171U	0.151	0.121	80	0.151	0.129	86	39-116	6.10	(< 20)
Anthracene	0.0171U	0.151	0.123	82	0.151	0.132	88	50-114	7.00	(< 20)
Benzo(a)Anthracene	0.0171U	0.151	0.119	79	0.151	0.122	81	54-122	2.70	(< 20)
Benzo(a)pyrene	0.0171U	0.151	0.118	78	0.151	0.121	81	50-125	2.90	(< 20)
Benzo(b)Fluoranthene	0.0171U	0.151	0.123	82	0.151	0.126	84	53-128	1.80	(< 20)
Benzo(g,h,i)perylene	0.0171U	0.151	0.118	78	0.151	0.120	80	49-127	1.60	(< 20)
Benzo(k)fluoranthene	0.0171U	0.151	0.118	79	0.151	0.122	81	56-123	3.00	(< 20)
Chrysene	0.0171U	0.151	0.121	81	0.151	0.125	83	57-118	2.90	(< 20)
Dibenzo(a,h)anthracene	0.0171U	0.151	0.122	81	0.151	0.124	83	50-129	1.40	(< 20)
Fluoranthene	0.0171U	0.151	0.120	79	0.151	0.125	83	55-119	4.40	(< 20)
Fluorene	0.0171U	0.151	0.125	83	0.151	0.134	89	47-114	6.60	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0171U	0.151	0.118	78	0.151	0.120	80	49-130	1.80	(< 20)
Naphthalene	0.0137U	0.151	0.118	78	0.151	0.126	84	38-111	6.70	(< 20)
Phenanthrene	0.0171U	0.151	0.129	85	0.151	0.135	90	49-113	4.60	(< 20)
Pyrene	0.0171U	0.151	0.120	79	0.151	0.123	82	55-117	3.10	(< 20)
<b>Surrogates</b>										
2-Methylnaphthalene-d10 (surr)		0.151	0.126	84	0.151	0.131	87	58-103	4.30	
Fluoranthene-d10 (surr)		0.151	0.120	80	0.151	0.126	84	54-113	4.50	

### Batch Information

Analytical Batch: XMS12848  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: CDM  
 Analytical Date/Time: 8/24/2021 6:49:00PM

Prep Batch: XXX45426  
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml  
 Prep Date/Time: 8/23/2021 7:45:41AM  
 Prep Initial Wt./Vol.: 22.75g  
 Prep Extract Vol: 5.00mL

Print Date: 09/01/2021 4:40:48PM

1215191

#371577

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road Fairbanks, AK 99709 (907) 479-0600

www.shannonwilson.com



TODY RECORD

Laboratory SGS Page 1 of 1 Attn: Jen Dawkins

Analytical Methods (include preservative if used)

Turn Around Time: [X] Normal [ ] Rush Please Specify

Quote No: MSA Number: SGS2016 J-Flags: [X] Yes [ ] No

Table with columns for analytical methods: DRO (AK102), RRO (AK103), BTX (B260D), PAH (B270D)

Main data table with columns: Sample Identity, Lab No., Time, Date Sampled, and various analytical method results (X or blank).

Project Information: Number: 102582-011 Name: AKU PFAS Contact: MKS

Sample Receipt: Total No. of Containers: 15 Delivery Method: goldstreak

Relinquished By: 1. Signature: [Signature] Time: 0930 Printed Name: Veselina Yakovleva Company: Shannon & Wilson

Relinquished By: 2. Signature: Time: Printed Name: Date: Company:

Relinquished By: 3. Signature: Time: Printed Name: Date: Company:

Notes: Trip blank was in cooler with samples at all times

Received By: 1. Signature: Time: Printed Name: Date: Company:

Received By: 2. Signature: Time: Printed Name: Date: Company:

Received By: 3. Signature: [Signature] Time: 16:35 Printed Name: Ryan Carbon Date: 8/16/12 Company: SGS IF

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - job file

1.5D58

No.



*Cooler*

Shipper's Name and Address Shannon and Wilson Inc 5430 Fairbanks Street Suite 3 Anchorage, AK 99518 USA Tel: 907-561-2120	Shipper's Account Number 27442311496	Not Negotiable <b>Air Waybill</b> Issued By <b>Alaska.</b> AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM
	Customer's ID Number 10925	

Consignee's Name and Address SGS North America 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	Consignee's Account Number 27400215947	Also notify  <b>NTPD</b>  Tel:

Issuing Carrier's Agent and City	Accounting Information Shannon and Wilson Inc 5430 Fairbanks Street Suite 3 Anchorage, AK 99518 USA GoldStreak	10925
Agent's IATA Code	Account No.	
Airport of Departure (Addr. of First Carrier) and Requested Routing <b>King Salmon</b>		

To	By First Carrier	To / By	To / By	Currency	WT/VAL	Other	Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD PX	X	X	NVD	NCV
Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance					
Anchorage	AS 2212/16		XXX					

Handling Information

**DANGEROUS GOODS IN EXCEPTED QUANTITIES DGD AND NOTOC NOT REQUIRED**

**STORE IN COOLER WHEN POSSIBLE**

SCI

No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	26.0	L			26.0		AS AGREED	SOIL SAMPLES
								Dims: 25 x 13 x14 x 1
1	26.0						AS AGREED	GSX REQ COL Volume: 2.633

Prepaid	Weight Charge	Collect	Other Charges
AS AGREED			XBC 10.00
Valuation Charge			
Tax			
Total Other Charges Due Agent		Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.	
Total Other Charges Due Carrier			
		For: Shannon and Wilson Inc	
		Signature of Shipper or his Agent	
		<input type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input checked="" type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS	
Total Prepaid	Total Collect		
AS AGREED			
		16 Aug 2021 10:29	King Salmon
		Alaska Airlines	
		Executed On (Date) at (Place) Signature of Issuing Carrier or its Agent	

**Alert Expeditors Inc.**

**#413212**

Citywide Delivery • 440-3351  
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 8/16/21  
From SON  
To SGS

Collect  Prepay  Advance Charges

Job # AKN PO# AS 8561 2403

Sample

Shipped Signature [Signature]

Received By: \_\_\_\_\_ Total Charge \_\_\_\_\_  
Page 63 of 65



e-Sample Receipt Form

SGS Workorder #:

1215191

1215191

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes 1F	
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	N/A	Cooler ID: 1 @ 1.5 °C Therm. ID: D58
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***) used?		N/A ***Exemption permitted for metals (e.g.200.8/6020A).
<b>Volatile / LL-Hg Requirements</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	Yes	
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1215191001-A	No Preservative Required	OK			
1215191001-B	Methanol field pres. 4 C	OK			
1215191002-A	No Preservative Required	OK			
1215191002-B	Methanol field pres. 4 C	OK			
1215191003-A	No Preservative Required	OK			
1215191003-B	Methanol field pres. 4 C	OK			
1215191004-A	No Preservative Required	OK			
1215191004-B	Methanol field pres. 4 C	OK			
1215191005-A	No Preservative Required	OK			
1215191005-B	Methanol field pres. 4 C	OK			
1215191006-A	No Preservative Required	OK			
1215191006-B	Methanol field pres. 4 C	OK			
1215191007-A	No Preservative Required	OK			
1215191007-B	Methanol field pres. 4 C	OK			
1215191008-A	Methanol field pres. 4 C	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

**Laboratory Data Review Checklist**

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

9/8/2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1215191

Laboratory Report Date:

9/1/2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

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Laboratory Report Date:

9/1/2021

CS Site Name:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes  No  N/A  Comments:

All analyses were performed by the SGS laboratory in Anchorage, AK.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt documentation notes that the samples arrived in good condition and properly preserved at 1.5°C.

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, etc.?

Yes  No  N/A  Comments:

There were no discrepancies noted in the sample receipt documentation.

e. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The PAH LOQs for samples 21AKN-SB-01(0'-1') and 21AKN-SB-03(0'-1') are elevated due to sample dilution. The samples were diluted due to the dark color of the extract.

The PAH MB associated with preparation batch XXX45393 had a surrogate recovery for 2-methylnaphthalene-d10 outside QC criteria. Surrogate recovery criteria are met in all associated batch QC and samples.

The VOC MS associated with preparation batch VXX37709 had a recovery for trichlorofluoromethane outside QC criteria. This analyte is not a part of the target analyte list; reported results are not affected.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

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d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not specify an effect on the data; refer to Sections 5 and 6 for further assessment.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

Naphthalene was not detected in the field samples *21AKN-SB-01(0'-1')*, *21AKN-SB-02(0'-1')*, and *21AKN-SB-03(0'-1')*. These results are reported at the limit of detection (LOD), which was greater than its associated DEC cleanup level.

e. Data quality or usability affected?

The non-detect naphthalene results lacking sufficient analytical sensitivity are denoted in bold on the summary table.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:



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ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

GRO was detected at an estimated concentration below the LOQ in the AK101 method blank sample associated with preparation batch VXX37679.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The samples 21AKN-SB-01(0'-1'), 21AKN-SB-01(6.5'-7.5'), 21AKN-SB-101(6.5'-7.5'), 21AKN-SB-02(0'-1'), 21AKN-SB-02(6'-7'), 21AKN-SB-03(0'-1'), and 21AKN-SB-03(7.3'-7.8') as well as the trip blank contained GRO concentrations less than the LOQ.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

The GRO results for the samples listed in 6.iii. are considered not detected due to contamination in a method blank. GRO results have been flagged "UB" at the LOQ in the analytical database.

v. Data quality or usability affected?

Comments:

The data quality/usability is affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – 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/LCSDs were reported for methods AK101, AK102, and AK 103. LCS samples were reported for SW8260D and SW8270D SIM. Refer to Section 6.c for assessment of laboratory precision.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for these samples.

iii. Accuracy – 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:

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iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

MS/MSD samples were reported for SW8260D, and SW8270D SIM.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals/Inorganics analyses were not requested for these samples.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

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- iv. Precision – 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:

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. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality/usability is not affected.

- 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 – 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:

PAH MB surrogate recovery for 2-methylnphtalene-d10 does not meet QC criteria..

- 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:

Surrogate recovery failures in laboratory QC samples are not considered to affect the project sample data. Surrogate recovery criteria are met in all associated batch QC and samples.

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iv. Data quality or usability affected?

Comments:

The data quality/usability is not affected.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

GRO was detected in the trip blank below LOQ.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

GRO is considered not detected in the trip blank due to method blank contamination, results are not affected.

v. Data quality or usability affected?

Comments:

The data quality/usability is not affected; see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:

Field duplicate pair 21AKN-SB-01(6.5'-7.5')/21AKN-SB-101(6.5'-7.5') was included with this work order.

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- iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

The relative precision could not be calculated. Analytes were not detected above the LOQ in the field duplicate pair.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and usability were not affected; see above.

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Samples were not collected with reusable sampling equipment, an equipment blank is not required.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

An equipment blank was not submitted.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; an equipment blank was not submitted with this work order.

- iii. Data quality or usability affected?

Comments:

N/A, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes  No  N/A  Comments:

No other data flags/qualifiers were required.

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CS Site Name:

### Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**  
SGS Project: **1215513**  
Project Name/Site: **102582-011 AKN PFAS**  
Project Contact: **Michael Jaramillo**

Refer to sample receipt form for information on sample condition.

**21AKN-MW-01 (1215513001) PS**

8270D SIM - PAH LCS/LCSD RPD for multiple analytes do not meet QC criteria. The sample was re-extracted outside of hold to confirm associated analytes. Results confirm and in-hold data is reported.

**21AKN-MW-101 (1215513002) PS**

8270D SIM - PAH LCS/LCSD RPD for multiple analytes do not meet QC criteria. The sample was re-extracted outside of hold to confirm associated analytes. Results confirm and in-hold data is reported.

**21AKN-MW-02 (1215513003) PS**

8270D SIM - PAH LCS/LCSD RPD for multiple analytes do not meet QC criteria. The sample was re-extracted outside of hold to confirm associated analytes. Results confirm and in-hold data is reported.

**21AKN-MW-03 (1215513004) PS**

8270D SIM - PAH LCS/LCSD RPD for multiple analytes do not meet QC criteria. The sample was re-extracted outside of hold to confirm associated analytes. Results confirm and in-hold data is reported.

**21AKN-EB-03 (1215513005) PS**

8270D SIM - PAH LCS/LCSD RPD for multiple analytes do not meet QC criteria. The sample was re-extracted outside of hold to confirm associated analytes. Results confirm and in-hold data is reported.

**LCSD for HBN 1824853 [XXX/4547 (1633248) LCSD**

8270D SIM - PAH LCS/LCSD RPD for multiple analytes do not meet QC criteria. The associated sample concentrations for this analyte are less than the LOQ.

**LCSD for HBN 1825232 [VXX/3778 (1635018) LCSD**

8260D - LCSD recovery for trans 1,4-Dichloro-2-Butene does not meet QC criteria, however this compound is not reported in the associated samples.

**MB for HBN 1824853 [XXX/45479] (1633246) MB**

8270D SIM - PAH phenanthrene is detect in the MB greater than one-half the LOQ, but less than the LOQ.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.



### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
21AKN-MW-01	1215513001	08/25/2021	08/26/2021	Water (Surface, Eff., Ground)
21AKN-MW-101	1215513002	08/25/2021	08/26/2021	Water (Surface, Eff., Ground)
21AKN-MW-02	1215513003	08/25/2021	08/26/2021	Water (Surface, Eff., Ground)
21AKN-MW-03	1215513004	08/25/2021	08/26/2021	Water (Surface, Eff., Ground)
21AKN-EB-03	1215513005	08/25/2021	08/26/2021	Water (Surface, Eff., Ground)
Trip Blank	1215513006	08/25/2021	08/26/2021	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (W)
SW8260D	Volatile Organic Compounds (W)

### Detectable Results Summary

Client Sample ID: **21AKN-MW-01**

Lab Sample ID: 1215513001

**Polynuclear Aromatics GC/MS**  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	0.0266J	ug/L
Diesel Range Organics	0.198J	mg/L

Client Sample ID: **21AKN-MW-101**

Lab Sample ID: 1215513002

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.0250J	ug/L
2-Methylnaphthalene	0.0274J	ug/L
Phenanthrene	0.0344J	ug/L

Client Sample ID: **21AKN-MW-02**

Lab Sample ID: 1215513003

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	0.0197J	ug/L
Fluoranthene	0.0255J	ug/L
Phenanthrene	0.0475J	ug/L
Pyrene	0.0189J	ug/L
Benzene	0.270J	ug/L

**Volatile GC/MS**

Client Sample ID: **21AKN-MW-03**

Lab Sample ID: 1215513004

**Polynuclear Aromatics GC/MS**  
**Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	0.0207J	ug/L
Residual Range Organics	0.381J	mg/L

Client Sample ID: **21AKN-EB-03**

Lab Sample ID: 1215513005

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
2-Methylnaphthalene	0.0258J	ug/L
Naphthalene	0.0560J	ug/L
Phenanthrene	0.0212J	ug/L



**Results of 21AKN-MW-01**

Client Sample ID: **21AKN-MW-01**  
 Client Project ID: **102582-011 AKN PFAS**  
 Lab Sample ID: 1215513001  
 Lab Project ID: 1215513

Collection Date: 08/25/21 15:08  
 Received Date: 08/26/21 14:19  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
2-Methylnaphthalene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Acenaphthene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Acenaphthylene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Benzo(a)Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Benzo[a]pyrene	0.00960 U	0.0192	0.00596	ug/L	1		09/04/21 20:43
Benzo[b]Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Benzo[g,h,i]perylene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Benzo[k]fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Chrysene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Dibenzo[a,h]anthracene	0.00960 U	0.0192	0.00596	ug/L	1		09/04/21 20:43
Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Fluorene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
Naphthalene	0.0481 U	0.0962	0.0298	ug/L	1		09/04/21 20:43
Phenanthrene	0.0266 J	0.0481	0.0144	ug/L	1		09/04/21 20:43
Pyrene	0.0240 U	0.0481	0.0144	ug/L	1		09/04/21 20:43
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	60.7	42-86		%	1		09/04/21 20:43
Fluoranthene-d10 (surr)	75.3	50-97		%	1		09/04/21 20:43

**Batch Information**

Analytical Batch: XMS12869  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: CDM  
 Analytical Date/Time: 09/04/21 20:43  
 Container ID: 1215513001-C

Prep Batch: XXX45479  
 Prep Method: SW3535A  
 Prep Date/Time: 08/31/21 01:30  
 Prep Initial Wt./Vol.: 260 mL  
 Prep Extract Vol: 1 mL



Results of 21AKN-MW-01

Client Sample ID: 21AKN-MW-01  
Client Project ID: 102582-011 AKN PFAS  
Lab Sample ID: 1215513001  
Lab Project ID: 1215513

Collection Date: 08/25/21 15:08  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.198 J	0.566	0.189	mg/L	1		09/02/21 19:05
<b>Surrogates</b>							
5a Androstane (surr)	80.7	50-150		%	1		09/02/21 19:05

Batch Information

Analytical Batch: XFC16073  
Analytical Method: AK102  
Analyst: IVM  
Analytical Date/Time: 09/02/21 19:05  
Container ID: 1215513001-A

Prep Batch: XXX45490  
Prep Method: SW3520C  
Prep Date/Time: 09/01/21 16:01  
Prep Initial Wt./Vol.: 265 mL  
Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.236 U	0.472	0.189	mg/L	1		09/02/21 19:05
<b>Surrogates</b>							
n-Triacontane-d62 (surr)	92.1	50-150		%	1		09/02/21 19:05

Batch Information

Analytical Batch: XFC16073  
Analytical Method: AK103  
Analyst: IVM  
Analytical Date/Time: 09/02/21 19:05  
Container ID: 1215513001-A

Prep Batch: XXX45490  
Prep Method: SW3520C  
Prep Date/Time: 09/01/21 16:01  
Prep Initial Wt./Vol.: 265 mL  
Prep Extract Vol: 1 mL



Results of **21AKN-MW-01**

Client Sample ID: **21AKN-MW-01**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215513001  
Lab Project ID: 1215513

Collection Date: 08/25/21 15:08  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/31/21 09:07
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	74.2	50-150		%	1		08/31/21 09:07

**Batch Information**

Analytical Batch: VFC15787  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/31/21 09:07  
Container ID: 1215513001-E

Prep Batch: VXX37736  
Prep Method: SW5030B  
Prep Date/Time: 08/30/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of 21AKN-MW-01

Client Sample ID: 21AKN-MW-01
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513001
Lab Project ID: 1215513

Collection Date: 08/25/21 15:08
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and Xylenes (total).

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2-Dichloroethane-D4 (surr), 4-Bromofluorobenzene (surr), and Toluene-d8 (surr).

Batch Information

Analytical Batch: VMS21147
Analytical Method: SW8260D
Analyst: MDT
Analytical Date/Time: 09/07/21 22:57
Container ID: 1215513001-H

Prep Batch: VXX37789
Prep Method: SW5030B
Prep Date/Time: 09/07/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 21AKN-MW-101

Client Sample ID: 21AKN-MW-101
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513002
Lab Project ID: 1215513

Collection Date: 08/25/21 14:58
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12869
Analytical Method: 8270D SIM LV (PAH)
Analyst: CDM
Analytical Date/Time: 09/04/21 21:03
Container ID: 1215513002-C

Prep Batch: XXX45479
Prep Method: SW3535A
Prep Date/Time: 08/31/21 01:30
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL



Results of 21AKN-MW-101

Client Sample ID: 21AKN-MW-101
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513002
Lab Project ID: 1215513

Collection Date: 08/25/21 14:58
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC16073
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 09/02/21 19:15
Container ID: 1215513002-A
Prep Batch: XXX45490
Prep Method: SW3520C
Prep Date/Time: 09/01/21 16:01
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC16073
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 09/02/21 19:15
Container ID: 1215513002-A
Prep Batch: XXX45490
Prep Method: SW3520C
Prep Date/Time: 09/01/21 16:01
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL





Results of **21AKN-MW-101**

Client Sample ID: **21AKN-MW-101**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215513002  
Lab Project ID: 1215513

Collection Date: 08/25/21 14:58  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/31/21 09:43
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	68.7	50-150		%	1		08/31/21 09:43

**Batch Information**

Analytical Batch: VFC15787  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/31/21 09:43  
Container ID: 1215513002-E

Prep Batch: VXX37736  
Prep Method: SW5030B  
Prep Date/Time: 08/30/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



**Results of 21AKN-MW-101**

Client Sample ID: **21AKN-MW-101**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215513002  
Lab Project ID: 1215513

Collection Date: 08/25/21 14:58  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/07/21 23:12
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:12
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:12
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/07/21 23:12
Toluene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:12
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/07/21 23:12
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		09/07/21 23:12
4-Bromofluorobenzene (surr)	104	85-114		%	1		09/07/21 23:12
Toluene-d8 (surr)	102	89-112		%	1		09/07/21 23:12

**Batch Information**

Analytical Batch: VMS21147  
Analytical Method: SW8260D  
Analyst: MDT  
Analytical Date/Time: 09/07/21 23:12  
Container ID: 1215513002-H

Prep Batch: VXX37789  
Prep Method: SW5030B  
Prep Date/Time: 09/07/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of 21AKN-MW-02

Client Sample ID: 21AKN-MW-02
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513003
Lab Project ID: 1215513

Collection Date: 08/25/21 16:18
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS12869
Analytical Method: 8270D SIM LV (PAH)
Analyst: CDM
Analytical Date/Time: 09/04/21 21:24
Container ID: 1215513003-C

Prep Batch: XXX45479
Prep Method: SW3535A
Prep Date/Time: 08/31/21 01:30
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of 21AKN-MW-02

Client Sample ID: 21AKN-MW-02  
Client Project ID: 102582-011 AKN PFAS  
Lab Sample ID: 1215513003  
Lab Project ID: 1215513

Collection Date: 08/25/21 16:18  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.300 U	0.600	0.200	mg/L	1		09/02/21 19:25
<b>Surrogates</b>							
5a Androstane (surr)	87.5	50-150		%	1		09/02/21 19:25

Batch Information

Analytical Batch: XFC16073  
Analytical Method: AK102  
Analyst: IVM  
Analytical Date/Time: 09/02/21 19:25  
Container ID: 1215513003-A

Prep Batch: XXX45490  
Prep Method: SW3520C  
Prep Date/Time: 09/01/21 16:01  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.250 U	0.500	0.200	mg/L	1		09/02/21 19:25
<b>Surrogates</b>							
n-Triacontane-d62 (surr)	92.4	50-150		%	1		09/02/21 19:25

Batch Information

Analytical Batch: XFC16073  
Analytical Method: AK103  
Analyst: IVM  
Analytical Date/Time: 09/02/21 19:25  
Container ID: 1215513003-A

Prep Batch: XXX45490  
Prep Method: SW3520C  
Prep Date/Time: 09/01/21 16:01  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL



**Results of 21AKN-MW-02**

Client Sample ID: **21AKN-MW-02**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215513003  
Lab Project ID: 1215513

Collection Date: 08/25/21 16:18  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/31/21 10:01
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	71.1	50-150		%	1		08/31/21 10:01

**Batch Information**

Analytical Batch: VFC15787  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/31/21 10:01  
Container ID: 1215513003-E

Prep Batch: VXX37736  
Prep Method: SW5030B  
Prep Date/Time: 08/30/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of 21AKN-MW-02

Client Sample ID: 21AKN-MW-02
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513003
Lab Project ID: 1215513

Collection Date: 08/25/21 16:18
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and Xylenes (total).

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2-Dichloroethane-D4 (surr), 4-Bromofluorobenzene (surr), and Toluene-d8 (surr).

Batch Information

Analytical Batch: VMS21147
Analytical Method: SW8260D
Analyst: MDT
Analytical Date/Time: 09/07/21 23:27
Container ID: 1215513003-H

Prep Batch: VXX37789
Prep Method: SW5030B
Prep Date/Time: 09/07/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 21AKN-MW-03

Client Sample ID: 21AKN-MW-03
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513004
Lab Project ID: 1215513

Collection Date: 08/25/21 17:20
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS12869
Analytical Method: 8270D SIM LV (PAH)
Analyst: CDM
Analytical Date/Time: 09/04/21 21:44
Container ID: 1215513004-C

Prep Batch: XXX45479
Prep Method: SW3535A
Prep Date/Time: 08/31/21 01:30
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of 21AKN-MW-03

Client Sample ID: 21AKN-MW-03  
Client Project ID: 102582-011 AKN PFAS  
Lab Sample ID: 1215513004  
Lab Project ID: 1215513

Collection Date: 08/25/21 17:20  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.300 U	0.600	0.200	mg/L	1		09/02/21 19:35

Surrogates

5a Androstane (surr)	89	50-150		%	1		09/02/21 19:35
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Batch Information

Analytical Batch: XFC16073  
Analytical Method: AK102  
Analyst: IVM  
Analytical Date/Time: 09/02/21 19:35  
Container ID: 1215513004-A

Prep Batch: XXX45490  
Prep Method: SW3520C  
Prep Date/Time: 09/01/21 16:01  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.381 J	0.500	0.200	mg/L	1		09/02/21 19:35

Surrogates

n-Triacontane-d62 (surr)	97.6	50-150		%	1		09/02/21 19:35
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Batch Information

Analytical Batch: XFC16073  
Analytical Method: AK103  
Analyst: IVM  
Analytical Date/Time: 09/02/21 19:35  
Container ID: 1215513004-A

Prep Batch: XXX45490  
Prep Method: SW3520C  
Prep Date/Time: 09/01/21 16:01  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL





**Results of 21AKN-MW-03**

Client Sample ID: **21AKN-MW-03**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215513004  
Lab Project ID: 1215513

Collection Date: 08/25/21 17:20  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/31/21 10:19
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	72.3	50-150		%	1		08/31/21 10:19

**Batch Information**

Analytical Batch: VFC15787  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/31/21 10:19  
Container ID: 1215513004-E

Prep Batch: VXX37736  
Prep Method: SW5030B  
Prep Date/Time: 08/30/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of 21AKN-MW-03

Client Sample ID: 21AKN-MW-03  
Client Project ID: 102582-011 AKN PFAS  
Lab Sample ID: 1215513004  
Lab Project ID: 1215513

Collection Date: 08/25/21 17:20  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/07/21 23:41
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:41
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:41
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/07/21 23:41
Toluene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:41
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/07/21 23:41

Surrogates

1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		09/07/21 23:41
4-Bromofluorobenzene (surr)	104	85-114		%	1		09/07/21 23:41
Toluene-d8 (surr)	102	89-112		%	1		09/07/21 23:41

Batch Information

Analytical Batch: VMS21147  
Analytical Method: SW8260D  
Analyst: MDT  
Analytical Date/Time: 09/07/21 23:41  
Container ID: 1215513004-H

Prep Batch: VXX37789  
Prep Method: SW5030B  
Prep Date/Time: 09/07/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of 21AKN-EB-03

Client Sample ID: 21AKN-EB-03
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513005
Lab Project ID: 1215513

Collection Date: 08/25/21 18:00
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards.

Batch Information

Analytical Batch: XMS12869
Analytical Method: 8270D SIM LV (PAH)
Analyst: CDM
Analytical Date/Time: 09/04/21 22:05
Container ID: 1215513005-C

Prep Batch: XXX45479
Prep Method: SW3535A
Prep Date/Time: 08/31/21 01:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



Results of 21AKN-EB-03

Client Sample ID: 21AKN-EB-03
Client Project ID: 102582-011 AKN PFAS
Lab Sample ID: 1215513005
Lab Project ID: 1215513

Collection Date: 08/25/21 18:00
Received Date: 08/26/21 14:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC16073
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 09/02/21 19:45
Container ID: 1215513005-A
Prep Batch: XXX45490
Prep Method: SW3520C
Prep Date/Time: 09/01/21 16:01
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62 (surr)).

Batch Information

Analytical Batch: XFC16073
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 09/02/21 19:45
Container ID: 1215513005-A
Prep Batch: XXX45490
Prep Method: SW3520C
Prep Date/Time: 09/01/21 16:01
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL



**Results of 21AKN-EB-03**

Client Sample ID: **21AKN-EB-03**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215513005  
Lab Project ID: 1215513

Collection Date: 08/25/21 18:00  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/31/21 10:37
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	70.3	50-150		%	1		08/31/21 10:37

**Batch Information**

Analytical Batch: VFC15787  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/31/21 10:37  
Container ID: 1215513005-E

Prep Batch: VXX37736  
Prep Method: SW5030B  
Prep Date/Time: 08/30/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of 21AKN-EB-03

Client Sample ID: 21AKN-EB-03  
Client Project ID: 102582-011 AKN PFAS  
Lab Sample ID: 1215513005  
Lab Project ID: 1215513

Collection Date: 08/25/21 18:00  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		09/07/21 23:56
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:56
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:56
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/07/21 23:56
Toluene	0.500 U	1.00	0.310	ug/L	1		09/07/21 23:56
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/07/21 23:56
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/07/21 23:56
4-Bromofluorobenzene (surr)	102	85-114		%	1		09/07/21 23:56
Toluene-d8 (surr)	101	89-112		%	1		09/07/21 23:56

Batch Information

Analytical Batch: VMS21147  
Analytical Method: SW8260D  
Analyst: MDT  
Analytical Date/Time: 09/07/21 23:56  
Container ID: 1215513005-H

Prep Batch: VXX37789  
Prep Method: SW5030B  
Prep Date/Time: 09/07/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



**Results of Trip Blank**

Client Sample ID: **Trip Blank**  
Client Project ID: **102582-011 AKN PFAS**  
Lab Sample ID: 1215513006  
Lab Project ID: 1215513

Collection Date: 08/25/21 14:58  
Received Date: 08/26/21 14:19  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/31/21 10:56
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	74.7	50-150		%	1		08/31/21 10:56

**Batch Information**

Analytical Batch: VFC15787  
Analytical Method: AK101  
Analyst: MDT  
Analytical Date/Time: 08/31/21 10:56  
Container ID: 1215513006-A

Prep Batch: VXX37736  
Prep Method: SW5030B  
Prep Date/Time: 08/30/21 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **102582-011 AKN PFAS**  
 Lab Sample ID: 1215513006  
 Lab Project ID: 1215513

Collection Date: 08/25/21 14:58  
 Received Date: 08/26/21 14:19  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/07/21 19:02
Benzene	0.200 U	0.400	0.120	ug/L	1		09/07/21 19:02
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/07/21 19:02
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/07/21 19:02
Toluene	0.500 U	1.00	0.310	ug/L	1		09/07/21 19:02
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/07/21 19:02
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	98.9	81-118		%	1		09/07/21 19:02
4-Bromofluorobenzene (surr)	103	85-114		%	1		09/07/21 19:02
Toluene-d8 (surr)	103	89-112		%	1		09/07/21 19:02

### Batch Information

Analytical Batch: VMS21147  
 Analytical Method: SW8260D  
 Analyst: MDT  
 Analytical Date/Time: 09/07/21 19:02  
 Container ID: 1215513006-C

Prep Batch: VXX37789  
 Prep Method: SW5030B  
 Prep Date/Time: 09/07/21 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL





### Method Blank

Blank ID: MB for HBN 1824887 [VXX/37736]  
Blank Lab ID: 1633379

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215513001, 1215513002, 1215513003, 1215513004, 1215513005, 1215513006

### Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	73.8	50-150		%

### Batch Information

Analytical Batch: VFC15787  
Analytical Method: AK101  
Instrument: Agilent 7890A PID/FID  
Analyst: MDT  
Analytical Date/Time: 8/31/2021 6:24:00AM

Prep Batch: VXX37736  
Prep Method: SW5030B  
Prep Date/Time: 8/30/2021 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/17/2021 2:35:43PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215513 [VXX37736]  
 Blank Spike Lab ID: 1633380  
 Date Analyzed: 08/31/2021 09:25

Spike Duplicate ID: LCSD for HBN 1215513 [VXX37736]  
 Spike Duplicate Lab ID: 1633381  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215513001, 1215513002, 1215513003, 1215513004, 1215513005, 1215513006

### Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.966	97	1.00	1.02	102	( 60-120 )	5.20	(< 20 )

### Surrogates

4-Bromofluorobenzene (surr)	0.0500		88	0.0500		92	( 50-150 )	4.30	
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### Batch Information

Analytical Batch: **VFC15787**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890A PID/FID**  
 Analyst: **MDT**

Prep Batch: **VXX37736**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **08/30/2021 06:00**  
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 09/17/2021 2:35:46PM



### Method Blank

Blank ID: MB for HBN 1825232 [VXX/37789]  
Blank Lab ID: 1635016

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215513001, 1215513002, 1215513003, 1215513004, 1215513005, 1215513006

### Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	101	89-112		%

### Batch Information

Analytical Batch: VMS21147  
Analytical Method: SW8260D  
Instrument: VPA 780/5975 GC/MS  
Analyst: MDT  
Analytical Date/Time: 9/7/2021 4:06:00PM

Prep Batch: VXX37789  
Prep Method: SW5030B  
Prep Date/Time: 9/7/2021 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/17/2021 2:35:49PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215513 [VXX37789]  
 Blank Spike Lab ID: 1635017  
 Date Analyzed: 09/07/2021 16:21

Spike Duplicate ID: LCSD for HBN 1215513 [VXX37789]  
 Spike Duplicate Lab ID: 1635018  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215513001, 1215513002, 1215513003, 1215513004, 1215513005, 1215513006

### Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	30.6	102	30	30.5	102	( 79-120 )	0.33	(< 20 )
Ethylbenzene	30	32.1	107	30	32.3	108	( 79-121 )	0.68	(< 20 )
o-Xylene	30	32.5	108	30	32.4	108	( 78-122 )	0.31	(< 20 )
P & M -Xylene	60	64.5	108	60	63.9	106	( 80-121 )	1.00	(< 20 )
Toluene	30	30.9	103	30	31.0	103	( 80-121 )	0.03	(< 20 )
Xylenes (total)	90	97.0	108	90	96.2	107	( 79-121 )	0.80	(< 20 )
<b>Surrogates</b>									
1,2-Dichloroethane-D4 (surr)	30		99	30		96	( 81-118 )	2.80	
4-Bromofluorobenzene (surr)	30		104	30		103	( 85-114 )	0.81	
Toluene-d8 (surr)	30		103	30		103	( 89-112 )	0.16	

### Batch Information

Analytical Batch: VMS21147  
 Analytical Method: SW8260D  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: MDT

Prep Batch: VXX37789  
 Prep Method: SW5030B  
 Prep Date/Time: 09/07/2021 06:00  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/17/2021 2:35:51PM

## Method Blank

Blank ID: MB for HBN 1824853 [XXX/45479]  
 Blank Lab ID: 1633246

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1215513001, 1215513002, 1215513003, 1215513004, 1215513005

## Results by 8270D SIM LV (PAH)

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0295J	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	57.2	42-86		%
Fluoranthene-d10 (surr)	76.4	50-97		%

## Batch Information

Analytical Batch: XMS12869  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: CDM  
 Analytical Date/Time: 9/4/2021 5:37:00PM

Prep Batch: XXX45479  
 Prep Method: SW3535A  
 Prep Date/Time: 8/31/2021 1:30:20AM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215513 [XXX45479]  
 Blank Spike Lab ID: 1633247  
 Date Analyzed: 09/04/2021 17:58

Spike Duplicate ID: LCSD for HBN 1215513  
 [XXX45479]  
 Spike Duplicate Lab ID: 1633248  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215513001, 1215513002, 1215513003, 1215513004, 1215513005

### Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.20	60	2	1.46	73	( 41-115 )	19.70	(< 20 )
2-Methylnaphthalene	2	1.17	58	2	1.45	72	( 39-114 )	21.20	* (< 20 )
Acenaphthene	2	1.33	66	2	1.69	85	( 48-114 )	24.10	* (< 20 )
Acenaphthylene	2	1.42	71	2	1.75	87	( 35-121 )	20.90	* (< 20 )
Anthracene	2	1.44	72	2	1.80	90	( 53-119 )	22.00	* (< 20 )
Benzo(a)Anthracene	2	1.43	71	2	1.70	85	( 59-120 )	17.60	(< 20 )
Benzo[a]pyrene	2	1.55	78	2	1.85	93	( 53-120 )	17.70	(< 20 )
Benzo[b]Fluoranthene	2	1.57	78	2	1.86	93	( 53-126 )	16.90	(< 20 )
Benzo[g,h,i]perylene	2	1.67	84	2	1.98	99	( 44-128 )	16.90	(< 20 )
Benzo[k]fluoranthene	2	1.48	74	2	1.76	88	( 54-125 )	17.30	(< 20 )
Chrysene	2	1.48	74	2	1.78	89	( 57-120 )	18.30	(< 20 )
Dibenzo[a,h]anthracene	2	1.70	85	2	2.01	101	( 44-131 )	16.60	(< 20 )
Fluoranthene	2	1.44	72	2	1.75	87	( 58-120 )	19.60	(< 20 )
Fluorene	2	1.44	72	2	1.81	91	( 50-118 )	22.80	* (< 20 )
Indeno[1,2,3-c,d] pyrene	2	1.57	78	2	1.85	93	( 48-130 )	16.60	(< 20 )
Naphthalene	2	1.18	59	2	1.45	73	( 43-114 )	20.60	* (< 20 )
Phenanthrene	2	1.43	72	2	1.75	87	( 53-115 )	19.80	(< 20 )
Pyrene	2	1.47	73	2	1.78	89	( 53-121 )	19.30	(< 20 )
<b>Surrogates</b>									
2-Methylnaphthalene-d10 (surr)	2		54	2		69	( 42-86 )	23.70	
Fluoranthene-d10 (surr)	2		69	2		87	( 50-97 )	23.60	

### Batch Information

Analytical Batch: XMS12869  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: CDM

Prep Batch: XXX45479  
 Prep Method: SW3535A  
 Prep Date/Time: 08/31/2021 01:30  
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 09/17/2021 2:35:55PM

## Method Blank

Blank ID: MB for HBN 1824961 [XXX/45490]  
 Blank Lab ID: 1633764

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1215513001, 1215513002, 1215513003, 1215513004, 1215513005

## Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.200	mg/L
<b>Surrogates</b>				
5a Androstane (surr)	75.6	60-120		%

## Batch Information

Analytical Batch: XFC16073  
 Analytical Method: AK102  
 Instrument: Agilent 7890B F  
 Analyst: IVM  
 Analytical Date/Time: 9/2/2021 2:58:00PM

Prep Batch: XXX45490  
 Prep Method: SW3520C  
 Prep Date/Time: 9/1/2021 4:01:13PM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215513 [XXX45490]  
 Blank Spike Lab ID: 1633765  
 Date Analyzed: 09/02/2021 15:08

Spike Duplicate ID: LCSD for HBN 1215513  
 [XXX45490]  
 Spike Duplicate Lab ID: 1633766  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215513001, 1215513002, 1215513003, 1215513004, 1215513005

### Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	18.9	94	20	19.4	97	( 75-125 )	2.90	(< 20 )
<b>Surrogates</b>									
5a Androstane (surr)	0.4		102	0.4		105	( 60-120 )	3.40	

### Batch Information

Analytical Batch: **XFC16073**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B F**  
 Analyst: **IVM**

Prep Batch: **XXX45490**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **09/01/2021 16:01**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 09/17/2021 2:35:59PM



## Method Blank

Blank ID: MB for HBN 1824961 [XXX/45490]  
Blank Lab ID: 1633764

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1215513001, 1215513002, 1215513003, 1215513004, 1215513005

## Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.200	mg/L
<b>Surrogates</b>				
n-Triacontane-d62 (surr)	94.6	60-120		%

## Batch Information

Analytical Batch: XFC16073  
Analytical Method: AK103  
Instrument: Agilent 7890B F  
Analyst: IVM  
Analytical Date/Time: 9/2/2021 2:58:00PM

Prep Batch: XXX45490  
Prep Method: SW3520C  
Prep Date/Time: 9/1/2021 4:01:13PM  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

Print Date: 09/17/2021 2:36:01PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1215513 [XXX45490]  
 Blank Spike Lab ID: 1633765  
 Date Analyzed: 09/02/2021 15:08

Spike Duplicate ID: LCSD for HBN 1215513 [XXX45490]  
 Spike Duplicate Lab ID: 1633766  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1215513001, 1215513002, 1215513003, 1215513004, 1215513005

### Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	20	19.1	95	20	20.0	100	( 60-120 )	4.60	(< 20 )	
<b>Surrogates</b>										
n-Triacontane-d62 (surr)	0.4		97	0.4		108	( 60-120 )	10.20		

### Batch Information

Analytical Batch: **XFC16073**  
 Analytical Method: **AK103**  
 Instrument: **Agilent 7890B F**  
 Analyst: **IVM**

Prep Batch: **XXX45490**  
 Prep Method: **SW3520C**  
 Prep Date/Time: **09/01/2021 16:01**  
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 09/17/2021 2:36:04PM



2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1  
Attn: Sen Daw King

Analytical Methods (include preservative if used)

GR0 (w/ HCl)  
BTEX (w/ HCl)  
DRO/DRO (w/ HCl)  
PAH

Quote No: \_\_\_\_\_  
 Turn Around Time:  Normal  Rush  
 Please Specify \_\_\_\_\_  
 MSA Number: MSA-SCS-2016  
 J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	GR0 (w/ HCl)	BTEX (w/ HCl)	DRO/DRO (w/ HCl)	PAH	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
<u>21AKN-KW-01</u>	<u>(1AD)</u>	<u>1508</u>	<u>8/25/21</u>	X	X	X	X	<u>10</u>	<u>ground water</u>
<u>21AKN-HW-101</u>	<u>(2AD)</u>	<u>1458</u>	<u>8/25/21</u>	X	X	X	X	<u>10</u>	
<u>21AKN-KW-02</u>	<u>(3AD)</u>	<u>1618</u>	<u>8/25/21</u>	X	X	X	X	<u>10</u>	
<u>21AKN-KW-03</u>	<u>(4AD)</u>	<u>1720</u>	<u>8/25/21</u>	X	X	X	X	<u>10</u>	
<u>21AKN-EB-03</u>	<u>(5AD)</u>	<u>1800</u>	<u>8/25/21</u>	X	X	X	X	<u>10</u>	
<u>Trip blank</u>	<u>(6AC)</u>			X				<u>6</u>	<u>lab provided trip blank</u>

1215513



Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Printed Name: <u>Veselin Yakimov</u> Company: <u>Shannon &amp; Wilson</u> Time: <u>0130</u> Date: <u>8/25/21</u>	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____
Received By: 1.	Received By: 2.	Received By: 3.
Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: _____ Printed Name: _____ Company: _____ Time: _____ Date: _____	Signature: <u>[Signature]</u> Printed Name: <u>Ryan Corico</u> Company: <u>SGS, FL</u> Time: <u>11:19</u> Date: <u>8/26/21</u>

Project Information  
 Number: 102582-011  
 Name: AKN PFAS  
 Contact: KXS  
 Ongoing Project? Yes  No   
 Sampler: VTY, JLD

Sample Receipt  
 Total No. of Containers: 56  
 COC Seals/Intact? Y/N/A  
 Received Good Cond./Cold  
 Temp:  
 Delivery Method: goldstreet

Notes:  
Trip blank has been in cooler with samples at all times.


Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

2.8 D63 Alert No.

027 AKN 8861 2705

*Cooper*

027-8861 2705

Shipper's Name and Address <b>Shannon and Wilson Inc</b> 2355 Hill Rd Fairbanks, AK 99712 USA  Tel: 907-479-0600	Shipper's Account Number <b>27400200733</b>  Customer's ID Number 10926	Not Negotiable  <b>Air Waybill</b> Issued By   P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM
--	---	--

Consignee's Name and Address <b>SGS North America</b> 200 W Potter Drive Anchorage, AK 99518 USA  Tel: 907-562-2343	Consignee's Account Number <b>27400215947</b>	Also notify          Tel:
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Issuing Carrier's Agent and City   Agent's IATA Code  Account No.	Accounting Information Shannon and Wilson Inc 2355 Hill Rd Fairbanks, AK 99712 USA  SRN/102582-011 GoldStreak	10926
Airport of Departure (Addr. of First Carrier) and Requested Routing <b>King Salmon</b>		


To	By First Carrier	To / By	To / By	Currency	WT/VAL	Other	Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD PZ	X	X	NVD	NCV
Airport of Destination <b>Anchorage</b>		Flight/Date <b>AS 2212/26</b>	Flight/Date	Amount of Insurance <b>XXX</b>				

Handling Information

**STORE IN COOLER WHEN POSSIBLE**

SCI

No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	42.0	L	N		42.0		AS AGREED	WATER SAMPLES          Dims: 25 x 13 x14 x 1          GSX FRA COL          Volume: 2.633
1	42.0						AS AGREED	

Prepaid <b>AS AGREED</b>	Weight Charge Collect	Other Charges <b>XBC 10.00</b>
Valuation Charge		Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.  For: <b>Shannon and Wilson Inc</b>  Signature of Shipper or his Agent   <input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS
Tax		
Total Other Charges Due Agent		
Total Other Charges Due Carrier		
Total Prepaid <b>AS AGREED</b>	Total Collect	Executed On (Date)      at (Place)      Signature of Issuing Carrier or its Agent <b>26 Aug 2021 09:56</b> <b>King Salmon</b> <b>Alaska Airlines</b>

027-8861 2705

# Alert Expeditors Inc.

#414528

Citywide Delivery • 440-3351  
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 8/26/01

From Alaska - 6/1/00

To 5/4/5

Collect  Prepay  Advance Charges

Job # PO#

<u>1 Bar</u>	
<u>8/26/01 #405</u>	<u>650</u>

Shipped Signature

Received By: [Signature] Total Charge Page 40 of 43



e-Sample Receipt Form

SGS Workorder #:

1215513

1215513

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		
Were Custody Seals intact? Note # & location	<input checked="" type="checkbox"/> Yes	1F, 1B
COC accompanied samples?	<input checked="" type="checkbox"/> Yes	
DOD: Were samples received in COC corresponding coolers?	<input type="checkbox"/> N/A	Exemption permitted if sampler hand carries/delivers.
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> Yes	Cooler ID: 1 @ 2.8 °C Therm. ID: D63
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/> N/A	
If <0°C, were sample containers ice free?	<input type="checkbox"/> N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	<input checked="" type="checkbox"/> Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	<input checked="" type="checkbox"/> Yes	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> N/A ***Exemption permitted for metals (e.g.200.8/6020A).
<b>Volatile / LL-Hg Requirements</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/> Yes	
Were all soil VOAs field extracted with MeOH+BFB?	<input type="checkbox"/> N/A	
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



### Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1215513001-A	HCL to pH < 2	OK	1215513005-J	HCL to pH < 2	OK
1215513001-B	HCL to pH < 2	OK	1215513006-A	HCL to pH < 2	OK
1215513001-C	No Preservative Required	OK	1215513006-B	HCL to pH < 2	OK
1215513001-D	No Preservative Required	OK	1215513006-C	HCL to pH < 2	OK
1215513001-E	HCL to pH < 2	OK			
1215513001-F	HCL to pH < 2	OK			
1215513001-G	HCL to pH < 2	OK			
1215513001-H	HCL to pH < 2	OK			
1215513001-I	HCL to pH < 2	OK			
1215513001-J	HCL to pH < 2	OK			
1215513002-A	HCL to pH < 2	OK			
1215513002-B	HCL to pH < 2	OK			
1215513002-C	No Preservative Required	OK			
1215513002-D	No Preservative Required	OK			
1215513002-E	HCL to pH < 2	OK			
1215513002-F	HCL to pH < 2	OK			
1215513002-G	HCL to pH < 2	OK			
1215513002-H	HCL to pH < 2	OK			
1215513002-I	HCL to pH < 2	OK			
1215513002-J	HCL to pH < 2	OK			
1215513003-A	HCL to pH < 2	OK			
1215513003-B	HCL to pH < 2	OK			
1215513003-C	No Preservative Required	OK			
1215513003-D	No Preservative Required	OK			
1215513003-E	HCL to pH < 2	OK			
1215513003-F	HCL to pH < 2	OK			
1215513003-G	HCL to pH < 2	OK			
1215513003-H	HCL to pH < 2	OK			
1215513003-I	HCL to pH < 2	OK			
1215513003-J	HCL to pH < 2	OK			
1215513004-A	HCL to pH < 2	OK			
1215513004-B	HCL to pH < 2	OK			
1215513004-C	No Preservative Required	OK			
1215513004-D	No Preservative Required	OK			
1215513004-E	HCL to pH < 2	OK			
1215513004-F	HCL to pH < 2	OK			
1215513004-G	HCL to pH < 2	OK			
1215513004-H	HCL to pH < 2	OK			
1215513004-I	HCL to pH < 2	OK			
1215513004-J	HCL to pH < 2	OK			
1215513005-A	HCL to pH < 2	OK			
1215513005-B	HCL to pH < 2	OK			
1215513005-C	No Preservative Required	OK			
1215513005-D	No Preservative Required	OK			
1215513005-E	HCL to pH < 2	OK			
1215513005-F	HCL to pH < 2	OK			
1215513005-G	HCL to pH < 2	OK			
1215513005-H	HCL to pH < 2	OK			
1215513005-I	HCL to pH < 2	OK			

Container Id

Preservative

Container  
Condition

Container Id

Preservative

Container  
Condition

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



**Laboratory Data Review Checklist**

Completed By:

Michael Jaramillo

Title:

Senior Chemist

Date:

September 27, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America, Inc (SGS)

Laboratory Report Number:

1215513

Laboratory Report Date:

September 17, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

1215513

Laboratory Report Date:

September 17, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified SGS of Anchorage, AK for the requested analyses. The reported analytes 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 ADEC CS approved?

Yes  No  N/A  Comments:

The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition, and where required, properly preserved and on ice were received 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, etc.?

Yes  No  N/A  Comments:

No discrepancies identified, therefore no documentation needed.

e. Data quality or usability affected?

Comments:

Not applicable, see above.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The LCS associated with preparation batch XXX45479 had several PAH RPD failures. Refer to Section 4.c. for corrective actions and Section 6.b. for assessment of LCSD RPD failures.

The VOC LCSD associated with preparation batch VXX37789 had a recovery failure for 1,4-dichloro-2-butadiene. The analyte was not detected in the associated project samples. However, this analyte is not a target analyte and project samples are not affected by the recovery failure for this analyte.

The PAH MB associated with preparation batch XXX45479 had a detection for phenanthrene greater than ½ the LOQ but less than the LOQ. Refer to Section 6.a. for further assessment.

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c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The samples associated with the preparation batch XXX45479 with LCSD RPD failures were re-extracted outside of hold time to confirm associated analytes. Results were confirmed and in-hold data were reported.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not discuss effect on data quality, it only discusses discrepancies and what was done considering them, as applicable. Any notable data quality issues mentioned in the case narrative are discussed elsewhere within this DEC checklist.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

Analytical sensitivity was evaluated to verify that reporting limits (RLs) met applicable DEC groundwater cleanup levels for non-detect results, as appropriate. RLs met applicable regulatory levels.

e. Data quality or usability affected?

Not applicable, see above.

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6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

No analytes were detected in method blank samples at concentrations exceeding the LOQ; however, the PAH analyte phenanthrene was detected at an estimated concentration below the LOQ in preparatory batch XXX45479.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The project samples 21AKN-MW-01, 21AKN-MW-101, 21AKN-MW-02, and 21AKN-MW-03 and the equipment blank sample 21AKN-EB-03 had detections for phenanthrene at concentrations below the LOQ and less than five-times the concentration detected in the method blank sample. Therefore, the phenanthrene results for these samples are considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the LOQ in the analytical tables.

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?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – 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:

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ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – 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:

The LCS associated with preparation batch 320-522308 had a high recovery failure for HFPO-DA. HFPO-DA was not detected in any associated project sample. Data qualification not required, and data quality/and for usability not affected.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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:

The LCSD associated with preparation batch XXX45479 had RPDs outside acceptance criteria for the PAH analytes 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, and naphthalene. Sample results are considered estimated, no direction of bias, and are flagged “J” in the analytical tables.

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. Data quality or usability affected? (Use comment box to explain.)

Comments:

Yes; see above.

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c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

iv. Precision – 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:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

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vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

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 – 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:

Surrogate recoveries were within acceptance criteria. Samples were not affected.

iv. Data quality or usability affected?

Comments:

See above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:



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iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

Target analytes were not detected in the trip blank samples.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

21AKN-MW-101 was a field duplicate of 21AKN-MW-01.

ii. Submitted blind to lab?

Yes  No  N/A  Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

Where calculable, analytical results met the comparison criterion ( $\leq 30\%$  for water) for the field duplicate pairs.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Not applicable, see above.

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g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

The equipment blank sample *21AKN-EB-03* was submitted with this work order.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

No analytes were detected in equipment blank sample at concentrations exceeding the LOQ; however, the PAH analytes 2-methylnaphthalene, naphthalene, and phenanthrene were detected at an estimated concentration below the LOQ.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The project samples *21AKN-MW-01* and *21AKN-MW-02* had detections for 2-methylnaphthalene at concentrations below the LOQ and less than five-times the concentration detected in the method blank sample. Therefore, the 2-methylnaphthalene results for these samples are considered not-detected due to potential cross-contamination and are flagged 'B' at the LOQ in the analytical tables.

The project samples did not have detections for naphthalene and are not considered affected by the potential cross-contamination.

The project samples and the equipment blank sample had detections for phenanthrene at concentrations similar to concentrations observed in the associated method blank sample. Refer to Section 6.a. for applied qualifiers.

iii. Data quality or usability affected?

Comments:

Yes, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

There were no additional flags/qualifiers required for this work order.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-77653-1  
Client Project/Site: AKN PFAS

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Michael X Jaramillo



---

*Authorized for release by:  
8/30/2021 11:08:49 AM*

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
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: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Job ID: 320-77653-1**

**Laboratory: Eurofins TestAmerica, Sacramento**

## Narrative

### Job Narrative 320-77653-1

#### Receipt

The samples were received on 8/17/2021 10:32 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 1.5° C.

#### LCMS

Method EPA 537(Mod): The method blank for preparation batch 320-517458 and analytical batch 320-518032 contained Perfluorooctanesulfonic acid (PFOS) above a half of the reporting limit (1/2RL). Associated samples were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. (CCVL 320-520224/2)

Method EPA 537(Mod): Results for samples 21AKN-SW-02 (320-77653-3) and 21AKN-SW-07 (320-77653-9) 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 samples 21AKN-SW-04 (320-77653-5), 21AKN-SW-107 (320-77653-10) and 21AKN-SW-08 (320-77653-11) 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: 21AKN-SW-07 (320-77653-9). 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.

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: 21AKN-SW-08 (320-77653-11). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

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 21AKN-SW-01 (320-77653-1), 21AKN-SW-101 (320-77653-2), 21AKN-SW-02 (320-77653-3), 21AKN-SW-03 (320-77653-4), 21AKN-SW-04 (320-77653-5), 21AKN-SW-05 (320-77653-6), 21AKN-SW-105 (320-77653-7), 21AKN-SW-06 (320-77653-8), 21AKN-SW-07 (320-77653-9), 21AKN-SW-107 (320-77653-10) and 21AKN-SW-08 (320-77653-11) in preparation batch 320-517458 were light yellow/orange in color with a thin layer of sediment at the bottom of the bottle prior to extraction.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-517458.

Method 3535: During the solid phase extraction process, the following samples 21AKN-SW-03 (320-77653-4), 21AKN-SW-07 (320-77653-9) and 21AKN-SW-08 (320-77653-11) in preparation batch 320-517458 contained non-settable particulates which clogged the solid phase extraction column.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-519512.

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: 21AKN-SW-01 (320-77653-1) and 21AKN-SW-101 (320-77653-2).

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

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## Job ID: 320-77653-1 (Continued)

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### Laboratory: Eurofins TestAmerica, Sacramento (Continued)

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

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# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Client Sample ID: 21AKN-SW-01

## Lab Sample ID: 320-77653-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.5		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.5	J	1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-101

## Lab Sample ID: 320-77653-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.4		2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.0		2.0	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.7	J	2.0	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RE	1.0	J	2.0	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-02

## Lab Sample ID: 320-77653-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	48		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	19		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	64		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	5.2		1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.2		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	200		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1900	B	38	10	ng/L	20		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-03

## Lab Sample ID: 320-77653-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	19		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	9.8		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	26		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	2.1		1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.7		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)	230	B	1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-04

## Lab Sample ID: 320-77653-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	120		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	14		1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	1.7	J	1.9	0.30	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	54		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	600		97	28	ng/L	50		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1500		97	41	ng/L	50		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1600		97	28	ng/L	50		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	4100	B	97	26	ng/L	50		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-05

## Lab Sample ID: 320-77653-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	11		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Client Sample ID: 21AKN-SW-05 (Continued)

Lab Sample ID: 320-77653-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	5.0		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	30		1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.94	J	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.0		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	60		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	110	B	1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-105

Lab Sample ID: 320-77653-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	13		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.6		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	32		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.0	J	1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.2		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	58		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	130	B	1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-06

Lab Sample ID: 320-77653-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	9.6		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.4		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	31		1.9	0.82	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.87	J	1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.4		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	50		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	110	B	1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-07

Lab Sample ID: 320-77653-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	84		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	39		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	170		1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	8.0		1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	6.7		1.9	1.1	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	1.8	J	1.9	1.2	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	10		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	320		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	2400	B	38	10	ng/L	20		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-107

Lab Sample ID: 320-77653-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	78		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	39		1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	180		1.9	0.82	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	8.4		1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	5.2		1.9	1.1	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.60	J	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	2.8		1.9	1.3	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Client Sample ID: 21AKN-SW-107 (Continued)

Lab Sample ID: 320-77653-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	290		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	2200	B	39	10	ng/L	20		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-08

Lab Sample ID: 320-77653-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	74		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	34		1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	130		1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	7.5		1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	330		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	3200	B	38	10	ng/L	20		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-01**

**Lab Sample ID: 320-77653-1**

Date Collected: 08/15/21 09:30

Matrix: Water

Date Received: 08/17/21 10:32

**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)	3.5		1.9	0.56	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluoroheptanoic acid (PFHpA)	1.8	J	1.9	0.24	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorononanoic acid (PFNA)	1.5	J	1.9	0.26	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 03:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		08/18/21 12:42	08/20/21 03:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		08/18/21 12:42	08/20/21 03:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		08/18/21 12:42	08/20/21 03:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 03:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/18/21 12:42	08/20/21 03:56	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/18/21 12:42	08/20/21 03:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		08/18/21 12:42	08/20/21 03:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C4 PFHpA	81		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C4 PFOA	100		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C5 PFNA	91		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C2 PFDA	96		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C2 PFUnA	86		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C2 PFDoA	83		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C2 PFTeDA	80		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C3 PFBS	95		50 - 150	08/18/21 12:42	08/20/21 03:56	1
18O2 PFHxS	74		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C4 PFOS	84		50 - 150	08/18/21 12:42	08/20/21 03:56	1
d3-NMeFOSAA	90		50 - 150	08/18/21 12:42	08/20/21 03:56	1
d5-NEtFOSAA	101		50 - 150	08/18/21 12:42	08/20/21 03:56	1
13C3 HFPO-DA	83		50 - 150	08/18/21 12:42	08/20/21 03:56	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RE**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		08/25/21 04:51	08/27/21 01:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	71		50 - 150	08/25/21 04:51	08/27/21 01:28	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-101**

**Lab Sample ID: 320-77653-2**

Date Collected: 08/15/21 09:20

Matrix: Water

Date Received: 08/17/21 10:32

**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		2.0	0.57	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluoroheptanoic acid (PFHpA)	2.0		2.0	0.25	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorononanoic acid (PFNA)	1.7	J	2.0	0.26	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/18/21 12:42	08/20/21 04:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		08/18/21 12:42	08/20/21 04:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		08/18/21 12:42	08/20/21 04:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		08/18/21 12:42	08/20/21 04:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/18/21 12:42	08/20/21 04:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/18/21 12:42	08/20/21 04:05	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		08/18/21 12:42	08/20/21 04:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		08/18/21 12:42	08/20/21 04:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C4 PFHpA	79		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C4 PFOA	95		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C5 PFNA	95		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C2 PFDA	90		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C2 PFUnA	93		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C2 PFDoA	92		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C2 PFTeDA	87		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C3 PFBS	93		50 - 150	08/18/21 12:42	08/20/21 04:05	1
18O2 PFHxS	87		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C4 PFOS	85		50 - 150	08/18/21 12:42	08/20/21 04:05	1
d3-NMeFOSAA	96		50 - 150	08/18/21 12:42	08/20/21 04:05	1
d5-NEtFOSAA	106		50 - 150	08/18/21 12:42	08/20/21 04:05	1
13C3 HFPO-DA	83		50 - 150	08/18/21 12:42	08/20/21 04:05	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RE**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	1.0	J	2.0	0.53	ng/L		08/25/21 04:51	08/27/21 01:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	76		50 - 150	08/25/21 04:51	08/27/21 01:37	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-02**

**Lab Sample ID: 320-77653-3**

Date Collected: 08/15/21 10:12

Matrix: Water

Date Received: 08/17/21 10:32

**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)	48		1.9	0.55	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluoroheptanoic acid (PFHpA)	19		1.9	0.24	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorooctanoic acid (PFOA)	64		1.9	0.81	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorononanoic acid (PFNA)	5.2		1.9	0.26	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorobutanesulfonic acid (PFBS)	8.2		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 04:14	1
Perfluorohexanesulfonic acid (PFHxS)	200		1.9	0.54	ng/L		08/18/21 12:42	08/20/21 04:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		08/18/21 12:42	08/20/21 04:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		08/18/21 12:42	08/20/21 04:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 04:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/18/21 12:42	08/20/21 04:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 04:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/18/21 12:42	08/20/21 04:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C4 PFHpA	80		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C4 PFOA	90		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C5 PFNA	68		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C2 PFDA	87		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C2 PFUnA	77		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C2 PFDoA	78		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C2 PFTeDA	81		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C3 PFBS	84		50 - 150	08/18/21 12:42	08/20/21 04:14	1
18O2 PFHxS	78		50 - 150	08/18/21 12:42	08/20/21 04:14	1
13C4 PFOS	70		50 - 150	08/18/21 12:42	08/20/21 04:14	1
d3-NMeFOSAA	80		50 - 150	08/18/21 12:42	08/20/21 04:14	1
d5-NEtFOSAA	80		50 - 150	08/18/21 12:42	08/20/21 04:14	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	1900	B	38	10	ng/L		08/18/21 12:42	08/24/21 14:57	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	72		50 - 150	08/18/21 12:42	08/24/21 14:57	20

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-03**

**Lab Sample ID: 320-77653-4**

Date Collected: 08/15/21 12:00

Matrix: Water

Date Received: 08/17/21 10:32

**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)	19		1.9	0.55	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluoroheptanoic acid (PFHpA)	9.8		1.9	0.24	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorooctanoic acid (PFOA)	26		1.9	0.81	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorononanoic acid (PFNA)	2.1		1.9	0.26	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorobutanesulfonic acid (PFBS)	5.7		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorohexanesulfonic acid (PFHxS)	130		1.9	0.54	ng/L		08/18/21 12:42	08/20/21 04:23	1
Perfluorooctanesulfonic acid (PFOS)	230	B	1.9	0.51	ng/L		08/18/21 12:42	08/20/21 04:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		08/18/21 12:42	08/20/21 04:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		08/18/21 12:42	08/20/21 04:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 04:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/18/21 12:42	08/20/21 04:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 04:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/18/21 12:42	08/20/21 04:23	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	71		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C4 PFHpA	77		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C4 PFOA	90		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C5 PFNA	81		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C2 PFDA	84		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C2 PFUnA	73		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C2 PFDoA	80		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C2 PFTeDA	64		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C3 PFBS	82		50 - 150				08/18/21 12:42	08/20/21 04:23	1
18O2 PFHxS	79		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C4 PFOS	75		50 - 150				08/18/21 12:42	08/20/21 04:23	1
d3-NMeFOSAA	75		50 - 150				08/18/21 12:42	08/20/21 04:23	1
d5-NEtFOSAA	91		50 - 150				08/18/21 12:42	08/20/21 04:23	1
13C3 HFPO-DA	73		50 - 150				08/18/21 12:42	08/20/21 04:23	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-04**

**Lab Sample ID: 320-77653-5**

Date Collected: 08/15/21 16:21

Matrix: Water

Date Received: 08/17/21 10:32

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	120		1.9	0.24	ng/L		08/18/21 12:42	08/20/21 04:32	1
Perfluorononanoic acid (PFNA)	14		1.9	0.26	ng/L		08/18/21 12:42	08/20/21 04:32	1
Perfluorodecanoic acid (PFDA)	1.7	J	1.9	0.30	ng/L		08/18/21 12:42	08/20/21 04:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/18/21 12:42	08/20/21 04:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/18/21 12:42	08/20/21 04:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		08/18/21 12:42	08/20/21 04:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		08/18/21 12:42	08/20/21 04:32	1
Perfluorobutanesulfonic acid (PFBS)	54		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 04:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		08/18/21 12:42	08/20/21 04:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		08/18/21 12:42	08/20/21 04:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 04:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		08/18/21 12:42	08/20/21 04:32	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/18/21 12:42	08/20/21 04:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		08/18/21 12:42	08/20/21 04:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	107		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C4 PFHpA	87		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C4 PFOA	87		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C5 PFNA	69		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C2 PFDA	100		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C2 PFUnA	112		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C2 PFDoA	107		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C2 PFTeDA	118		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C3 PFBS	118		50 - 150	08/18/21 12:42	08/20/21 04:32	1
18O2 PFHxS	94		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C4 PFOS	74		50 - 150	08/18/21 12:42	08/20/21 04:32	1
d3-NMeFOSAA	100		50 - 150	08/18/21 12:42	08/20/21 04:32	1
d5-NEtFOSAA	118		50 - 150	08/18/21 12:42	08/20/21 04:32	1
13C3 HFPO-DA	98		50 - 150	08/18/21 12:42	08/20/21 04:32	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	600		97	28	ng/L		08/18/21 12:42	08/26/21 01:03	50
Perfluorooctanoic acid (PFOA)	1500		97	41	ng/L		08/18/21 12:42	08/26/21 01:03	50
Perfluorohexanesulfonic acid (PFHxS)	1600		97	28	ng/L		08/18/21 12:42	08/26/21 01:03	50
Perfluorooctanesulfonic acid (PFOS)	4100	B	97	26	ng/L		08/18/21 12:42	08/26/21 01:03	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		50 - 150	08/18/21 12:42	08/26/21 01:03	50
13C4 PFOA	101		50 - 150	08/18/21 12:42	08/26/21 01:03	50
18O2 PFHxS	113		50 - 150	08/18/21 12:42	08/26/21 01:03	50
13C4 PFOS	107		50 - 150	08/18/21 12:42	08/26/21 01:03	50

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-05**

**Lab Sample ID: 320-77653-6**

Date Collected: 08/15/21 17:38

Matrix: Water

Date Received: 08/17/21 10:32

**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)	11		1.9	0.54	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluoroheptanoic acid (PFHpA)	5.0		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorooctanoic acid (PFOA)	30		1.9	0.79	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorononanoic acid (PFNA)	0.94	J	1.9	0.25	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorobutanesulfonic acid (PFBS)	3.0		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorohexanesulfonic acid (PFHxS)	60		1.9	0.53	ng/L		08/18/21 12:42	08/20/21 04:42	1
Perfluorooctanesulfonic acid (PFOS)	110	B	1.9	0.50	ng/L		08/18/21 12:42	08/20/21 04:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		08/18/21 12:42	08/20/21 04:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		08/18/21 12:42	08/20/21 04:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		08/18/21 12:42	08/20/21 04:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		08/18/21 12:42	08/20/21 04:42	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 04:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		08/18/21 12:42	08/20/21 04:42	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	83		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C4 PFHpA	94		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C4 PFOA	103		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C5 PFNA	95		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C2 PFDA	95		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C2 PFUnA	93		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C2 PFDoA	90		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C2 PFTeDA	84		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C3 PFBS	85		50 - 150				08/18/21 12:42	08/20/21 04:42	1
18O2 PFHxS	88		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C4 PFOS	95		50 - 150				08/18/21 12:42	08/20/21 04:42	1
d3-NMeFOSAA	85		50 - 150				08/18/21 12:42	08/20/21 04:42	1
d5-NEtFOSAA	96		50 - 150				08/18/21 12:42	08/20/21 04:42	1
13C3 HFPO-DA	82		50 - 150				08/18/21 12:42	08/20/21 04:42	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-105**

**Lab Sample ID: 320-77653-7**

Date Collected: 08/15/21 17:28

Matrix: Water

Date Received: 08/17/21 10:32

**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)	13		1.9	0.55	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluoroheptanoic acid (PFHpA)	4.6		1.9	0.24	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorooctanoic acid (PFOA)	32		1.9	0.81	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorononanoic acid (PFNA)	1.0	J	1.9	0.26	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorobutanesulfonic acid (PFBS)	3.2		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorohexanesulfonic acid (PFHxS)	58		1.9	0.54	ng/L		08/18/21 12:42	08/20/21 04:51	1
Perfluorooctanesulfonic acid (PFOS)	130	B	1.9	0.51	ng/L		08/18/21 12:42	08/20/21 04:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		08/18/21 12:42	08/20/21 04:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		08/18/21 12:42	08/20/21 04:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 04:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/18/21 12:42	08/20/21 04:51	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/18/21 12:42	08/20/21 04:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/18/21 12:42	08/20/21 04:51	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	75		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C4 PFHpA	79		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C4 PFOA	102		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C5 PFNA	83		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C2 PFDA	100		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C2 PFUnA	91		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C2 PFDoA	93		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C2 PFTeDA	78		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C3 PFBS	81		50 - 150				08/18/21 12:42	08/20/21 04:51	1
18O2 PFHxS	86		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C4 PFOS	87		50 - 150				08/18/21 12:42	08/20/21 04:51	1
d3-NMeFOSAA	86		50 - 150				08/18/21 12:42	08/20/21 04:51	1
d5-NEtFOSAA	98		50 - 150				08/18/21 12:42	08/20/21 04:51	1
13C3 HFPO-DA	75		50 - 150				08/18/21 12:42	08/20/21 04:51	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-06**

**Lab Sample ID: 320-77653-8**

Date Collected: 08/15/21 17:55

Matrix: Water

Date Received: 08/17/21 10:32

**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)	9.6		1.9	0.56	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluoroheptanoic acid (PFHpA)	4.4		1.9	0.24	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorooctanoic acid (PFOA)	31		1.9	0.82	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorononanoic acid (PFNA)	0.87	J	1.9	0.26	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorobutanesulfonic acid (PFBS)	2.4		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorohexanesulfonic acid (PFHxS)	50		1.9	0.55	ng/L		08/18/21 12:42	08/20/21 05:18	1
Perfluorooctanesulfonic acid (PFOS)	110	B	1.9	0.52	ng/L		08/18/21 12:42	08/20/21 05:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		08/18/21 12:42	08/20/21 05:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		08/18/21 12:42	08/20/21 05:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 05:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		08/18/21 12:42	08/20/21 05:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/18/21 12:42	08/20/21 05:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		08/18/21 12:42	08/20/21 05:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C4 PFHpA	80		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C4 PFOA	108		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C5 PFNA	80		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C2 PFDA	99		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C2 PFUnA	92		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C2 PFDoA	90		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C2 PFTeDA	78		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C3 PFBS	84		50 - 150	08/18/21 12:42	08/20/21 05:18	1
18O2 PFHxS	89		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C4 PFOS	84		50 - 150	08/18/21 12:42	08/20/21 05:18	1
d3-NMeFOSAA	83		50 - 150	08/18/21 12:42	08/20/21 05:18	1
d5-NEtFOSAA	88		50 - 150	08/18/21 12:42	08/20/21 05:18	1
13C3 HFPO-DA	73		50 - 150	08/18/21 12:42	08/20/21 05:18	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-07**

**Lab Sample ID: 320-77653-9**

Date Collected: 08/16/21 08:30

Matrix: Water

Date Received: 08/17/21 10:32

**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)	84		1.9	0.55	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluoroheptanoic acid (PFHpA)	39		1.9	0.24	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorooctanoic acid (PFOA)	170		1.9	0.81	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorononanoic acid (PFNA)	8.0		1.9	0.26	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluoroundecanoic acid (PFUnA)	6.7		1.9	1.1	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorotridecanoic acid (PFTriA)	1.8	J	1.9	1.2	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorobutanesulfonic acid (PFBS)	10		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 05:27	1
Perfluorohexanesulfonic acid (PFHxS)	320		1.9	0.54	ng/L		08/18/21 12:42	08/20/21 05:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		08/18/21 12:42	08/20/21 05:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		08/18/21 12:42	08/20/21 05:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 05:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/18/21 12:42	08/20/21 05:27	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/18/21 12:42	08/20/21 05:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/18/21 12:42	08/20/21 05:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	54		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C4 PFHpA	64		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C4 PFOA	67		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C5 PFNA	52		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C2 PFDA	70		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C2 PFUnA	59		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C2 PFDoA	59		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C2 PFTeDA	59		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C3 PFBS	65		50 - 150	08/18/21 12:42	08/20/21 05:27	1
18O2 PFHxS	58		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C4 PFOS	50		50 - 150	08/18/21 12:42	08/20/21 05:27	1
d3-NMeFOSAA	49	*5-	50 - 150	08/18/21 12:42	08/20/21 05:27	1
d5-NEtFOSAA	59		50 - 150	08/18/21 12:42	08/20/21 05:27	1
13C3 HFPO-DA	57		50 - 150	08/18/21 12:42	08/20/21 05:27	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2400	B	38	10	ng/L		08/18/21 12:42	08/24/21 15:07	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	49	*5-	50 - 150	08/18/21 12:42	08/24/21 15:07	20

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-107**

**Lab Sample ID: 320-77653-10**

Date Collected: 08/16/21 08:20

Matrix: Water

Date Received: 08/17/21 10:32

**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)	78		1.9	0.56	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluoroheptanoic acid (PFHpA)	39		1.9	0.24	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorooctanoic acid (PFOA)	180		1.9	0.82	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorononanoic acid (PFNA)	8.4		1.9	0.26	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluoroundecanoic acid (PFUnA)	5.2		1.9	1.1	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorododecanoic acid (PFDoA)	0.60	J	1.9	0.53	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorotridecanoic acid (PFTriA)	2.8		1.9	1.3	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 05:36	1
Perfluorohexanesulfonic acid (PFHxS)	290		1.9	0.55	ng/L		08/18/21 12:42	08/20/21 05:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		08/18/21 12:42	08/20/21 05:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		08/18/21 12:42	08/20/21 05:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 05:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.4	ng/L		08/18/21 12:42	08/20/21 05:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		08/18/21 12:42	08/20/21 05:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		08/18/21 12:42	08/20/21 05:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C4 PFHpA	85		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C4 PFOA	93		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C5 PFNA	64		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C2 PFDA	86		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C2 PFUnA	86		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C2 PFDoA	74		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C2 PFTeDA	97		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C3 PFBS	83		50 - 150	08/18/21 12:42	08/20/21 05:36	1
18O2 PFHxS	87		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C4 PFOS	75		50 - 150	08/18/21 12:42	08/20/21 05:36	1
d3-NMeFOSAA	85		50 - 150	08/18/21 12:42	08/20/21 05:36	1
d5-NEtFOSAA	89		50 - 150	08/18/21 12:42	08/20/21 05:36	1
13C3 HFPO-DA	74		50 - 150	08/18/21 12:42	08/20/21 05:36	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2200	B	39	10	ng/L		08/18/21 12:42	08/26/21 00:45	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	76		50 - 150	08/18/21 12:42	08/26/21 00:45	20

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-08**

**Lab Sample ID: 320-77653-11**

Date Collected: 08/16/21 09:00

Matrix: Water

Date Received: 08/17/21 10:32

**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)	74		1.9	0.54	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluoroheptanoic acid (PFHpA)	34		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorooctanoic acid (PFOA)	130		1.9	0.80	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorononanoic acid (PFNA)	7.5		1.9	0.25	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.19	ng/L		08/18/21 12:42	08/20/21 05:46	1
Perfluorohexanesulfonic acid (PFHxS)	330		1.9	0.54	ng/L		08/18/21 12:42	08/20/21 05:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		08/18/21 12:42	08/20/21 05:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		08/18/21 12:42	08/20/21 05:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		08/18/21 12:42	08/20/21 05:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		08/18/21 12:42	08/20/21 05:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		08/18/21 12:42	08/20/21 05:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		08/18/21 12:42	08/20/21 05:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	25	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C4 PFHpA	25	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C4 PFOA	30	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C5 PFNA	24	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C2 PFDA	27	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C2 PFUnA	28	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C2 PFDoA	28	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C2 PFTeDA	30	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C3 PFBS	27	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
18O2 PFHxS	25	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C4 PFOS	24	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
d3-NMeFOSAA	26	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
d5-NEtFOSAA	27	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1
13C3 HFPO-DA	22	*5-	50 - 150	08/18/21 12:42	08/20/21 05:46	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	3200	B	38	10	ng/L		08/18/21 12:42	08/26/21 00:54	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	27	*5-	50 - 150	08/18/21 12:42	08/26/21 00:54	20

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-77653-1	21AKN-SW-01	86	81	100	91	96	86	83	80
320-77653-1 - RE	21AKN-SW-01								
320-77653-2	21AKN-SW-101	91	79	95	95	90	93	92	87
320-77653-2 - RE	21AKN-SW-101								
320-77653-3	21AKN-SW-02	79	80	90	68	87	77	78	81
320-77653-3 - DL	21AKN-SW-02								
320-77653-4	21AKN-SW-03	71	77	90	81	84	73	80	64
320-77653-5	21AKN-SW-04	107	87	87	69	100	112	107	118
320-77653-5 - DL	21AKN-SW-04	83		101					
320-77653-6	21AKN-SW-05	83	94	103	95	95	93	90	84
320-77653-7	21AKN-SW-105	75	79	102	83	100	91	93	78
320-77653-8	21AKN-SW-06	86	80	108	80	99	92	90	78
320-77653-9	21AKN-SW-07	54	64	67	52	70	59	59	59
320-77653-9 - DL	21AKN-SW-07								
320-77653-10	21AKN-SW-107	78	85	93	64	86	86	74	97
320-77653-10 - DL	21AKN-SW-107								
320-77653-11	21AKN-SW-08	25 *5-	25 *5-	30 *5-	24 *5-	27 *5-	28 *5-	28 *5-	30 *5-
320-77653-11 - DL	21AKN-SW-08								
LCS 320-517458/2-A	Lab Control Sample	89	92	96	89	90	95	90	95
LCS 320-519512/2-A	Lab Control Sample								
LCSD 320-517458/3-A	Lab Control Sample Dup	87	95	95	80	98	84	94	91
LCSD 320-519512/3-A	Lab Control Sample Dup								
MB 320-517458/1-A	Method Blank	84	95	95	83	88	97	90	101
MB 320-519512/1-A	Method Blank								

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-77653-1	21AKN-SW-01	95	74	84	90	101	83
320-77653-1 - RE	21AKN-SW-01			71			
320-77653-2	21AKN-SW-101	93	87	85	96	106	83
320-77653-2 - RE	21AKN-SW-101			76			
320-77653-3	21AKN-SW-02	84	78	70	80	80	
320-77653-3 - DL	21AKN-SW-02			72			
320-77653-4	21AKN-SW-03	82	79	75	75	91	73
320-77653-5	21AKN-SW-04	118	94	74	100	118	98
320-77653-5 - DL	21AKN-SW-04		113	107			
320-77653-6	21AKN-SW-05	85	88	95	85	96	82
320-77653-7	21AKN-SW-105	81	86	87	86	98	75
320-77653-8	21AKN-SW-06	84	89	84	83	88	73
320-77653-9	21AKN-SW-07	65	58	50	49 *5-	59	57
320-77653-9 - DL	21AKN-SW-07			49 *5-			
320-77653-10	21AKN-SW-107	83	87	75	85	89	74
320-77653-10 - DL	21AKN-SW-107			76			
320-77653-11	21AKN-SW-08	27 *5-	25 *5-	24 *5-	26 *5-	27 *5-	22 *5-
320-77653-11 - DL	21AKN-SW-08			27 *5-			
LCS 320-517458/2-A	Lab Control Sample	106	91	91	85	98	89
LCS 320-519512/2-A	Lab Control Sample			75			
LCSD 320-517458/3-A	Lab Control Sample Dup	91	91	83	78	90	84
LCSD 320-519512/3-A	Lab Control Sample Dup			76			

Eurofins TestAmerica, Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AKN PFAS

Job ID: 320-77653-1

**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	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
MB 320-517458/1-A	Method Blank	85	97	87	78	97	77
MB 320-519512/1-A	Method Blank			84			

**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



# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-517458/1-A**  
**Matrix: Water**  
**Analysis Batch: 518032**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 517458**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		08/18/21 12:42	08/20/21 03:29	1
Perfluorooctanesulfonic acid (PFOS)	3.40		2.0	0.54	ng/L		08/18/21 12:42	08/20/21 03:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		08/18/21 12:42	08/20/21 03:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		08/18/21 12:42	08/20/21 03:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		08/18/21 12:42	08/20/21 03:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		08/18/21 12:42	08/20/21 03:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		08/18/21 12:42	08/20/21 03:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		08/18/21 12:42	08/20/21 03:29	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	84		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C4 PFHpA	95		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C4 PFOA	95		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C5 PFNA	83		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C2 PFDA	88		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C2 PFUnA	97		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C2 PFDoA	90		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C2 PFTeDA	101		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C3 PFBS	85		50 - 150	08/18/21 12:42	08/20/21 03:29	1
18O2 PFHxS	97		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C4 PFOS	87		50 - 150	08/18/21 12:42	08/20/21 03:29	1
d3-NMeFOSAA	78		50 - 150	08/18/21 12:42	08/20/21 03:29	1
d5-NEtFOSAA	97		50 - 150	08/18/21 12:42	08/20/21 03:29	1
13C3 HFPO-DA	77		50 - 150	08/18/21 12:42	08/20/21 03:29	1

**Lab Sample ID: LCS 320-517458/2-A**  
**Matrix: Water**  
**Analysis Batch: 518032**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 517458**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	48.2		ng/L		120	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.9		ng/L		105	71 - 133
Perfluorononanoic acid (PFNA)	40.0	46.6		ng/L		117	69 - 130

Eurofins TestAmerica, Sacramento



# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-517458/2-A**  
**Matrix: Water**  
**Analysis Batch: 518032**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 517458**

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	40.5		ng/L		101	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	42.8		ng/L		107	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.4		ng/L		108	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	30.0		ng/L		85	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	41.8		ng/L		115	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	40.6		ng/L		109	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	45.5		ng/L		114	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.7		ng/L		99	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	38.4		ng/L		103	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.7		ng/L		112	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	38.1		ng/L		101	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.9		ng/L		122	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	89		50 - 150
13C4 PFHpA	92		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	89		50 - 150
13C2 PFDA	90		50 - 150
13C2 PFUnA	95		50 - 150
13C2 PFDoA	90		50 - 150
13C2 PFTeDA	95		50 - 150
13C3 PFBS	106		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	91		50 - 150
d3-NMeFOSAA	85		50 - 150
d5-NEtFOSAA	98		50 - 150
13C3 HFPO-DA	89		50 - 150

**Lab Sample ID: LCSD 320-517458/3-A**  
**Matrix: Water**  
**Analysis Batch: 518032**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 517458**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD Limit
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	72 - 129	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.2		ng/L		100	72 - 130	18	30
Perfluorooctanoic acid (PFOA)	40.0	46.4		ng/L		116	71 - 133	10	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-517458/3-A**  
**Matrix: Water**  
**Analysis Batch: 518032**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 517458**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	46.1		ng/L		115	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	41.1		ng/L		103	71 - 129	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	45.7		ng/L		114	69 - 133	12	30
Perfluorododecanoic acid (PFDoA)	40.0	42.0		ng/L		105	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	39.2		ng/L		98	65 - 144	10	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.0		ng/L		99	72 - 130	15	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.4		ng/L		105	68 - 131	8	30
Perfluorooctanesulfonic acid (PFOS)	37.1	39.5		ng/L		106	65 - 140	3	30
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	45.0		ng/L		112	65 - 136	1	30
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	43.0		ng/L		107	61 - 135	8	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.7		ng/L		106	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.0		ng/L		110	72 - 132	2	30
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	37.7	42.0		ng/L		111	76 - 136	10	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.7		ng/L		121	81 - 141	0	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	87		50 - 150
13C4 PFHpA	95		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	80		50 - 150
13C2 PFDA	98		50 - 150
13C2 PFUnA	84		50 - 150
13C2 PFDoA	94		50 - 150
13C2 PFTeDA	91		50 - 150
13C3 PFBS	91		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	83		50 - 150
d3-NMeFOSAA	78		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	84		50 - 150

**Lab Sample ID: MB 320-519512/1-A**  
**Matrix: Water**  
**Analysis Batch: 520224**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 519512**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		08/25/21 04:51	08/27/21 01:01	1

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOS	84		50 - 150	08/25/21 04:51	08/27/21 01:01	1

**Lab Sample ID: LCS 320-519512/2-A**  
**Matrix: Water**  
**Analysis Batch: 520224**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 519512**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
Perfluorooctanesulfonic acid (PFOS)	37.1	39.5		ng/L		107	65 - 140

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C4 PFOS	75		50 - 150

**Lab Sample ID: LCSD 320-519512/3-A**  
**Matrix: Water**  
**Analysis Batch: 520224**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 519512**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
Perfluorooctanesulfonic acid (PFOS)	37.1	36.9		ng/L		100	65 - 140	7	30

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C4 PFOS	76		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## LCMS

### Prep Batch: 517458

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77653-1	21AKN-SW-01	Total/NA	Water	3535	
320-77653-2	21AKN-SW-101	Total/NA	Water	3535	
320-77653-3 - DL	21AKN-SW-02	Total/NA	Water	3535	
320-77653-3	21AKN-SW-02	Total/NA	Water	3535	
320-77653-4	21AKN-SW-03	Total/NA	Water	3535	
320-77653-5	21AKN-SW-04	Total/NA	Water	3535	
320-77653-5 - DL	21AKN-SW-04	Total/NA	Water	3535	
320-77653-6	21AKN-SW-05	Total/NA	Water	3535	
320-77653-7	21AKN-SW-105	Total/NA	Water	3535	
320-77653-8	21AKN-SW-06	Total/NA	Water	3535	
320-77653-9 - DL	21AKN-SW-07	Total/NA	Water	3535	
320-77653-9	21AKN-SW-07	Total/NA	Water	3535	
320-77653-10	21AKN-SW-107	Total/NA	Water	3535	
320-77653-10 - DL	21AKN-SW-107	Total/NA	Water	3535	
320-77653-11 - DL	21AKN-SW-08	Total/NA	Water	3535	
320-77653-11	21AKN-SW-08	Total/NA	Water	3535	
MB 320-517458/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-517458/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-517458/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 518032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77653-1	21AKN-SW-01	Total/NA	Water	EPA 537(Mod)	517458
320-77653-2	21AKN-SW-101	Total/NA	Water	EPA 537(Mod)	517458
320-77653-3	21AKN-SW-02	Total/NA	Water	EPA 537(Mod)	517458
320-77653-4	21AKN-SW-03	Total/NA	Water	EPA 537(Mod)	517458
320-77653-5	21AKN-SW-04	Total/NA	Water	EPA 537(Mod)	517458
320-77653-6	21AKN-SW-05	Total/NA	Water	EPA 537(Mod)	517458
320-77653-7	21AKN-SW-105	Total/NA	Water	EPA 537(Mod)	517458
320-77653-8	21AKN-SW-06	Total/NA	Water	EPA 537(Mod)	517458
320-77653-9	21AKN-SW-07	Total/NA	Water	EPA 537(Mod)	517458
320-77653-10	21AKN-SW-107	Total/NA	Water	EPA 537(Mod)	517458
320-77653-11	21AKN-SW-08	Total/NA	Water	EPA 537(Mod)	517458
MB 320-517458/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	517458
LCS 320-517458/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	517458
LCSD 320-517458/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	517458

### Analysis Batch: 519284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77653-3 - DL	21AKN-SW-02	Total/NA	Water	EPA 537(Mod)	517458
320-77653-9 - DL	21AKN-SW-07	Total/NA	Water	EPA 537(Mod)	517458

### Prep Batch: 519512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77653-1 - RE	21AKN-SW-01	Total/NA	Water	3535	
320-77653-2 - RE	21AKN-SW-101	Total/NA	Water	3535	
MB 320-519512/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-519512/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-519512/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## LCMS

### Analysis Batch: 519850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77653-5 - DL	21AKN-SW-04	Total/NA	Water	EPA 537(Mod)	517458
320-77653-10 - DL	21AKN-SW-107	Total/NA	Water	EPA 537(Mod)	517458
320-77653-11 - DL	21AKN-SW-08	Total/NA	Water	EPA 537(Mod)	517458

### Analysis Batch: 520224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77653-1 - RE	21AKN-SW-01	Total/NA	Water	EPA 537(Mod)	519512
320-77653-2 - RE	21AKN-SW-101	Total/NA	Water	EPA 537(Mod)	519512
MB 320-519512/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	519512
LCS 320-519512/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	519512
LCSD 320-519512/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	519512

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Client Sample ID: 21AKN-SW-01

Lab Sample ID: 320-77653-1

Date Collected: 08/15/21 09:30

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 03:56	S1M	TAL SAC
Total/NA	Prep	3535	RE		256.4 mL	10.0 mL	519512	08/25/21 04:51	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	RE	1			520224	08/27/21 01:28	JRB	TAL SAC

## Client Sample ID: 21AKN-SW-101

Lab Sample ID: 320-77653-2

Date Collected: 08/15/21 09:20

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.9 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 04:05	S1M	TAL SAC
Total/NA	Prep	3535	RE		255.8 mL	10.0 mL	519512	08/25/21 04:51	EG	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	RE	1			520224	08/27/21 01:37	JRB	TAL SAC

## Client Sample ID: 21AKN-SW-02

Lab Sample ID: 320-77653-3

Date Collected: 08/15/21 10:12

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.4 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 04:14	S1M	TAL SAC
Total/NA	Prep	3535	DL		263.4 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	20			519284	08/24/21 14:57	JRB	TAL SAC

## Client Sample ID: 21AKN-SW-03

Lab Sample ID: 320-77653-4

Date Collected: 08/15/21 12:00

Matrix: Water

Date Received: 08/17/21 10:32

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 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 04:23	S1M	TAL SAC

## Client Sample ID: 21AKN-SW-04

Lab Sample ID: 320-77653-5

Date Collected: 08/15/21 16:21

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.7 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 04:32	S1M	TAL SAC
Total/NA	Prep	3535	DL		258.7 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	50			519850	08/26/21 01:03	S1M	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-05**

**Lab Sample ID: 320-77653-6**

Date Collected: 08/15/21 17:38

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.1 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 04:42	S1M	TAL SAC

**Client Sample ID: 21AKN-SW-105**

**Lab Sample ID: 320-77653-7**

Date Collected: 08/15/21 17:28

Matrix: Water

Date Received: 08/17/21 10:32

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	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 04:51	S1M	TAL SAC

**Client Sample ID: 21AKN-SW-06**

**Lab Sample ID: 320-77653-8**

Date Collected: 08/15/21 17:55

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.4 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 05:18	S1M	TAL SAC

**Client Sample ID: 21AKN-SW-07**

**Lab Sample ID: 320-77653-9**

Date Collected: 08/16/21 08:30

Matrix: Water

Date Received: 08/17/21 10:32

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	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 05:27	S1M	TAL SAC
Total/NA	Prep	3535	DL		261.5 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	20			519284	08/24/21 15:07	JRB	TAL SAC

**Client Sample ID: 21AKN-SW-107**

**Lab Sample ID: 320-77653-10**

Date Collected: 08/16/21 08:20

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.8 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 05:36	S1M	TAL SAC
Total/NA	Prep	3535	DL		258.8 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	20			519850	08/26/21 00:45	S1M	TAL SAC

**Client Sample ID: 21AKN-SW-08**

**Lab Sample ID: 320-77653-11**

Date Collected: 08/16/21 09:00

Matrix: Water

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.1 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518032	08/20/21 05:46	S1M	TAL SAC

Eurofins TestAmerica, Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

**Client Sample ID: 21AKN-SW-08**

**Lab Sample ID: 320-77653-11**

**Date Collected: 08/16/21 09:00**

**Matrix: Water**

**Date Received: 08/17/21 10:32**

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		266.1 mL	10.0 mL	517458	08/18/21 12:42	EH	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	20			519850	08/26/21 00:54	S1M	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

## Laboratory: Eurofins TestAmerica, 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

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL 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:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77653-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-77653-1	21AKN-SW-01	Water	08/15/21 09:30	08/17/21 10:32
320-77653-2	21AKN-SW-101	Water	08/15/21 09:20	08/17/21 10:32
320-77653-3	21AKN-SW-02	Water	08/15/21 10:12	08/17/21 10:32
320-77653-4	21AKN-SW-03	Water	08/15/21 12:00	08/17/21 10:32
320-77653-5	21AKN-SW-04	Water	08/15/21 16:21	08/17/21 10:32
320-77653-6	21AKN-SW-05	Water	08/15/21 17:38	08/17/21 10:32
320-77653-7	21AKN-SW-105	Water	08/15/21 17:28	08/17/21 10:32
320-77653-8	21AKN-SW-06	Water	08/15/21 17:55	08/17/21 10:32
320-77653-9	21AKN-SW-07	Water	08/16/21 08:30	08/17/21 10:32
320-77653-10	21AKN-SW-107	Water	08/16/21 08:20	08/17/21 10:32
320-77653-11	21AKN-SW-08	Water	08/16/21 09:00	08/17/21 10:32

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# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

**Turn Around Time:**  
 Normal     Rush  
 Please Specify

**Quote No:**  
**MSA Number:** TBD  
**J-Flags:**  Yes     No

PFAS x 18

Total Number of Containers

Sample Identity	Lab No.	Time	Date Sampled							Remarks/Matrix Composition/Grab? Sample Containers
21AKN-SW-01		0930	8/15/21	X						2 surface water
21AKN-SW-101		0920		X						2
21AKN-SW-02		1012		X						2
21AKN-SW-03		1200		X						2
21AKN-SW-04		1621		X						2
21AKN-SW-05		1738		X						2
21AKN-SW-105		1728		X						2
21AKN-SW-06		1755		X						2
21AKN-SW-07		0830	8/16/21	X						2
21AKN-SW-107		0820		X						2



**Project Information**  
 Number: 102582-011  
 Name: AKN PFAS  
 Contact: MKS  
 Ongoing Project? Yes  No   
 Sampler: VY DOLD

**Sample Receipt**  
 Total No. of Containers:  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond./Cold  
 Temp: i.s.  
 Delivery Method: goldstreet

**Relinquished By: 1.**  
 Signature: [Signature] Time: 0930  
 Printed Name: Veselina Yakimova Date: 8/16/21  
 Company: Shannon & Wilson

**Relinquished By: 2.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Relinquished By: 3.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Notes:**  
Samples may contain some organics

**Received By: 1.**  
 Signature: [Signature] Time: 09:45  
 Printed Name: Nicholas Cahill Date: 08-17-21  
 Company: ETASAC

**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



# CHAIN-OF-CUSTODY RECORD

Page 2 of 2  
 Laboratory Test America  
 Attn: David Aetucker

Analytical Methods (include preservative if used)

**Turn Around Time:**  
 Normal     Rush  
 Please Specify

**Quote No:**  
**MSA Number:** TBD  
**J-Flags:**  Yes     No

PFAS X18									
Total Number of Containers									

Sample Identity	Lab No.	Time	Date Sampled	Analytical Methods						Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
<u>21AKN-SW-08</u>		<u>0900</u>	<u>8/16/21</u>	<u>X</u>						<u>2</u>	<u>surface water</u>

**Project Information**  
 Number: 102582-01  
 Name: AKN PFAS  
 Contact: MXJ  
 Ongoing Project? Yes  No   
 Sampler: VTY, JLD

**Sample Receipt**  
 Total No. of Containers: \_\_\_\_\_  
 COC Seals/Intact? Y/N/NA \_\_\_\_\_  
 Received Good Cond./Cold \_\_\_\_\_  
 Temp: 1.5 C  
 Delivery Method: gold street

**Relinquished By: 1.**  
 Signature: [Signature] Time: 0930  
 Printed Name: Veselin Jankov Date: 8/16/21  
 Company: Shannon & Wilson

**Relinquished By: 2.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Relinquished By: 3.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Notes:**  
Samples may contain some organics

**Received By: 1.**  
 Signature: [Signature] Time: 10:12  
 Printed Name: Nicholas Cahill Date: 8/17/21  
 Company: ETASAC

**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



## Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-77653-1

**Login Number: 77653**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Her, David A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> 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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Laboratory Data Review Checklist

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

September 7, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-77653-1

Laboratory Report Date:

August 30, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-77653-1

Laboratory Report Date:

August 30, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes 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 ADEC CS approved?

Yes  No  N/A  Comments:

The requested analyses were conducted by TestAmerica of West Sacramento, CA.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:



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Laboratory Report Date:

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CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received 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, etc.?

Yes  No  N/A  Comments:

There were no discrepancies noted by the laboratory.

e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

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Laboratory Report Date:

August 30, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The method blank for preparation batch 320-517485 contained PFOS above half the reporting limit. Associated samples were not re-extracted and/or re-analyzed because results are greater than 10x the value found in the method blank.

The "I" qualifier means the transition mass ratio for the low-level continuing calibration verification (CCVL) associated with analytical batch 320-520224 was outside of the established ratio limit. 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. The transition mass ratios in the project samples were within established ratios and are not affected by the uncertainty in the CCVL sample.

Results for samples *21AKN-SW-02*, *21AKN-SW-04*, *21AKN-SW-07*, *21AKN-SW-107*, and *21AKN-SW-08* were reported at a dilution due to high concentration of the target analyte in the analysis of undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: *21AKN-SW-07* and *21AKN-SW-08*. 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. Refer to Section 6.d. for further assessment.

The samples *21AKN-SW-01*, *21AKN-SW-101*, *21AKN-SW-02*, *21AKN-SW-03*, *21AKN-SW-04*, *21AKN-SW-05*, *21AKN-SW-105*, *21AKN-SW-06*, *21AKN-SW-07*, *21AKN-SW-107*, and *21AKN-SW-08* in preparation batch 320-517458 were light yellow/orange in color with a thin layer of sediment at the bottom of the bottle prior to extraction

During the solid phase extraction process, the samples *21AKN-SW-03*, *21AKN-SW-07*, and *21AKN-SW-08* in preparation batch 320-517458 contained non-settable particulates which clogged the solid phase extraction column.

The samples *21AKN-SW-01* and *21AKN-SW-101* contained floating particulates in the sample bottle prior to extraction.

There was insufficient sample volume available to perform a matrix spike (MS) and MS duplicate (MSD) in conjunction with preparation batches 320-517458 and 320-519512.

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August 30, 2021

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ADOT&PF King Salmon Airport Statewide PFAS

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

The laboratory analyzed a laboratory control sample/laboratory control sample duplicate (LCS/LCSD) to assess laboratory accuracy and precision since there was insufficient volume for an MS/MSD. The data quality and usability were not affected.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not identify an effect on the data quality and/or usability.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit (RL) is greater than the applicable regulatory limit for PFOS and PFOA in sample 21AKN-SW-04. However, the sample was analyzed at a dilution because these analytes were detected at high concentrations greater than the applicable regulatory limit. The results are not affected.

e. Data quality or usability affected?

The data quality/usability were not affected; see above.

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CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

PFOS was detected in the MB associated with preparation batch 320-517458.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

The PFOS for project samples *21AKN-SW-02*, *21AKN-SW-03*, *21AKN-SW-04*, *21AKN-SW-05*, *21AKN-SW-105*, *21AKN-SW-06*, *21AKN-SW-07*, *21AKN-SW-107*, *21AKN-SW-08* are associated with the preparation batch 320-517458 and had PFOS results greater than ten times the result in the method blanks; therefore, results are not considered affected.

Samples *21AKN-SW-01* and *21AKN-SW-101* were re-extracted for PFOS. The associated method blank did not have detections for PFOS and are not affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – 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:

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CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – 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 – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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; analytical accuracy and precision were demonstrated to be 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:

Qualification of the data was not required; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

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c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Insufficient sample volume was available to perform a MS/MSD with the associated preparatory batches. However, the laboratory analyzed an LCS and LCSD to assess laboratory accuracy and precision.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

iv. Precision – 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:

MS and MSD samples were not analyzed for this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A; MS and MSD samples were not analyzed for this work order.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

MS and MSD samples were not analyzed for this work order.

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ADOT&PF King Salmon Airport Statewide PFAS

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; 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 – 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:

The IDA percent recoveries for sample 21AKN-SW-07 were below acceptance criteria for d3-NMeFOSAA and 13C4 PFOS. However, PFOS and associated IDA 13C4 PFOS were analyzed at a dilution due to high concentrations of the target analyte. The PFOS results are not affected by the IDA recovery failure for this analyte.

The IDA percent recoveries for sample 21AKN-SW-08 were below acceptance criteria for all IDAs. However, PFOS and associated IDA 13C4 PFOS were analyzed at a dilution due to high concentrations of the target analyte. The PFOS results are not affected by the IDA recovery failure for this analyte.

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 NMeFOSAA result for sample 21AKN-SW-07 is considered estimated, no direction of bias, and is flagged 'J\*' in the analytical summary tables.

All analytical results, except PFOS, for sample 21AKN-SW-08 are considered estimated, no direction of bias, and are flagged 'J\*' in the analytical summary tables.

iv. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

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e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

A trip blank is not required for the requested analysis.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A; a trip blank is not required for the requested analysis.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

Field duplicate pairs 21AKN-SW-01/21AKN-SW-101, 21AKN-SW-05/21AKN-SW-105, and 21AKN-SW-07/21AKN-SW-107 were submitted with this work order.



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iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

Field-duplicate RPDs are within the project-specified RPD of 30% for water samples, where calculable, except for PFTrDA for the field duplicate pair 21AKN-SW-07 / 21AKN-SW-107. The sample results are considered estimated and are flagged 'J\*' in the analytical tables.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and/or usability was affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Decontamination or equipment blank were not required for this project.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

Decontamination or equipment blank were not required for this project.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Decontamination or equipment blank were not required for this project.

iii. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

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CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

There were no additional flags/qualifiers required for this work order.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-77655-1  
Client Project/Site: AKN PFAS

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



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*Authorized for release by:  
8/30/2021 11:11:38 AM*

David Alltucker, Project Manager I  
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### LINKS

Review your project  
results through  
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*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## 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.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Job ID: 320-77655-1**

**Laboratory: Eurofins TestAmerica, Sacramento**

## Narrative

### Job Narrative 320-77655-1

#### Receipt

The samples were received on 8/17/2021 10:32 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 1.5° C.

#### Receipt Exceptions

The container label for the following sample(s) did not match the information listed on the Chain-of-Custody (COC):  
Sample 21AKN-SS-04 (320-77655-11). container sample time lists 9:17, while COC lists 9:19. Sample time was logged in according to COC.

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.

Method EPA 537(Mod): The low level continuing calibration verification (CCVL) associated with batch 320-518606 recovered above the upper control limit for Perfluorodecanoic acid (PFDA). The samples associated with this CCV were less than the reporting limit (RL) for the affected analyte. Additionally, the bracketing continuing calibration verifications (CCV) were within control limits for the analyte. There is no impact on the data; therefore the data have been reported.

Method EPA 537(Mod): The following samples exhibited matrix interferences for Perfluorooctanesulfonic acid (PFOS) causing elevation of the reporting limit (RL): 21AKN-SB-01 (0'-1') (320-77655-3) and 21AKN-SS-03 (320-77655-10) . The RL for the affected analyte has been raised to be equal to the matrix interferences, and a "G" qualifier applied.

Method EPA 537(Mod): The following sample exhibited matrix interferences for Perfluorooctanesulfonic acid (PFOS) causing elevation of the reporting limit (RL): 21AKN-SS-18 (320-77655-27) . The RL for the affected analyte has been raised to be equal to the matrix interferences, and a "G" qualifier applied.

Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-517585 and analytical batch 320-518192 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method EPA 537(Mod): Due to the high concentration of Perfluorooctanesulfonic acid (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-517585 and analytical batch 320-518606 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Method EPA 537(Mod): Results for sample 21AKN-SB-03 (0'-1') (320-77655-6) 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 samples 21AKN-SS-11 (320-77655-19) were reported from the analysis of a diluted extract due to sample matrix 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 21AKN-SS-14 (320-77655-22) 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 samples 21AKN-SS-15 (320-77655-23), 21AKN-SS-20 (320-77655-29), (320-77655-A-29-B MS) and (320-77655-A-29-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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

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## Job ID: 320-77655-1 (Continued)

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### Laboratory: Eurofins TestAmerica, Sacramento (Continued)

acceptance limits.

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: 21AKN-SB-03 (0'-1') (320-77655-6). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: 21AKN-SS-09 (320-77655-16), 21AKN-SS-11 (320-77655-19) and 21AKN-SS-12 (320-77655-20). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: 21AKN-SS-17 (320-77655-25), 21AKN-SS-117 (320-77655-26), 21AKN-SS-20 (320-77655-29), (320-77655-A-29-B MS) and (320-77655-A-29-C MSD). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

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

### General Chemistry

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

### Organic Prep

Method SHAKE: The following samples were yellow after final volume/extraction: 21AKN-SS-13 (320-77655-21), 21AKN-SS-17 (320-77655-25), 21AKN-SS-117 (320-77655-26), 21AKN-SS-19 (320-77655-28), 21AKN-SS-20 (320-77655-29), (320-77655-A-29 MS) and (320-77655-A-29 MSD).

Method SHAKE: The following samples were yellow after extraction/final volume: 21AKN-SS-03 (320-77655-10), 21AKN-SS-11 (320-77655-19) and 21AKN-SS-12 (320-77655-20)

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: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SB-02 (0'-1')

## Lab Sample ID: 320-77655-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.050	J	0.20	0.029	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.35		0.20	0.043	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-02 (6'-7')

## Lab Sample ID: 320-77655-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.088	J	0.24	0.034	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.23	J	0.24	0.051	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-01 (0'-1')

## Lab Sample ID: 320-77655-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.071	J	0.22	0.032	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-01 (6.5'-7.5')

## Lab Sample ID: 320-77655-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.091	J	0.23	0.050	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-101 (6.5-7.5')

## Lab Sample ID: 320-77655-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.032	J	0.22	0.032	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.11	J	0.22	0.047	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-03 (0'-1')

## Lab Sample ID: 320-77655-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	3.8		1.1	0.17	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.89	J	1.1	0.21	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.1	0.29	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	14		1.1	0.12	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	1.9		1.1	0.26	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	52		1.1	0.23	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.38	J	1.1	0.16	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	4.3		1.1	0.11	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.99	J	1.1	0.21	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		1.1	0.16	ug/Kg	5	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	340		11	2.4	ug/Kg	50	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-03 (7.3'-7.8')

## Lab Sample ID: 320-77655-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.6		0.24	0.037	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.43		0.24	0.045	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2		0.24	0.063	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	2.5		0.24	0.026	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.28		0.24	0.045	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.5		0.24	0.034	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	17		0.24	0.051	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-01

## Lab Sample ID: 320-77655-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.045	J	0.23	0.036	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.044	J I	0.23	0.025	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.059	J	0.23	0.033	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.16	J I	0.23	0.049	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-02

## Lab Sample ID: 320-77655-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.044	J	0.22	0.042	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.097	J	0.22	0.024	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.40	I	0.22	0.047	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-03

## Lab Sample ID: 320-77655-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroundecanoic acid (PFUnA)	0.17	J	0.20	0.042	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.071	J	0.20	0.030	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.18	J	0.20	0.021	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.14	J I	0.20	0.029	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-04

## Lab Sample ID: 320-77655-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.17	J	0.20	0.054	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.050	J	0.20	0.022	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.22		0.20	0.029	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.4		0.20	0.044	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-05

## Lab Sample ID: 320-77655-12

No Detections.

## Client Sample ID: 21AKN-SS-06

## Lab Sample ID: 320-77655-13

No Detections.

## Client Sample ID: 21AKN-SS-07

## Lab Sample ID: 320-77655-14

No Detections.

## Client Sample ID: 21AKN-SS-08

## Lab Sample ID: 320-77655-15

No Detections.

## Client Sample ID: 21AKN-SS-09

## Lab Sample ID: 320-77655-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroundecanoic acid (PFUnA)	0.17	J	0.22	0.045	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.060	J	0.22	0.032	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.61		0.22	0.023	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.046	J	0.22	0.040	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.10	J	0.22	0.031	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4		0.22	0.046	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-109

## Lab Sample ID: 320-77655-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroundecanoic acid (PFUnA)	0.14	J	0.19	0.041	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.061	J	0.19	0.029	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.51		0.19	0.020	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.11	J	0.19	0.028	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.0		0.19	0.042	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-10

## Lab Sample ID: 320-77655-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.23		0.22	0.034	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.046	J	0.22	0.042	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.030	J	0.22	0.024	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-11

## Lab Sample ID: 320-77655-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.62	J	2.1	0.56	ug/Kg	10	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.9	J I	2.1	0.46	ug/Kg	10	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-12

## Lab Sample ID: 320-77655-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.18	J	0.21	0.032	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.061	J	0.21	0.040	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		0.21	0.055	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.054	J I	0.21	0.023	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.11	J	0.21	0.044	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.054	J	0.21	0.022	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6		0.21	0.030	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.3		0.21	0.045	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-13

## Lab Sample ID: 320-77655-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.81		0.20	0.031	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.35		0.20	0.038	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	13		0.20	0.053	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.039	J	0.20	0.022	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.051	J	0.20	0.030	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.055	J	0.20	0.038	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.4		0.20	0.029	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.3		0.20	0.043	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-14

## Lab Sample ID: 320-77655-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.060	J	0.23	0.060	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.10	J	0.23	0.033	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0		0.23	0.049	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.56		0.23	0.026	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) - DL	23		1.1	0.27	ug/Kg	5	✳	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-15

## Lab Sample ID: 320-77655-23

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.49	J	0.55	0.085	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.40	J	0.55	0.10	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	5.8		0.55	0.15	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.0		0.55	0.061	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.18	J	0.55	0.13	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	1.1		0.55	0.12	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.20	J	0.55	0.083	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.45	J	0.55	0.058	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.6		0.55	0.080	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	100		5.5	1.2	ug/Kg	10	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-16

## Lab Sample ID: 320-77655-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroundecanoic acid (PFUnA)	0.14	J	0.23	0.048	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.080	J	0.23	0.034	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.11	J	0.23	0.024	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.074	J	0.23	0.042	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.048	J I	0.23	0.033	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.034	J	0.23	0.026	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-17

## Lab Sample ID: 320-77655-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroundecanoic acid (PFUnA)	0.13	J	0.22	0.047	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.070	J	0.22	0.034	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.065	J	0.22	0.024	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.041	J	0.22	0.041	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.14	J	0.22	0.032	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.5		0.22	0.048	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-117

## Lab Sample ID: 320-77655-26

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroundecanoic acid (PFUnA)	0.11	J	0.23	0.048	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.077	J	0.23	0.034	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.053	J	0.23	0.024	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.058	J	0.23	0.042	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.13	J	0.23	0.033	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.3		0.23	0.049	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.78		0.23	0.055	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SS-18

## Lab Sample ID: 320-77655-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.061	J	0.22	0.058	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.063	J	0.22	0.052	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.061	J	0.22	0.046	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.078	J	0.22	0.033	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.033	J	0.22	0.023	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.043	J	0.22	0.040	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-19**

**Lab Sample ID: 320-77655-28**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.46		0.24	0.037	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.18	J	0.24	0.046	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.19	J	0.24	0.064	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.24		0.24	0.026	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.32		0.24	0.058	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	10		0.24	0.051	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.20	J	0.24	0.036	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.55		0.24	0.025	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.065	J	0.24	0.045	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.079	J	0.24	0.046	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0	I	0.24	0.035	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15	I	0.24	0.052	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

**Client Sample ID: 21AKN-SS-20**

**Lab Sample ID: 320-77655-29**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.43	I	0.19	0.030	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.084	J	0.19	0.037	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6		0.19	0.051	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.19		0.19	0.021	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.25		0.19	0.047	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	1.1		0.19	0.041	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.047	J	0.19	0.029	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorotridecanoic acid (PFTriA)	0.11	J	0.19	0.020	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.049	J	0.19	0.037	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.5	F1	0.19	0.028	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.14	J   F1	0.19	0.022	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.13	J	0.19	0.047	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	28		0.97	0.21	ug/Kg	5	✳	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-02 (0'-1')**

**Lab Sample ID: 320-77655-1**

Date Collected: 08/14/21 09:40

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 93.7

**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		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.050</b>	<b>J</b>	0.20	0.029	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.35</b>		0.20	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 05:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	59		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C4 PFHpA	78		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C4 PFOA	75		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C5 PFNA	61		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C2 PFDA	76		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C2 PFUnA	73		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C2 PFDoA	67		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C2 PFTeDA	80		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C3 PFBS	60		50 - 150	08/18/21 18:34	08/22/21 05:45	1
18O2 PFHxS	67		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C4 PFOS	61		50 - 150	08/18/21 18:34	08/22/21 05:45	1
d3-NMeFOSAA	73		50 - 150	08/18/21 18:34	08/22/21 05:45	1
d5-NEtFOSAA	85		50 - 150	08/18/21 18:34	08/22/21 05:45	1
13C3 HFPO-DA	58		50 - 150	08/18/21 18:34	08/22/21 05:45	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>6.3</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>93.7</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-02 (6'-7')**

**Lab Sample ID: 320-77655-2**

Date Collected: 08/14/21 10:00

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 79.1

**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		0.24	0.036	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluoroheptanoic acid (PFHpA)	ND		0.24	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluorooctanoic acid (PFOA)	ND		0.24	0.062	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluorononanoic acid (PFNA)	ND		0.24	0.026	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.056	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.049	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.035	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.24	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.088</b>	<b>J</b>	0.24	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.23</b>	<b>J</b>	0.24	0.051	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.24	0.027	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.24	0.056	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.24	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.036	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.046	ug/Kg	☼	08/18/21 18:34	08/22/21 06:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	56		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C4 PFHpA	68		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C4 PFOA	68		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C5 PFNA	76		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C2 PFDA	75		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C2 PFUnA	66		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C2 PFDoA	67		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C2 PFTeDA	78		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C3 PFBS	57		50 - 150	08/18/21 18:34	08/22/21 06:12	1
18O2 PFHxS	69		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C4 PFOS	63		50 - 150	08/18/21 18:34	08/22/21 06:12	1
d3-NMeFOSAA	55		50 - 150	08/18/21 18:34	08/22/21 06:12	1
d5-NEtFOSAA	75		50 - 150	08/18/21 18:34	08/22/21 06:12	1
13C3 HFPO-DA	54		50 - 150	08/18/21 18:34	08/22/21 06:12	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>20.9</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>79.1</b>		0.1	0.1	%			08/18/21 15:17	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-01 (0'-1')**

**Lab Sample ID: 320-77655-3**

Date Collected: 08/14/21 11:50

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 88.5

**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		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.058	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.046	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.033	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.071</b>	<b>J</b>	0.22	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Perfluorooctanesulfonic acid (PFOS)	ND	G	0.95	0.95	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 06:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	62		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C4 PFHpA	64		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C4 PFOA	71		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C5 PFNA	66		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C2 PFDA	68		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C2 PFUnA	63		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C2 PFDoA	56		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C2 PFTeDA	64		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C3 PFBS	58		50 - 150	08/18/21 18:34	08/22/21 06:21	1
18O2 PFHxS	63		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C4 PFOS	59		50 - 150	08/18/21 18:34	08/22/21 06:21	1
d3-NMeFOSAA	71		50 - 150	08/18/21 18:34	08/22/21 06:21	1
d5-NEtFOSAA	76		50 - 150	08/18/21 18:34	08/22/21 06:21	1
13C3 HFPO-DA	54		50 - 150	08/18/21 18:34	08/22/21 06:21	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	11.5		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	88.5		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-01 (6.5'-7.5')**

**Lab Sample ID: 320-77655-4**

Date Collected: 08/14/21 12:05

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 86.0

**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		0.23	0.036	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.044	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.061	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.025	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.055	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.049	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.035	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.024	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.043	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.044	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.034	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.091</b>	<b>J</b>	0.23	0.050	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.027	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.055	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.040	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.047	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.036	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.045	ug/Kg	✱	08/18/21 18:34	08/22/21 06:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	54		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C4 PFHpA	59		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C4 PFOA	63		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C5 PFNA	62		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C2 PFDA	64		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C2 PFUnA	62		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C2 PFDoA	70		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C2 PFTeDA	71		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C3 PFBS	57		50 - 150	08/18/21 18:34	08/22/21 06:30	1
18O2 PFHxS	64		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C4 PFOS	56		50 - 150	08/18/21 18:34	08/22/21 06:30	1
d3-NMeFOSAA	59		50 - 150	08/18/21 18:34	08/22/21 06:30	1
d5-NEtFOSAA	79		50 - 150	08/18/21 18:34	08/22/21 06:30	1
13C3 HFPO-DA	53		50 - 150	08/18/21 18:34	08/22/21 06:30	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>14.0</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>86.0</b>		0.1	0.1	%			08/18/21 15:17	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-101 (6.5-7.5')**

**Lab Sample ID: 320-77655-5**

Date Collected: 08/14/21 11:55

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 85.4

**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		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.059	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.046	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.033	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.032</b>	<b>J</b>	0.22	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.11</b>	<b>J</b>	0.22	0.047	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 06:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	59		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C4 PFHpA	72		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C4 PFOA	68		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C5 PFNA	57		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C2 PFDA	76		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C2 PFUnA	59		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C2 PFDoA	66		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C2 PFTeDA	75		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C3 PFBS	58		50 - 150	08/18/21 18:34	08/22/21 06:40	1
18O2 PFHxS	70		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C4 PFOS	59		50 - 150	08/18/21 18:34	08/22/21 06:40	1
d3-NMeFOSAA	61		50 - 150	08/18/21 18:34	08/22/21 06:40	1
d5-NEtFOSAA	66		50 - 150	08/18/21 18:34	08/22/21 06:40	1
13C3 HFPO-DA	55		50 - 150	08/18/21 18:34	08/22/21 06:40	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>14.6</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>85.4</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-03 (0'-1')**

**Lab Sample ID: 320-77655-6**

Date Collected: 08/14/21 13:40

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 88.4

**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		1.1	0.17	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluoroheptanoic acid (PFHpA)	0.89	J	1.1	0.21	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorooctanoic acid (PFOA)	1.9		1.1	0.29	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorononanoic acid (PFNA)	14		1.1	0.12	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorodecanoic acid (PFDA)	1.9		1.1	0.26	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluoroundecanoic acid (PFUnA)	52		1.1	0.23	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorododecanoic acid (PFDoA)	0.38	J	1.1	0.16	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorotridecanoic acid (PFTriA)	4.3		1.1	0.11	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorotetradecanoic acid (PFTeA)	ND		1.1	0.20	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorobutanesulfonic acid (PFBS)	0.99	J	1.1	0.21	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Perfluorohexanesulfonic acid (PFHxS)	12		1.1	0.16	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.1	0.13	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.1	0.26	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.1	0.19	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.1	0.22	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.1	0.17	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.1	0.21	ug/Kg	☼	08/18/21 18:34	08/26/21 01:21	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	56		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C4 PFHpA	62		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C4 PFOA	62		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C5 PFNA	61		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C2 PFDA	68		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C2 PFUnA	67		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C2 PFDoA	63		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C2 PFTeDA	68		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C3 PFBS	59		50 - 150	08/18/21 18:34	08/26/21 01:21	5
18O2 PFHxS	66		50 - 150	08/18/21 18:34	08/26/21 01:21	5
d3-NMeFOSAA	71		50 - 150	08/18/21 18:34	08/26/21 01:21	5
d5-NEtFOSAA	88		50 - 150	08/18/21 18:34	08/26/21 01:21	5
13C3 HFPO-DA	51		50 - 150	08/18/21 18:34	08/26/21 01:21	5

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	340		11	2.4	ug/Kg	☼	08/18/21 18:34	08/26/21 01:12	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	46	*5-	50 - 150	08/18/21 18:34	08/26/21 01:12	50

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	11.6		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-03 (0'-1')**

**Lab Sample ID: 320-77655-6**

**Date Collected: 08/14/21 13:40**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

**Percent Solids: 88.4**

## General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88.4		0.1	0.1	%			08/18/21 15:17	1

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# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-03 (7.3'-7.8')**

**Lab Sample ID: 320-77655-7**

Date Collected: 08/14/21 13:55

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 80.9

**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)	1.6		0.24	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluoroheptanoic acid (PFHpA)	0.43		0.24	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorooctanoic acid (PFOA)	1.2		0.24	0.063	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorononanoic acid (PFNA)	2.5		0.24	0.026	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.057	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.050	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.035	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorobutanesulfonic acid (PFBS)	0.28		0.24	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorohexanesulfonic acid (PFHxS)	7.5		0.24	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Perfluorooctanesulfonic acid (PFOS)	17		0.24	0.051	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.24	0.027	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.24	0.057	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.24	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.046	ug/Kg	☼	08/18/21 18:34	08/22/21 06:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C4 PFHpA	72		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C4 PFOA	73		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C5 PFNA	75		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C2 PFDA	88		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C2 PFUnA	84		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C2 PFDoA	77		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C2 PFTeDA	75		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C3 PFBS	79		50 - 150	08/18/21 18:34	08/22/21 06:49	1
18O2 PFHxS	88		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C4 PFOS	75		50 - 150	08/18/21 18:34	08/22/21 06:49	1
d3-NMeFOSAA	84		50 - 150	08/18/21 18:34	08/22/21 06:49	1
d5-NEtFOSAA	95		50 - 150	08/18/21 18:34	08/22/21 06:49	1
13C3 HFPO-DA	64		50 - 150	08/18/21 18:34	08/22/21 06:49	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	19.1		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	80.9		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-01**

**Lab Sample ID: 320-77655-8**

Date Collected: 08/15/21 08:49

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 78.0

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.045</b>	<b>J</b>	0.23	0.036	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.061	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>0.044</b>	<b>J I</b>	0.23	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.055	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.059</b>	<b>J</b>	0.23	0.033	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.16</b>	<b>J I</b>	0.23	0.049	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.026	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.055	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.047	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.036	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 07:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	61		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C4 PFHpA	67		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C4 PFOA	74		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C5 PFNA	68		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C2 PFDA	76		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C2 PFUnA	65		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C2 PFDoA	64		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C2 PFTeDA	61		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C3 PFBS	60		50 - 150	08/18/21 18:34	08/22/21 07:07	1
18O2 PFHxS	57		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C4 PFOS	66		50 - 150	08/18/21 18:34	08/22/21 07:07	1
d3-NMeFOSAA	75		50 - 150	08/18/21 18:34	08/22/21 07:07	1
d5-NEtFOSAA	81		50 - 150	08/18/21 18:34	08/22/21 07:07	1
13C3 HFPO-DA	53		50 - 150	08/18/21 18:34	08/22/21 07:07	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>22.0</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>78.0</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-02**

**Lab Sample ID: 320-77655-9**

Date Collected: 08/15/21 09:00

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 88.5

**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		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
<b>Perfluoroheptanoic acid (PFHpA)</b>	<b>0.044</b>	<b>J</b>	0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.058	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>0.097</b>	<b>J</b>	0.22	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.046	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.033	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.22	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.40</b>	<b>I</b>	0.22	0.047	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 07:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	63		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C4 PFHpA	56		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C4 PFOA	69		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C5 PFNA	60		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C2 PFDA	70		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C2 PFUnA	63		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C2 PFDoA	62		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C2 PFTeDA	62		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C3 PFBS	61		50 - 150	08/18/21 18:34	08/22/21 07:16	1
18O2 PFHxS	66		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C4 PFOS	66		50 - 150	08/18/21 18:34	08/22/21 07:16	1
d3-NMeFOSAA	65		50 - 150	08/18/21 18:34	08/22/21 07:16	1
d5-NEtFOSAA	73		50 - 150	08/18/21 18:34	08/22/21 07:16	1
13C3 HFPO-DA	53		50 - 150	08/18/21 18:34	08/22/21 07:16	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>11.5</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>88.5</b>		0.1	0.1	%			08/18/21 15:17	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-03**

**Lab Sample ID: 320-77655-10**

Date Collected: 08/15/21 08:08

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.2

**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		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.17</b>	<b>J</b>	0.20	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.071</b>	<b>J</b>	0.20	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
<b>Perfluorotridecanoic acid (PFTriA)</b>	<b>0.18</b>	<b>J</b>	0.20	0.021	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.14</b>	<b>J I</b>	0.20	0.029	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Perfluorooctanesulfonic acid (PFOS)	ND	G	0.42	0.42	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 07:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	67		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C4 PFHpA	64		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C4 PFOA	76		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C5 PFNA	65		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C2 PFDA	66		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C2 PFUnA	76		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C2 PFDoA	57		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C2 PFTeDA	56		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C3 PFBS	69		50 - 150	08/18/21 18:34	08/22/21 07:25	1
18O2 PFHxS	67		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C4 PFOS	69		50 - 150	08/18/21 18:34	08/22/21 07:25	1
d3-NMeFOSAA	60		50 - 150	08/18/21 18:34	08/22/21 07:25	1
d5-NEtFOSAA	65		50 - 150	08/18/21 18:34	08/22/21 07:25	1
13C3 HFPO-DA	63		50 - 150	08/18/21 18:34	08/22/21 07:25	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>7.8</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>92.2</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-04**

**Lab Sample ID: 320-77655-11**

Date Collected: 08/15/21 09:19

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 93.2

**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		0.20	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.17</b>	<b>J</b>	0.20	0.054	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>0.050</b>	<b>J</b>	0.20	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.049	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.22</b>		0.20	0.029	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.4</b>		0.20	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.049	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.036	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 07:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	58		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C4 PFHpA	63		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C4 PFOA	70		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C5 PFNA	62		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C2 PFDA	74		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C2 PFUnA	63		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C2 PFDoA	56		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C2 PFTeDA	60		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C3 PFBS	63		50 - 150	08/18/21 18:34	08/22/21 07:34	1
18O2 PFHxS	67		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C4 PFOS	69		50 - 150	08/18/21 18:34	08/22/21 07:34	1
d3-NMeFOSAA	68		50 - 150	08/18/21 18:34	08/22/21 07:34	1
d5-NEtFOSAA	66		50 - 150	08/18/21 18:34	08/22/21 07:34	1
13C3 HFPO-DA	55		50 - 150	08/18/21 18:34	08/22/21 07:34	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>6.8</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>93.2</b>		0.1	0.1	%			08/18/21 15:17	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-05**

**Lab Sample ID: 320-77655-12**

Date Collected: 08/15/21 09:53

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 93.0

**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		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.029	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 07:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	62		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C4 PFHpA	71		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C4 PFOA	76		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C5 PFNA	76		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C2 PFDA	71		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C2 PFUnA	77		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C2 PFDoA	72		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C2 PFTeDA	75		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C3 PFBS	55		50 - 150	08/18/21 18:34	08/22/21 07:43	1
18O2 PFHxS	66		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C4 PFOS	60		50 - 150	08/18/21 18:34	08/22/21 07:43	1
d3-NMeFOSAA	72		50 - 150	08/18/21 18:34	08/22/21 07:43	1
d5-NEtFOSAA	92		50 - 150	08/18/21 18:34	08/22/21 07:43	1
13C3 HFPO-DA	56		50 - 150	08/18/21 18:34	08/22/21 07:43	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	7.0		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	93.0		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-06**

**Lab Sample ID: 320-77655-13**

Date Collected: 08/15/21 10:04

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.4

**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		0.21	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluoroheptanoic acid (PFHpA)	ND		0.21	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorooctanoic acid (PFOA)	ND		0.21	0.055	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorononanoic acid (PFNA)	ND		0.21	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorodecanoic acid (PFDA)	ND		0.21	0.050	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluoroundecanoic acid (PFUnA)	ND		0.21	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorododecanoic acid (PFDoA)	ND		0.21	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorotridecanoic acid (PFTriA)	ND		0.21	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.21	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.21	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.21	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.21	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.21	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.21	0.050	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.21	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.21	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.21	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.21	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 07:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	70		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C4 PFHpA	65		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C4 PFOA	77		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C5 PFNA	66		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C2 PFDA	79		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C2 PFUnA	69		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C2 PFDoA	79		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C2 PFTeDA	72		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C3 PFBS	62		50 - 150	08/18/21 18:34	08/22/21 07:52	1
18O2 PFHxS	69		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C4 PFOS	65		50 - 150	08/18/21 18:34	08/22/21 07:52	1
d3-NMeFOSAA	80		50 - 150	08/18/21 18:34	08/22/21 07:52	1
d5-NEtFOSAA	80		50 - 150	08/18/21 18:34	08/22/21 07:52	1
13C3 HFPO-DA	57		50 - 150	08/18/21 18:34	08/22/21 07:52	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	7.6		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	92.4		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-07**

**Lab Sample ID: 320-77655-14**

Date Collected: 08/15/21 10:31

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 91.7

**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		0.21	0.033	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluoroheptanoic acid (PFHpA)	ND		0.21	0.041	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorooctanoic acid (PFOA)	ND		0.21	0.057	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorononanoic acid (PFNA)	ND		0.21	0.024	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorodecanoic acid (PFDA)	ND		0.21	0.051	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluoroundecanoic acid (PFUnA)	ND		0.21	0.045	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorododecanoic acid (PFDoA)	ND		0.21	0.032	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorotridecanoic acid (PFTriA)	ND		0.21	0.022	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.21	0.040	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.21	0.041	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.21	0.031	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.21	0.046	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.21	0.025	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.21	0.051	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.21	0.037	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.21	0.044	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.21	0.033	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.21	0.042	ug/Kg	✱	08/18/21 18:34	08/22/21 08:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	68		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C4 PFHpA	73		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C4 PFOA	76		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C5 PFNA	76		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C2 PFDA	73		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C2 PFUnA	76		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C2 PFDoA	75		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C2 PFTeDA	74		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C3 PFBS	65		50 - 150	08/18/21 18:34	08/22/21 08:02	1
18O2 PFHxS	64		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C4 PFOS	62		50 - 150	08/18/21 18:34	08/22/21 08:02	1
d3-NMeFOSAA	83		50 - 150	08/18/21 18:34	08/22/21 08:02	1
d5-NEtFOSAA	88		50 - 150	08/18/21 18:34	08/22/21 08:02	1
13C3 HFPO-DA	57		50 - 150	08/18/21 18:34	08/22/21 08:02	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	8.3		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	91.7		0.1	0.1	%			08/18/21 15:17	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-08**

**Lab Sample ID: 320-77655-15**

Date Collected: 08/15/21 10:43

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.4

**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		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.054	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.049	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.029	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.049	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 08:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	53		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C4 PFHpA	63		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C4 PFOA	75		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C5 PFNA	66		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C2 PFDA	71		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C2 PFUnA	62		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C2 PFDoA	59		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C2 PFTeDA	70		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C3 PFBS	56		50 - 150	08/18/21 18:34	08/22/21 08:11	1
18O2 PFHxS	57		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C4 PFOS	52		50 - 150	08/18/21 18:34	08/22/21 08:11	1
d3-NMeFOSAA	66		50 - 150	08/18/21 18:34	08/22/21 08:11	1
d5-NEtFOSAA	78		50 - 150	08/18/21 18:34	08/22/21 08:11	1
13C3 HFPO-DA	55		50 - 150	08/18/21 18:34	08/22/21 08:11	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	7.6		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	92.4		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-09**

**Lab Sample ID: 320-77655-16**

Date Collected: 08/15/21 10:55

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 91.5

**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		0.22	0.033	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.057	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.052	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.17</b>	<b>J</b>	0.22	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.060</b>	<b>J</b>	0.22	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
<b>Perfluorotridecanoic acid (PFTriA)</b>	<b>0.61</b>		0.22	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
<b>Perfluorotetradecanoic acid (PFTeA)</b>	<b>0.046</b>	<b>J</b>	0.22	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.10</b>	<b>J</b>	0.22	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.4</b>		0.22	0.046	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.052	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.033	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 08:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	54		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C4 PFHpA	56		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C4 PFOA	65		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C5 PFNA	58		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C2 PFDA	70		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C2 PFUnA	61		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C2 PFDoA	57		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C2 PFTeDA	47	*5-	50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C3 PFBS	60		50 - 150	08/18/21 18:34	08/22/21 08:20	1
18O2 PFHxS	65		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C4 PFOS	57		50 - 150	08/18/21 18:34	08/22/21 08:20	1
d3-NMeFOSAA	59		50 - 150	08/18/21 18:34	08/22/21 08:20	1
d5-NEtFOSAA	61		50 - 150	08/18/21 18:34	08/22/21 08:20	1
13C3 HFPO-DA	55		50 - 150	08/18/21 18:34	08/22/21 08:20	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>8.5</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>91.5</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-109**

**Lab Sample ID: 320-77655-17**

Date Collected: 08/15/21 10:45

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.3

**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		0.19	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
Perfluoroheptanoic acid (PFHpA)	ND		0.19	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
Perfluorooctanoic acid (PFOA)	ND		0.19	0.052	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
Perfluorononanoic acid (PFNA)	ND		0.19	0.021	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
Perfluorodecanoic acid (PFDA)	ND		0.19	0.047	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.14</b>	<b>J</b>	0.19	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.061</b>	<b>J</b>	0.19	0.029	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
<b>Perfluorotridecanoic acid (PFTriA)</b>	<b>0.51</b>		0.19	0.020	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.19	0.036	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.19	0.037	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.11</b>	<b>J</b>	0.19	0.028	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.0</b>		0.19	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.19	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.19	0.047	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.19	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.19	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.19	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.19	0.038	ug/Kg	☼	08/18/21 18:34	08/22/21 08:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	70		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C4 PFHpA	69		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C4 PFOA	77		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C5 PFNA	72		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C2 PFDA	89		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C2 PFUnA	80		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C2 PFDoA	64		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C2 PFTeDA	62		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C3 PFBS	75		50 - 150	08/18/21 18:34	08/22/21 08:29	1
18O2 PFHxS	70		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C4 PFOS	78		50 - 150	08/18/21 18:34	08/22/21 08:29	1
d3-NMeFOSAA	74		50 - 150	08/18/21 18:34	08/22/21 08:29	1
d5-NEtFOSAA	80		50 - 150	08/18/21 18:34	08/22/21 08:29	1
13C3 HFPO-DA	68		50 - 150	08/18/21 18:34	08/22/21 08:29	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>7.7</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>92.3</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-10**

**Lab Sample ID: 320-77655-18**

Date Collected: 08/15/21 11:10

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 89.5

**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)	0.23		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluoroheptanoic acid (PFHpA)	0.046	J	0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.059	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorononanoic acid (PFNA)	0.030	J	0.22	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.046	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.033	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.042	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.22	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.22	0.047	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.025	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.053	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.034	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 08:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	59		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C4 PFHpA	71		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C4 PFOA	67		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C5 PFNA	67		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C2 PFDA	67		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C2 PFUnA	68		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C2 PFDoA	69		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C2 PFTeDA	77		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C3 PFBS	54		50 - 150	08/18/21 18:34	08/22/21 08:47	1
18O2 PFHxS	66		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C4 PFOS	59		50 - 150	08/18/21 18:34	08/22/21 08:47	1
d3-NMeFOSAA	57		50 - 150	08/18/21 18:34	08/22/21 08:47	1
d5-NEtFOSAA	74		50 - 150	08/18/21 18:34	08/22/21 08:47	1
13C3 HFPO-DA	59		50 - 150	08/18/21 18:34	08/22/21 08:47	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	10.5		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	89.5		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-11**

**Lab Sample ID: 320-77655-19**

Date Collected: 08/15/21 11:18

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 93.3

**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	0.33	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.40	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.62</b>	<b>J</b>	2.1	0.56	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluorononanoic acid (PFNA)	ND		2.1	0.23	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluorodecanoic acid (PFDA)	ND		2.1	0.51	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluoroundecanoic acid (PFUnA)	ND		2.1	0.45	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.32	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluorotridecanoic acid (PFTriA)	ND		2.1	0.22	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.39	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.40	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Perfluorohexanesulfonic acid (PFHxS)	ND		2.1	0.31	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.9</b>	<b>J I</b>	2.1	0.46	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.1	0.25	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.1	0.51	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.1	0.37	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.1	0.44	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.1	0.33	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.1	0.42	ug/Kg	☼	08/18/21 18:34	08/22/21 08:56	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	49	*5-	50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C4 PFHpA	61		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C4 PFOA	68		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C5 PFNA	63		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C2 PFDA	62		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C2 PFUnA	54		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C2 PFDoA	54		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C2 PFTeDA	61		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C3 PFBS	52		50 - 150	08/18/21 18:34	08/22/21 08:56	10
18O2 PFHxS	55		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C4 PFOS	50		50 - 150	08/18/21 18:34	08/22/21 08:56	10
d3-NMeFOSAA	58		50 - 150	08/18/21 18:34	08/22/21 08:56	10
d5-NEtFOSAA	72		50 - 150	08/18/21 18:34	08/22/21 08:56	10
13C3 HFPO-DA	45	*5-	50 - 150	08/18/21 18:34	08/22/21 08:56	10

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>6.7</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>93.3</b>		0.1	0.1	%			08/18/21 15:17	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-12**

**Lab Sample ID: 320-77655-20**

Date Collected: 08/15/21 11:33

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 94.6

**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)	0.18	J	0.21	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluoroheptanoic acid (PFHpA)	0.061	J	0.21	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorooctanoic acid (PFOA)	2.4		0.21	0.055	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorononanoic acid (PFNA)	0.054	J I	0.21	0.023	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorodecanoic acid (PFDA)	ND		0.21	0.050	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluoroundecanoic acid (PFUnA)	0.11	J	0.21	0.044	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorododecanoic acid (PFDoA)	ND		0.21	0.031	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorotridecanoic acid (PFTriA)	0.054	J	0.21	0.022	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.21	0.039	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.21	0.040	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorohexanesulfonic acid (PFHxS)	1.6		0.21	0.030	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Perfluorooctanesulfonic acid (PFOS)	3.3		0.21	0.045	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.21	0.024	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.21	0.050	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.21	0.036	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.21	0.043	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.21	0.032	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.21	0.041	ug/Kg	☼	08/18/21 18:34	08/22/21 09:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	74		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C4 PFHpA	66		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C4 PFOA	80		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C5 PFNA	72		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C2 PFDA	76		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C2 PFUnA	64		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C2 PFDoA	54		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C2 PFTeDA	51		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C3 PFBS	88		50 - 150	08/18/21 18:34	08/22/21 09:24	1
18O2 PFHxS	81		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C4 PFOS	79		50 - 150	08/18/21 18:34	08/22/21 09:24	1
d3-NMeFOSAA	60		50 - 150	08/18/21 18:34	08/22/21 09:24	1
d5-NEtFOSAA	60		50 - 150	08/18/21 18:34	08/22/21 09:24	1
13C3 HFPO-DA	73		50 - 150	08/18/21 18:34	08/22/21 09:24	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	5.4		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	94.6		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-13**

**Lab Sample ID: 320-77655-21**

Date Collected: 08/15/21 11:41

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 95.4

**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)	0.81		0.20	0.031	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluoroheptanoic acid (PFHpA)	0.35		0.20	0.038	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorooctanoic acid (PFOA)	13		0.20	0.053	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorononanoic acid (PFNA)	0.039	J	0.20	0.022	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorododecanoic acid (PFDoA)	0.051	J	0.20	0.030	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorobutanesulfonic acid (PFBS)	0.055	J	0.20	0.038	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorohexanesulfonic acid (PFHxS)	5.4		0.20	0.029	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Perfluorooctanesulfonic acid (PFOS)	7.3		0.20	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg	☼	08/18/21 19:44	08/20/21 11:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C4 PFHpA	73		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C4 PFOA	84		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C5 PFNA	66		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C2 PFDA	79		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C2 PFUnA	82		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C2 PFDoA	68		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C2 PFTeDA	63		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C3 PFBS	93		50 - 150	08/18/21 19:44	08/20/21 11:09	1
18O2 PFHxS	65		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C4 PFOS	76		50 - 150	08/18/21 19:44	08/20/21 11:09	1
d3-NMeFOSAA	69		50 - 150	08/18/21 19:44	08/20/21 11:09	1
d5-NEtFOSAA	83		50 - 150	08/18/21 19:44	08/20/21 11:09	1
13C3 HFPO-DA	77		50 - 150	08/18/21 19:44	08/20/21 11:09	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.6		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	95.4		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-14**

**Lab Sample ID: 320-77655-22**

Date Collected: 08/15/21 11:52

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 87.8

**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		0.23	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.060</b>	<b>J</b>	0.23	0.060	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.025	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.055	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.048	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.034	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.024	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.042	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.10</b>	<b>J</b>	0.23	0.033	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.0</b>		0.23	0.049	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
<b>N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)</b>	<b>0.56</b>		0.23	0.026	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.040	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.047	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.044	ug/Kg	☼	08/18/21 19:44	08/20/21 11:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	75		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C4 PFHpA	76		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C4 PFOA	87		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C5 PFNA	87		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C2 PFDA	86		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C2 PFUnA	74		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C2 PFDoA	75		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C2 PFTeDA	62		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C3 PFBS	90		50 - 150	08/18/21 19:44	08/20/21 11:18	1
18O2 PFHxS	84		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C4 PFOS	88		50 - 150	08/18/21 19:44	08/20/21 11:18	1
d3-NMeFOSAA	76		50 - 150	08/18/21 19:44	08/20/21 11:18	1
d5-NEtFOSAA	83		50 - 150	08/18/21 19:44	08/20/21 11:18	1
13C3 HFPO-DA	77		50 - 150	08/18/21 19:44	08/20/21 11:18	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)</b>	<b>23</b>		1.1	0.27	ug/Kg	☼	08/18/21 19:44	08/27/21 20:20	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	117		50 - 150	08/18/21 19:44	08/27/21 20:20	5

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>12.2</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>87.8</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-15**

**Lab Sample ID: 320-77655-23**

Date Collected: 08/15/21 12:17

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 35.2

**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)	0.49	J	0.55	0.085	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluoroheptanoic acid (PFHpA)	0.40	J	0.55	0.10	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorooctanoic acid (PFOA)	5.8		0.55	0.15	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorononanoic acid (PFNA)	1.0		0.55	0.061	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorodecanoic acid (PFDA)	0.18	J	0.55	0.13	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluoroundecanoic acid (PFUnA)	1.1		0.55	0.12	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorododecanoic acid (PFDoA)	0.20	J	0.55	0.083	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorotridecanoic acid (PFTriA)	0.45	J	0.55	0.058	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.55	0.10	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.55	0.10	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Perfluorohexanesulfonic acid (PFHxS)	3.6		0.55	0.080	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.55	0.063	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.55	0.13	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.55	0.096	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.55	0.11	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.55	0.085	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.55	0.11	ug/Kg	☼	08/18/21 19:44	08/20/21 11:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	62		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C4 PFHpA	64		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C4 PFOA	67		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C5 PFNA	58		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C2 PFDA	81		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C2 PFUnA	67		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C2 PFDoA	58		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C2 PFTeDA	55		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C3 PFBS	69		50 - 150	08/18/21 19:44	08/20/21 11:27	1
18O2 PFHxS	68		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C4 PFOS	64		50 - 150	08/18/21 19:44	08/20/21 11:27	1
d3-NMeFOSAA	75		50 - 150	08/18/21 19:44	08/20/21 11:27	1
d5-NEtFOSAA	79		50 - 150	08/18/21 19:44	08/20/21 11:27	1
13C3 HFPO-DA	57		50 - 150	08/18/21 19:44	08/20/21 11:27	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	100		5.5	1.2	ug/Kg	☼	08/18/21 19:44	08/22/21 03:55	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	59		50 - 150	08/18/21 19:44	08/22/21 03:55	10

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	64.8		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-15**

**Lab Sample ID: 320-77655-23**

Date Collected: 08/15/21 12:17

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 35.2

## General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	35.2		0.1	0.1	%			08/18/21 15:17	1

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-16**

**Lab Sample ID: 320-77655-24**

Date Collected: 08/15/21 12:37

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 86.6

**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		0.23	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.061	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.025	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.055	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.14</b>	<b>J</b>	0.23	0.048	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.080</b>	<b>J</b>	0.23	0.034	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
<b>Perfluorotridecanoic acid (PFTriA)</b>	<b>0.11</b>	<b>J</b>	0.23	0.024	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
<b>Perfluorotetradecanoic acid (PFTeA)</b>	<b>0.074</b>	<b>J</b>	0.23	0.042	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.048</b>	<b>J I</b>	0.23	0.033	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.23	0.049	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
<b>N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)</b>	<b>0.034</b>	<b>J</b>	0.23	0.026	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.055	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.040	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.047	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.045	ug/Kg	☼	08/18/21 19:44	08/20/21 11:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	65		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C4 PFHpA	78		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C4 PFOA	86		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C5 PFNA	75		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C2 PFDA	78		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C2 PFUnA	77		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C2 PFDoA	74		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C2 PFTeDA	86		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C3 PFBS	72		50 - 150	08/18/21 19:44	08/20/21 11:37	1
18O2 PFHxS	70		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C4 PFOS	74		50 - 150	08/18/21 19:44	08/20/21 11:37	1
d3-NMeFOSAA	77		50 - 150	08/18/21 19:44	08/20/21 11:37	1
d5-NEtFOSAA	83		50 - 150	08/18/21 19:44	08/20/21 11:37	1
13C3 HFPO-DA	64		50 - 150	08/18/21 19:44	08/20/21 11:37	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>13.4</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>86.6</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-17**

**Lab Sample ID: 320-77655-25**

Date Collected: 08/15/21 12:52

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 85.7

**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		0.22	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.059	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.025	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.054	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.13</b>	<b>J</b>	0.22	0.047	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.070</b>	<b>J</b>	0.22	0.034	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
<b>Perfluorotridecanoic acid (PFTriA)</b>	<b>0.065</b>	<b>J</b>	0.22	0.024	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
<b>Perfluorotetradecanoic acid (PFTeA)</b>	<b>0.041</b>	<b>J</b>	0.22	0.041	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.14</b>	<b>J</b>	0.22	0.032	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.5</b>		0.22	0.048	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.026	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.054	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.039	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.046	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.044	ug/Kg	☼	08/18/21 19:44	08/20/21 11:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C4 PFHpA	70		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C4 PFOA	80		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C5 PFNA	79		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C2 PFDA	79		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C2 PFUnA	69		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C2 PFDoA	57		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C2 PFTeDA	52		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C3 PFBS	97		50 - 150	08/18/21 19:44	08/20/21 11:46	1
18O2 PFHxS	85		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C4 PFOS	72		50 - 150	08/18/21 19:44	08/20/21 11:46	1
d3-NMeFOSAA	60		50 - 150	08/18/21 19:44	08/20/21 11:46	1
d5-NEtFOSAA	62		50 - 150	08/18/21 19:44	08/20/21 11:46	1
13C3 HFPO-DA	73		50 - 150	08/18/21 19:44	08/20/21 11:46	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>14.3</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>85.7</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-117**

**Lab Sample ID: 320-77655-26**

Date Collected: 08/15/21 12:42

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 85.3

**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		0.23	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.060	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.025	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.055	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.11</b>	<b>J</b>	0.23	0.048	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.077</b>	<b>J</b>	0.23	0.034	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
<b>Perfluorotridecanoic acid (PFTriA)</b>	<b>0.053</b>	<b>J</b>	0.23	0.024	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
<b>Perfluorotetradecanoic acid (PFTeA)</b>	<b>0.058</b>	<b>J</b>	0.23	0.042	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.13</b>	<b>J</b>	0.23	0.033	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.3</b>		0.23	0.049	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.026	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
<b>N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)</b>	<b>0.78</b>		0.23	0.055	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.040	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.047	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.044	ug/Kg	☼	08/18/21 19:44	08/20/21 11:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C4 PFHpA	82		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C4 PFOA	87		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C5 PFNA	80		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C2 PFDA	80		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C2 PFUnA	71		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C2 PFDoA	65		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C2 PFTeDA	53		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C3 PFBS	92		50 - 150	08/18/21 19:44	08/20/21 11:55	1
18O2 PFHxS	88		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C4 PFOS	92		50 - 150	08/18/21 19:44	08/20/21 11:55	1
d3-NMeFOSAA	64		50 - 150	08/18/21 19:44	08/20/21 11:55	1
d5-NEtFOSAA	64		50 - 150	08/18/21 19:44	08/20/21 11:55	1
13C3 HFPO-DA	83		50 - 150	08/18/21 19:44	08/20/21 11:55	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>14.7</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>85.3</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-18**

**Lab Sample ID: 320-77655-27**

Date Collected: 08/15/21 13:12

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 88.5

**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		0.22	0.034	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.042	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.061</b>	<b>J</b>	0.22	0.058	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.024	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
<b>Perfluorodecanoic acid (PFDA)</b>	<b>0.063</b>	<b>J</b>	0.22	0.052	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
<b>Perfluoroundecanoic acid (PFUnA)</b>	<b>0.061</b>	<b>J</b>	0.22	0.046	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.078</b>	<b>J</b>	0.22	0.033	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
<b>Perfluorotridecanoic acid (PFTriA)</b>	<b>0.033</b>	<b>J</b>	0.22	0.023	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
<b>Perfluorotetradecanoic acid (PFTeA)</b>	<b>0.043</b>	<b>J</b>	0.22	0.040	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.042	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.22	0.032	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
Perfluorooctanesulfonic acid (PFOS)	ND	G	0.31	0.31	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.025	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.052	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.038	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.045	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.034	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.043	ug/Kg	☼	08/18/21 19:44	08/20/21 12:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	69		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C4 PFHpA	76		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C4 PFOA	84		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C5 PFNA	76		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C2 PFDA	78		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C2 PFUnA	79		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C2 PFDoA	75		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C2 PFTeA	70		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C3 PFBS	74		50 - 150	08/18/21 19:44	08/20/21 12:04	1
18O2 PFHxS	71		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C4 PFOS	62		50 - 150	08/18/21 19:44	08/20/21 12:04	1
d3-NMeFOSAA	78		50 - 150	08/18/21 19:44	08/20/21 12:04	1
d5-NEtFOSAA	86		50 - 150	08/18/21 19:44	08/20/21 12:04	1
13C3 HFPO-DA	63		50 - 150	08/18/21 19:44	08/20/21 12:04	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>11.5</b>		0.1	0.1	%			08/18/21 15:17	1
<b>Percent Solids</b>	<b>88.5</b>		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-19**

**Lab Sample ID: 320-77655-28**

Date Collected: 08/15/21 13:20

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 80.5

**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)	0.46		0.24	0.037	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluoroheptanoic acid (PFHpA)	0.18	J	0.24	0.046	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorooctanoic acid (PFOA)	0.19	J	0.24	0.064	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorononanoic acid (PFNA)	0.24		0.24	0.026	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorodecanoic acid (PFDA)	0.32		0.24	0.058	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluoroundecanoic acid (PFUnA)	10		0.24	0.051	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorododecanoic acid (PFDoA)	0.20	J	0.24	0.036	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorotridecanoic acid (PFTriA)	0.55		0.24	0.025	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorotetradecanoic acid (PFTeA)	0.065	J	0.24	0.045	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorobutanesulfonic acid (PFBS)	0.079	J	0.24	0.046	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	I	0.24	0.035	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Perfluorooctanesulfonic acid (PFOS)	15	I	0.24	0.052	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.24	0.028	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.24	0.058	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.042	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.24	0.049	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.037	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.047	ug/Kg	☼	08/18/21 19:44	08/20/21 12:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	75		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C4 PFHpA	69		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C4 PFOA	75		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C5 PFNA	62		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C2 PFDA	74		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C2 PFUnA	63		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C2 PFDoA	58		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C2 PFTeDA	56		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C3 PFBS	85		50 - 150	08/18/21 19:44	08/20/21 12:13	1
18O2 PFHxS	74		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C4 PFOS	79		50 - 150	08/18/21 19:44	08/20/21 12:13	1
d3-NMeFOSAA	62		50 - 150	08/18/21 19:44	08/20/21 12:13	1
d5-NEtFOSAA	61		50 - 150	08/18/21 19:44	08/20/21 12:13	1
13C3 HFPO-DA	72		50 - 150	08/18/21 19:44	08/20/21 12:13	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	19.5		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	80.5		0.1	0.1	%			08/18/21 15:17	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-20**

**Lab Sample ID: 320-77655-29**

Date Collected: 08/15/21 13:30

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 95.7

**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)	0.43	I	0.19	0.030	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluoroheptanoic acid (PFHpA)	0.084	J	0.19	0.037	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorooctanoic acid (PFOA)	2.6		0.19	0.051	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorononanoic acid (PFNA)	0.19		0.19	0.021	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorodecanoic acid (PFDA)	0.25		0.19	0.047	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluoroundecanoic acid (PFUnA)	1.1		0.19	0.041	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorododecanoic acid (PFDoA)	0.047	J	0.19	0.029	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorotridecanoic acid (PFTriA)	0.11	J	0.19	0.020	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.19	0.036	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorobutanesulfonic acid (PFBS)	0.049	J	0.19	0.037	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Perfluorohexanesulfonic acid (PFHxS)	5.5	F1	0.19	0.028	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.14	J I F1	0.19	0.022	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.13	J	0.19	0.047	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	F1	0.19	0.034	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.19	0.040	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.19	0.030	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	F1	0.19	0.038	ug/Kg	☼	08/18/21 19:44	08/20/21 12:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C4 PFHpA	69		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C4 PFOA	76		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C5 PFNA	61		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C2 PFDA	73		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C2 PFUnA	66		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C2 PFDoA	61		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C2 PFTeDA	47	*5-	50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C3 PFBS	124		50 - 150	08/18/21 19:44	08/20/21 12:40	1
18O2 PFHxS	95		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C4 PFOS	95		50 - 150	08/18/21 19:44	08/20/21 12:40	1
d3-NMeFOSAA	49	*5-	50 - 150	08/18/21 19:44	08/20/21 12:40	1
d5-NEtFOSAA	52		50 - 150	08/18/21 19:44	08/20/21 12:40	1
13C3 HFPO-DA	87		50 - 150	08/18/21 19:44	08/20/21 12:40	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28		0.97	0.21	ug/Kg	☼	08/18/21 19:44	08/22/21 03:28	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	74		50 - 150	08/18/21 19:44	08/22/21 03:28	5

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-20**

**Lab Sample ID: 320-77655-29**

**Date Collected: 08/15/21 13:30**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

**Percent Solids: 95.7**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.3		0.1	0.1	%			08/18/21 15:17	1
Percent Solids	95.7		0.1	0.1	%			08/18/21 15:17	1

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# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-77655-1	21AKN-SB-02 (0'-1')	59	78	75	61	76	73	67	80
320-77655-1 MS	21AKN-SB-02 (0'-1')	50	66	63	66	66	62	66	72
320-77655-1 MSD	21AKN-SB-02 (0'-1')	62	73	80	65	76	72	70	74
320-77655-2	21AKN-SB-02 (6'-7')	56	68	68	76	75	66	67	78
320-77655-3	21AKN-SB-01 (0'-1')	62	64	71	66	68	63	56	64
320-77655-4	21AKN-SB-01 (6.5'-7.5')	54	59	63	62	64	62	70	71
320-77655-5	21AKN-SB-101 (6.5'-7.5')	59	72	68	57	76	59	66	75
320-77655-6 - DL	21AKN-SB-03 (0'-1')								
320-77655-6	21AKN-SB-03 (0'-1')	56	62	62	61	68	67	63	68
320-77655-7	21AKN-SB-03 (7.3'-7.8')	71	72	73	75	88	84	77	75
320-77655-8	21AKN-SS-01	61	67	74	68	76	65	64	61
320-77655-9	21AKN-SS-02	63	56	69	60	70	63	62	62
320-77655-10	21AKN-SS-03	67	64	76	65	66	76	57	56
320-77655-11	21AKN-SS-04	58	63	70	62	74	63	56	60
320-77655-12	21AKN-SS-05	62	71	76	76	71	77	72	75
320-77655-13	21AKN-SS-06	70	65	77	66	79	69	79	72
320-77655-14	21AKN-SS-07	68	73	76	76	73	76	75	74
320-77655-15	21AKN-SS-08	53	63	75	66	71	62	59	70
320-77655-16	21AKN-SS-09	54	56	65	58	70	61	57	47 *5-
320-77655-17	21AKN-SS-109	70	69	77	72	89	80	64	62
320-77655-18	21AKN-SS-10	59	71	67	67	67	68	69	77
320-77655-19	21AKN-SS-11	49 *5-	61	68	63	62	54	54	61
320-77655-20	21AKN-SS-12	74	66	80	72	76	64	54	51
320-77655-21	21AKN-SS-13	77	73	84	66	79	82	68	63
320-77655-22	21AKN-SS-14	75	76	87	87	86	74	75	62
320-77655-22 - DL	21AKN-SS-14								
320-77655-23	21AKN-SS-15	62	64	67	58	81	67	58	55
320-77655-23 - DL	21AKN-SS-15								
320-77655-24	21AKN-SS-16	65	78	86	75	78	77	74	86
320-77655-25	21AKN-SS-17	80	70	80	79	79	69	57	52
320-77655-26	21AKN-SS-117	85	82	87	80	80	71	65	53
320-77655-27	21AKN-SS-18	69	76	84	76	78	79	75	70
320-77655-28	21AKN-SS-19	75	69	75	62	74	63	58	56
320-77655-29	21AKN-SS-20	76	69	76	61	73	66	61	47 *5-
320-77655-29 - DL	21AKN-SS-20								
320-77655-29 MS	21AKN-SS-20	74	66	78	57	63	60	64	43 *5-
320-77655-29 MS - DL	21AKN-SS-20								
320-77655-29 MSD	21AKN-SS-20	75	66	76	57	71	66	63	43 *5-
320-77655-29 MSD - DL	21AKN-SS-20								
LCS 320-517575/2-A	Lab Control Sample	54	62	63	53	72	63	56	71
LCS 320-517585/2-A	Lab Control Sample	64	76	76	69	66	74	84	73
MB 320-517575/1-A	Method Blank	56	71	70	60	75	63	75	75
MB 320-517585/1-A	Method Blank	78	88	85	81	77	76	83	80

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-77655-1	21AKN-SB-02 (0'-1')	60	67	61	73	85	58
320-77655-1 MS	21AKN-SB-02 (0'-1')	55	56	55	69	87	56
320-77655-1 MSD	21AKN-SB-02 (0'-1')	64	62	68	85	93	59

Eurofins TestAmerica, Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AKN PFAS

Job ID: 320-77655-1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)**

**Matrix: Solid**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOs (50-150)	d5NEFOs (50-150)	HFPODA (50-150)
320-77655-2	21AKN-SB-02 (6'-7')	57	69	63	55	75	54
320-77655-3	21AKN-SB-01 (0'-1')	58	63	59	71	76	54
320-77655-4	21AKN-SB-01 (6.5'-7.5')	57	64	56	59	79	53
320-77655-5	21AKN-SB-101 (6.5'-7.5')	58	70	59	61	66	55
320-77655-6 - DL	21AKN-SB-03 (0'-1')			46 *5-			
320-77655-6	21AKN-SB-03 (0'-1')	59	66		71	88	51
320-77655-7	21AKN-SB-03 (7.3'-7.8')	79	88	75	84	95	64
320-77655-8	21AKN-SS-01	60	57	66	75	81	53
320-77655-9	21AKN-SS-02	61	66	66	65	73	53
320-77655-10	21AKN-SS-03	69	67	69	60	65	63
320-77655-11	21AKN-SS-04	63	67	69	68	66	55
320-77655-12	21AKN-SS-05	55	66	60	72	92	56
320-77655-13	21AKN-SS-06	62	69	65	80	80	57
320-77655-14	21AKN-SS-07	65	64	62	83	88	57
320-77655-15	21AKN-SS-08	56	57	52	66	78	55
320-77655-16	21AKN-SS-09	60	65	57	59	61	55
320-77655-17	21AKN-SS-109	75	70	78	74	80	68
320-77655-18	21AKN-SS-10	54	66	59	57	74	59
320-77655-19	21AKN-SS-11	52	55	50	58	72	45 *5-
320-77655-20	21AKN-SS-12	88	81	79	60	60	73
320-77655-21	21AKN-SS-13	93	65	76	69	83	77
320-77655-22	21AKN-SS-14	90	84	88	76	83	77
320-77655-22 - DL	21AKN-SS-14					117	
320-77655-23	21AKN-SS-15	69	68	64	75	79	57
320-77655-23 - DL	21AKN-SS-15			59			
320-77655-24	21AKN-SS-16	72	70	74	77	83	64
320-77655-25	21AKN-SS-17	97	85	72	60	62	73
320-77655-26	21AKN-SS-117	92	88	92	64	64	83
320-77655-27	21AKN-SS-18	74	71	62	78	86	63
320-77655-28	21AKN-SS-19	85	74	79	62	61	72
320-77655-29	21AKN-SS-20	124	95	95	49 *5-	52	87
320-77655-29 - DL	21AKN-SS-20			74			
320-77655-29 MS	21AKN-SS-20	112	96	82	46 *5-	48 *5-	75
320-77655-29 MS - DL	21AKN-SS-20			84			
320-77655-29 MSD	21AKN-SS-20	107	97	110	43 *5-	47 *5-	81
320-77655-29 MSD - DL	21AKN-SS-20			76			
LCS 320-517575/2-A	Lab Control Sample	58	65	58	56	61	52
LCS 320-517585/2-A	Lab Control Sample	76	81	78	68	74	63
MB 320-517575/1-A	Method Blank	66	66	60	71	80	55
MB 320-517585/1-A	Method Blank	78	81	88	75	81	73

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc

Project/Site: AKN PFAS

C3PFBS = 13C3 PFBS

PFHxS = 18O2 PFHxS

PFOS = 13C4 PFOS

d3NMFOS = d3-NMeFOSAA

d5NEFOS = d5-NEtFOSAA

HFPODA = 13C3 HFPO-DA

Job ID: 320-77655-1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-517575/1-A**  
**Matrix: Solid**  
**Analysis Batch: 518612**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 517575**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.031	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.053	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.029	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.043	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg		08/18/21 18:34	08/22/21 05:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg		08/18/21 18:34	08/22/21 05:26	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	56		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C4 PFHpA	71		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C4 PFOA	70		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C5 PFNA	60		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C2 PFDA	75		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C2 PFUnA	63		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C2 PFDoA	75		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C2 PFTeDA	75		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C3 PFBS	66		50 - 150	08/18/21 18:34	08/22/21 05:26	1
18O2 PFHxS	66		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C4 PFOS	60		50 - 150	08/18/21 18:34	08/22/21 05:26	1
d3-NMeFOSAA	71		50 - 150	08/18/21 18:34	08/22/21 05:26	1
d5-NEtFOSAA	80		50 - 150	08/18/21 18:34	08/22/21 05:26	1
13C3 HFPO-DA	55		50 - 150	08/18/21 18:34	08/22/21 05:26	1

**Lab Sample ID: LCS 320-517575/2-A**  
**Matrix: Solid**  
**Analysis Batch: 518612**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 517575**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	2.00	2.01		ug/Kg		101	70 - 132
Perfluoroheptanoic acid (PFHpA)	2.00	2.11		ug/Kg		106	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	1.97		ug/Kg		98	69 - 133
Perfluorononanoic acid (PFNA)	2.00	2.43		ug/Kg		122	72 - 129

Eurofins TestAmerica, Sacramento



# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-517575/2-A**  
**Matrix: Solid**  
**Analysis Batch: 518612**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 517575**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	2.00	1.96		ug/Kg		98	69 - 133
Perfluoroundecanoic acid (PFUnA)	2.00	1.99		ug/Kg		99	64 - 136
Perfluorododecanoic acid (PFDoA)	2.00	2.43		ug/Kg		122	69 - 135
Perfluorotridecanoic acid (PFTriA)	2.00	2.06		ug/Kg		103	66 - 139
Perfluorotetradecanoic acid (PFTeA)	2.00	1.97		ug/Kg		98	69 - 133
Perfluorobutanesulfonic acid (PFBS)	1.77	1.54		ug/Kg		87	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.75		ug/Kg		96	67 - 130
Perfluorooctanesulfonic acid (PFOS)	1.86	1.84		ug/Kg		99	68 - 136
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	2.00	2.29		ug/Kg		115	63 - 144
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	2.00	2.01		ug/Kg		100	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.86	1.86		ug/Kg		100	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.12		ug/Kg		106	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	1.62		ug/Kg		86	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.09		ug/Kg		111	79 - 139

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	54		50 - 150
13C4 PFHpA	62		50 - 150
13C4 PFOA	63		50 - 150
13C5 PFNA	53		50 - 150
13C2 PFDA	72		50 - 150
13C2 PFUnA	63		50 - 150
13C2 PFDoA	56		50 - 150
13C2 PFTeDA	71		50 - 150
13C3 PFBS	58		50 - 150
18O2 PFHxS	65		50 - 150
13C4 PFOS	58		50 - 150
d3-NMeFOSAA	56		50 - 150
d5-NEtFOSAA	61		50 - 150
13C3 HFPO-DA	52		50 - 150

**Lab Sample ID: 320-77655-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 518612**

**Client Sample ID: 21AKN-SB-02 (0'-1')**  
**Prep Type: Total/NA**  
**Prep Batch: 517575**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	ND		2.05	2.40		ug/Kg	☼	117	70 - 132
Perfluoroheptanoic acid (PFHpA)	ND		2.05	2.16		ug/Kg	☼	105	71 - 131
Perfluorooctanoic acid (PFOA)	ND		2.05	2.42		ug/Kg	☼	118	69 - 133

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-77655-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 518612**

**Client Sample ID: 21AKN-SB-02 (0'-1')**  
**Prep Type: Total/NA**  
**Prep Batch: 517575**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	ND		2.05	2.29		ug/Kg	⊛	111	72 - 129
Perfluorodecanoic acid (PFDA)	ND		2.05	2.18		ug/Kg	⊛	106	69 - 133
Perfluoroundecanoic acid (PFUnA)	ND		2.05	2.25		ug/Kg	⊛	110	64 - 136
Perfluorododecanoic acid (PFDoA)	ND		2.05	2.36		ug/Kg	⊛	115	69 - 135
Perfluorotridecanoic acid (PFTriA)	ND		2.05	1.91		ug/Kg	⊛	93	66 - 139
Perfluorotetradecanoic acid (PFTeA)	ND		2.05	2.07		ug/Kg	⊛	101	69 - 133
Perfluorobutanesulfonic acid (PFBS)	ND		1.81	1.68		ug/Kg	⊛	92	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	0.050	J	1.87	1.91		ug/Kg	⊛	99	67 - 130
Perfluorooctanesulfonic acid (PFOS)	0.35		1.91	2.42		ug/Kg	⊛	109	68 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.05	2.46		ug/Kg	⊛	120	63 - 144
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.05	2.15		ug/Kg	⊛	105	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.91	1.98		ug/Kg	⊛	103	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.05	2.06		ug/Kg	⊛	101	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.93	1.74		ug/Kg	⊛	90	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.93	2.47		ug/Kg	⊛	128	79 - 139

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C2 PFHxA	50		50 - 150
13C4 PFHpA	66		50 - 150
13C4 PFOA	63		50 - 150
13C5 PFNA	66		50 - 150
13C2 PFDA	66		50 - 150
13C2 PFUnA	62		50 - 150
13C2 PFDoA	66		50 - 150
13C2 PFTeDA	72		50 - 150
13C3 PFBS	55		50 - 150
18O2 PFHxS	56		50 - 150
13C4 PFOS	55		50 - 150
d3-NMeFOSAA	69		50 - 150
d5-NEtFOSAA	87		50 - 150
13C3 HFPO-DA	56		50 - 150

**Lab Sample ID: 320-77655-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 518612**

**Client Sample ID: 21AKN-SB-02 (0'-1')**  
**Prep Type: Total/NA**  
**Prep Batch: 517575**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perfluorohexanoic acid (PFHxA)	ND		1.98	1.97		ug/Kg	⊛	99	70 - 132	20	30
Perfluoroheptanoic acid (PFHpA)	ND		1.98	1.80		ug/Kg	⊛	91	71 - 131	18	30

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-77655-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 518612**

**Client Sample ID: 21AKN-SB-02 (0'-1')**  
**Prep Type: Total/NA**  
**Prep Batch: 517575**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	ND		1.98	1.89		ug/Kg	*	95	69 - 133	25	30
Perfluorononanoic acid (PFNA)	ND		1.98	2.34		ug/Kg	*	118	72 - 129	2	30
Perfluorodecanoic acid (PFDA)	ND		1.98	2.09		ug/Kg	*	105	69 - 133	4	30
Perfluoroundecanoic acid (PFUnA)	ND		1.98	2.16		ug/Kg	*	109	64 - 136	4	30
Perfluorododecanoic acid (PFDoA)	ND		1.98	2.11		ug/Kg	*	106	69 - 135	11	30
Perfluorotridecanoic acid (PFTriA)	ND		1.98	1.72		ug/Kg	*	87	66 - 139	11	30
Perfluorotetradecanoic acid (PFTeA)	ND		1.98	2.09		ug/Kg	*	105	69 - 133	1	30
Perfluorobutanesulfonic acid (PFBS)	ND		1.75	1.56		ug/Kg	*	89	72 - 128	7	30
Perfluorohexanesulfonic acid (PFHxS)	0.050	J	1.81	1.96		ug/Kg	*	106	67 - 130	2	30
Perfluorooctanesulfonic acid (PFOS)	0.35		1.84	2.17		ug/Kg	*	99	68 - 136	11	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.98	2.22		ug/Kg	*	112	63 - 144	10	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.98	2.25		ug/Kg	*	114	61 - 139	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.85	1.77		ug/Kg	*	96	75 - 135	11	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.98	2.13		ug/Kg	*	107	77 - 137	3	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.87	1.55		ug/Kg	*	83	76 - 136	11	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.87	1.91		ug/Kg	*	102	79 - 139	26	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C2 PFHxA	62		50 - 150
13C4 PFHpA	73		50 - 150
13C4 PFOA	80		50 - 150
13C5 PFNA	65		50 - 150
13C2 PFDA	76		50 - 150
13C2 PFUnA	72		50 - 150
13C2 PFDoA	70		50 - 150
13C2 PFTeDA	74		50 - 150
13C3 PFBS	64		50 - 150
18O2 PFHxS	62		50 - 150
13C4 PFOS	68		50 - 150
d3-NMeFOSAA	85		50 - 150
d5-NEtFOSAA	93		50 - 150
13C3 HFPO-DA	59		50 - 150

**Lab Sample ID: MB 320-517585/1-A**  
**Matrix: Solid**  
**Analysis Batch: 518192**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 517585**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.031	ug/Kg		08/18/21 19:44	08/20/21 10:51	1

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-517585/1-A**  
**Matrix: Solid**  
**Analysis Batch: 518192**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 517585**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.053	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.029	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.043	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg		08/18/21 19:44	08/20/21 10:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg		08/18/21 19:44	08/20/21 10:51	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	78		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C4 PFHpA	88		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C4 PFOA	85		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C5 PFNA	81		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C2 PFDA	77		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C2 PFUnA	76		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C2 PFDoA	83		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C2 PFTeDA	80		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C3 PFBS	78		50 - 150	08/18/21 19:44	08/20/21 10:51	1
18O2 PFHxS	81		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C4 PFOS	88		50 - 150	08/18/21 19:44	08/20/21 10:51	1
d3-NMeFOSAA	75		50 - 150	08/18/21 19:44	08/20/21 10:51	1
d5-NEtFOSAA	81		50 - 150	08/18/21 19:44	08/20/21 10:51	1
13C3 HFPO-DA	73		50 - 150	08/18/21 19:44	08/20/21 10:51	1

**Lab Sample ID: LCS 320-517585/2-A**  
**Matrix: Solid**  
**Analysis Batch: 518192**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 517585**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Perfluorohexanoic acid (PFHxA)	2.00	2.17		ug/Kg		108	70 - 132
Perfluoroheptanoic acid (PFHpA)	2.00	2.31		ug/Kg		116	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	2.36		ug/Kg		118	69 - 133
Perfluorononanoic acid (PFNA)	2.00	2.18		ug/Kg		109	72 - 129
Perfluorodecanoic acid (PFDA)	2.00	2.28		ug/Kg		114	69 - 133

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-517585/2-A**  
**Matrix: Solid**  
**Analysis Batch: 518192**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 517585**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	2.00	1.90		ug/Kg		95	64 - 136
Perfluorododecanoic acid (PFDoA)	2.00	1.95		ug/Kg		97	69 - 135
Perfluorotridecanoic acid (PFTriA)	2.00	2.09		ug/Kg		104	66 - 139
Perfluorotetradecanoic acid (PFTeA)	2.00	2.11		ug/Kg		106	69 - 133
Perfluorobutanesulfonic acid (PFBS)	1.77	1.68		ug/Kg		95	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.84		ug/Kg		101	67 - 130
Perfluorooctanesulfonic acid (PFOS)	1.86	1.91		ug/Kg		103	68 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.28		ug/Kg		114	63 - 144
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.11		ug/Kg		105	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.86	1.80		ug/Kg		97	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.29		ug/Kg		115	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	1.70		ug/Kg		90	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.06		ug/Kg		109	79 - 139

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	64		50 - 150
13C4 PFHpA	76		50 - 150
13C4 PFOA	76		50 - 150
13C5 PFNA	69		50 - 150
13C2 PFDA	66		50 - 150
13C2 PFUnA	74		50 - 150
13C2 PFDoA	84		50 - 150
13C2 PFTeDA	73		50 - 150
13C3 PFBS	76		50 - 150
18O2 PFHxS	81		50 - 150
13C4 PFOS	78		50 - 150
d3-NMeFOSAA	68		50 - 150
d5-NEtFOSAA	74		50 - 150
13C3 HFPO-DA	63		50 - 150

**Lab Sample ID: 320-77655-29 MS**  
**Matrix: Solid**  
**Analysis Batch: 518192**

**Client Sample ID: 21AKN-SS-20**  
**Prep Type: Total/NA**  
**Prep Batch: 517585**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
Perfluorohexanoic acid (PFHxA)	0.43	I	1.94	2.29		ug/Kg	☼	96	70 - 132
Perfluoroheptanoic acid (PFHpA)	0.084	J	1.94	2.04		ug/Kg	☼	101	71 - 131
Perfluorooctanoic acid (PFOA)	2.6		1.94	4.27		ug/Kg	☼	86	69 - 133
Perfluorononanoic acid (PFNA)	0.19		1.94	2.48		ug/Kg	☼	118	72 - 129

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-77655-29 MS**

**Matrix: Solid**

**Analysis Batch: 518192**

**Client Sample ID: 21AKN-SS-20**

**Prep Type: Total/NA**

**Prep Batch: 517585**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	0.25		1.94	2.44		ug/Kg	☼	113	69 - 133
Perfluoroundecanoic acid (PFUnA)	1.1		1.94	3.64		ug/Kg	☼	131	64 - 136
Perfluorododecanoic acid (PFDoA)	0.047	J	1.94	1.97		ug/Kg	☼	99	69 - 135
Perfluorotridecanoic acid (PFTriA)	0.11	J	1.94	1.60		ug/Kg	☼	77	66 - 139
Perfluorotetradecanoic acid (PFTeA)	ND		1.94	2.00		ug/Kg	☼	103	69 - 133
Perfluorobutanesulfonic acid (PFBS)	0.049	J	1.72	1.64		ug/Kg	☼	93	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	5.5	F1	1.77	6.57	F1	ug/Kg	☼	61	67 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.14	J   F1	1.94	2.66		ug/Kg	☼	129	63 - 144
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.13	J	1.94	2.39		ug/Kg	☼	116	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	F1	1.81	2.57	F1	ug/Kg	☼	142	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.94	2.13		ug/Kg	☼	110	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.83	1.95		ug/Kg	☼	106	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	F1	1.83	1.54		ug/Kg	☼	84	79 - 139

Isotope Dilution	MS %Recovery	MS Qualifier	MS Limits
13C2 PFHxA	74		50 - 150
13C4 PFHpA	66		50 - 150
13C4 PFOA	78		50 - 150
13C5 PFNA	57		50 - 150
13C2 PFDA	63		50 - 150
13C2 PFUnA	60		50 - 150
13C2 PFDoA	64		50 - 150
13C2 PFTeDA	43	*5-	50 - 150
13C3 PFBS	112		50 - 150
18O2 PFHxS	96		50 - 150
13C4 PFOS	82		50 - 150
d3-NMeFOSAA	46	*5-	50 - 150
d5-NEtFOSAA	48	*5-	50 - 150
13C3 HFPO-DA	75		50 - 150

**Lab Sample ID: 320-77655-29 MSD**

**Matrix: Solid**

**Analysis Batch: 518192**

**Client Sample ID: 21AKN-SS-20**

**Prep Type: Total/NA**

**Prep Batch: 517585**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	0.43	I	1.97	2.21		ug/Kg	☼	91	70 - 132	3	30
Perfluoroheptanoic acid (PFHpA)	0.084	J	1.97	2.39		ug/Kg	☼	117	71 - 131	16	30
Perfluorooctanoic acid (PFOA)	2.6		1.97	4.57		ug/Kg	☼	100	69 - 133	7	30
Perfluorononanoic acid (PFNA)	0.19		1.97	2.48		ug/Kg	☼	117	72 - 129	0	30
Perfluorodecanoic acid (PFDA)	0.25		1.97	2.36		ug/Kg	☼	107	69 - 133	4	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-77655-29 MSD**

**Matrix: Solid**

**Analysis Batch: 518192**

**Client Sample ID: 21AKN-SS-20**

**Prep Type: Total/NA**

**Prep Batch: 517585**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	1.1		1.97	3.44		ug/Kg	☼	119	64 - 136	6	30
Perfluorododecanoic acid (PFDoA)	0.047	J	1.97	1.81		ug/Kg	☼	90	69 - 135	9	30
Perfluorotridecanoic acid (PFTriA)	0.11	J	1.97	1.48		ug/Kg	☼	70	66 - 139	8	30
Perfluorotetradecanoic acid (PFTeA)	ND		1.97	1.90		ug/Kg	☼	97	69 - 133	5	30
Perfluorobutanesulfonic acid (PFBS)	0.049	J	1.74	1.78		ug/Kg	☼	99	72 - 128	8	30
Perfluorohexanesulfonic acid (PFHxS)	5.5	F1	1.79	6.45	F1	ug/Kg	☼	53	67 - 130	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.14	J I F1	1.97	2.99	F1	ug/Kg	☼	145	63 - 144	12	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.13	J	1.97	2.46		ug/Kg	☼	118	61 - 139	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	F1	1.83	1.92		ug/Kg	☼	104	75 - 135	29	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.97	2.13		ug/Kg	☼	108	77 - 137	0	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.85	1.50		ug/Kg	☼	81	76 - 136	26	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	F1	1.85	1.17	F1	ug/Kg	☼	63	79 - 139	27	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	MSD Limits
13C2 PFHxA	75		50 - 150
13C4 PFHpA	66		50 - 150
13C4 PFOA	76		50 - 150
13C5 PFNA	57		50 - 150
13C2 PFDA	71		50 - 150
13C2 PFUnA	66		50 - 150
13C2 PFDoA	63		50 - 150
13C2 PFTeDA	43	*5-	50 - 150
13C3 PFBS	107		50 - 150
18O2 PFHxS	97		50 - 150
13C4 PFOS	110		50 - 150
d3-NMeFOSAA	43	*5-	50 - 150
d5-NEtFOSAA	47	*5-	50 - 150
13C3 HFPO-DA	81		50 - 150

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

**Lab Sample ID: 320-77655-29 MS**

**Matrix: Solid**

**Analysis Batch: 518606**

**Client Sample ID: 21AKN-SS-20**

**Prep Type: Total/NA**

**Prep Batch: 517585**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS) - DL	28		1.80	24.5	4	ug/Kg	☼	-210	68 - 136

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
 Project/Site: AKN PFAS

Job ID: 320-77655-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
13C4 PFOS - DL	84		50 - 150

**Lab Sample ID: 320-77655-29 MSD**  
**Matrix: Solid**  
**Analysis Batch: 518606**

**Client Sample ID: 21AKN-SS-20**  
**Prep Type: Total/NA**  
**Prep Batch: 517585**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorooctanesulfonic acid (PFOS) - DL	28		1.83	24.7	4	ug/Kg	⊛	-200	68 - 136	1	30

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
13C4 PFOS - DL	76		50 - 150

## Method: D 2216 - Percent Moisture

**Lab Sample ID: 320-77655-1 DU**  
**Matrix: Solid**  
**Analysis Batch: 517502**

**Client Sample ID: 21AKN-SB-02 (0'-1')**  
**Prep Type: Total/NA**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>DU Result</i>	<i>DU Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>RPD</i>	<i>RPD Limit</i>
Percent Moisture	6.3		6.6		%		4	20
Percent Solids	93.7		93.4		%		0.3	20

**Lab Sample ID: 320-77655-20 DU**  
**Matrix: Solid**  
**Analysis Batch: 517510**

**Client Sample ID: 21AKN-SS-12**  
**Prep Type: Total/NA**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>DU Result</i>	<i>DU Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>RPD</i>	<i>RPD Limit</i>
Percent Moisture	5.4		4.7		%		14	20
Percent Solids	94.6		95.3		%		0.8	20



# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## LCMS

### Prep Batch: 517575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-1	21AKN-SB-02 (0'-1')	Total/NA	Solid	SHAKE	
320-77655-2	21AKN-SB-02 (6'-7')	Total/NA	Solid	SHAKE	
320-77655-3	21AKN-SB-01 (0'-1')	Total/NA	Solid	SHAKE	
320-77655-4	21AKN-SB-01 (6.5'-7.5')	Total/NA	Solid	SHAKE	
320-77655-5	21AKN-SB-101 (6.5'-7.5')	Total/NA	Solid	SHAKE	
320-77655-6	21AKN-SB-03 (0'-1')	Total/NA	Solid	SHAKE	
320-77655-6 - DL	21AKN-SB-03 (0'-1')	Total/NA	Solid	SHAKE	
320-77655-7	21AKN-SB-03 (7.3'-7.8')	Total/NA	Solid	SHAKE	
320-77655-8	21AKN-SS-01	Total/NA	Solid	SHAKE	
320-77655-9	21AKN-SS-02	Total/NA	Solid	SHAKE	
320-77655-10	21AKN-SS-03	Total/NA	Solid	SHAKE	
320-77655-11	21AKN-SS-04	Total/NA	Solid	SHAKE	
320-77655-12	21AKN-SS-05	Total/NA	Solid	SHAKE	
320-77655-13	21AKN-SS-06	Total/NA	Solid	SHAKE	
320-77655-14	21AKN-SS-07	Total/NA	Solid	SHAKE	
320-77655-15	21AKN-SS-08	Total/NA	Solid	SHAKE	
320-77655-16	21AKN-SS-09	Total/NA	Solid	SHAKE	
320-77655-17	21AKN-SS-109	Total/NA	Solid	SHAKE	
320-77655-18	21AKN-SS-10	Total/NA	Solid	SHAKE	
320-77655-19	21AKN-SS-11	Total/NA	Solid	SHAKE	
320-77655-20	21AKN-SS-12	Total/NA	Solid	SHAKE	
MB 320-517575/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-517575/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-77655-1 MS	21AKN-SB-02 (0'-1')	Total/NA	Solid	SHAKE	
320-77655-1 MSD	21AKN-SB-02 (0'-1')	Total/NA	Solid	SHAKE	

### Prep Batch: 517585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-21	21AKN-SS-13	Total/NA	Solid	SHAKE	
320-77655-22	21AKN-SS-14	Total/NA	Solid	SHAKE	
320-77655-22 - DL	21AKN-SS-14	Total/NA	Solid	SHAKE	
320-77655-23 - DL	21AKN-SS-15	Total/NA	Solid	SHAKE	
320-77655-23	21AKN-SS-15	Total/NA	Solid	SHAKE	
320-77655-24	21AKN-SS-16	Total/NA	Solid	SHAKE	
320-77655-25	21AKN-SS-17	Total/NA	Solid	SHAKE	
320-77655-26	21AKN-SS-117	Total/NA	Solid	SHAKE	
320-77655-27	21AKN-SS-18	Total/NA	Solid	SHAKE	
320-77655-28	21AKN-SS-19	Total/NA	Solid	SHAKE	
320-77655-29	21AKN-SS-20	Total/NA	Solid	SHAKE	
320-77655-29 - DL	21AKN-SS-20	Total/NA	Solid	SHAKE	
MB 320-517585/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-517585/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-77655-29 MS	21AKN-SS-20	Total/NA	Solid	SHAKE	
320-77655-29 MS - DL	21AKN-SS-20	Total/NA	Solid	SHAKE	
320-77655-29 MSD	21AKN-SS-20	Total/NA	Solid	SHAKE	
320-77655-29 MSD - DL	21AKN-SS-20	Total/NA	Solid	SHAKE	

### Analysis Batch: 518192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-21	21AKN-SS-13	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-22	21AKN-SS-14	Total/NA	Solid	EPA 537(Mod)	517585

Eurofins TestAmerica, Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## LCMS (Continued)

### Analysis Batch: 518192 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-23	21AKN-SS-15	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-24	21AKN-SS-16	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-25	21AKN-SS-17	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-26	21AKN-SS-117	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-27	21AKN-SS-18	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-28	21AKN-SS-19	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-29	21AKN-SS-20	Total/NA	Solid	EPA 537(Mod)	517585
MB 320-517585/1-A	Method Blank	Total/NA	Solid	EPA 537(Mod)	517585
LCS 320-517585/2-A	Lab Control Sample	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-29 MS	21AKN-SS-20	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-29 MSD	21AKN-SS-20	Total/NA	Solid	EPA 537(Mod)	517585

### Analysis Batch: 518606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-23 - DL	21AKN-SS-15	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-29 - DL	21AKN-SS-20	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-29 MS - DL	21AKN-SS-20	Total/NA	Solid	EPA 537(Mod)	517585
320-77655-29 MSD - DL	21AKN-SS-20	Total/NA	Solid	EPA 537(Mod)	517585

### Analysis Batch: 518612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-1	21AKN-SB-02 (0'-1')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-2	21AKN-SB-02 (6'-7')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-3	21AKN-SB-01 (0'-1')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-4	21AKN-SB-01 (6.5'-7.5')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-5	21AKN-SB-101 (6.5'-7.5')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-7	21AKN-SB-03 (7.3'-7.8')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-8	21AKN-SS-01	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-9	21AKN-SS-02	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-10	21AKN-SS-03	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-11	21AKN-SS-04	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-12	21AKN-SS-05	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-13	21AKN-SS-06	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-14	21AKN-SS-07	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-15	21AKN-SS-08	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-16	21AKN-SS-09	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-17	21AKN-SS-109	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-18	21AKN-SS-10	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-19	21AKN-SS-11	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-20	21AKN-SS-12	Total/NA	Solid	EPA 537(Mod)	517575
MB 320-517575/1-A	Method Blank	Total/NA	Solid	EPA 537(Mod)	517575
LCS 320-517575/2-A	Lab Control Sample	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-1 MS	21AKN-SB-02 (0'-1')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-1 MSD	21AKN-SB-02 (0'-1')	Total/NA	Solid	EPA 537(Mod)	517575

### Analysis Batch: 519850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-6 - DL	21AKN-SB-03 (0'-1')	Total/NA	Solid	EPA 537(Mod)	517575
320-77655-6	21AKN-SB-03 (0'-1')	Total/NA	Solid	EPA 537(Mod)	517575

Eurofins TestAmerica, Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## LCMS

### Analysis Batch: 520530

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-22 - DL	21AKN-SS-14	Total/NA	Solid	EPA 537(Mod)	517585

## General Chemistry

### Analysis Batch: 517502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-1	21AKN-SB-02 (0'-1')	Total/NA	Solid	D 2216	
320-77655-2	21AKN-SB-02 (6'-7')	Total/NA	Solid	D 2216	
320-77655-3	21AKN-SB-01 (0'-1')	Total/NA	Solid	D 2216	
320-77655-4	21AKN-SB-01 (6.5'-7.5')	Total/NA	Solid	D 2216	
320-77655-5	21AKN-SB-101 (6.5'-7.5')	Total/NA	Solid	D 2216	
320-77655-6	21AKN-SB-03 (0'-1')	Total/NA	Solid	D 2216	
320-77655-7	21AKN-SB-03 (7.3'-7.8')	Total/NA	Solid	D 2216	
320-77655-8	21AKN-SS-01	Total/NA	Solid	D 2216	
320-77655-9	21AKN-SS-02	Total/NA	Solid	D 2216	
320-77655-10	21AKN-SS-03	Total/NA	Solid	D 2216	
320-77655-11	21AKN-SS-04	Total/NA	Solid	D 2216	
320-77655-12	21AKN-SS-05	Total/NA	Solid	D 2216	
320-77655-13	21AKN-SS-06	Total/NA	Solid	D 2216	
320-77655-14	21AKN-SS-07	Total/NA	Solid	D 2216	
320-77655-15	21AKN-SS-08	Total/NA	Solid	D 2216	
320-77655-16	21AKN-SS-09	Total/NA	Solid	D 2216	
320-77655-17	21AKN-SS-109	Total/NA	Solid	D 2216	
320-77655-18	21AKN-SS-10	Total/NA	Solid	D 2216	
320-77655-19	21AKN-SS-11	Total/NA	Solid	D 2216	
320-77655-1 DU	21AKN-SB-02 (0'-1')	Total/NA	Solid	D 2216	

### Analysis Batch: 517510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77655-20	21AKN-SS-12	Total/NA	Solid	D 2216	
320-77655-21	21AKN-SS-13	Total/NA	Solid	D 2216	
320-77655-22	21AKN-SS-14	Total/NA	Solid	D 2216	
320-77655-23	21AKN-SS-15	Total/NA	Solid	D 2216	
320-77655-24	21AKN-SS-16	Total/NA	Solid	D 2216	
320-77655-25	21AKN-SS-17	Total/NA	Solid	D 2216	
320-77655-26	21AKN-SS-117	Total/NA	Solid	D 2216	
320-77655-27	21AKN-SS-18	Total/NA	Solid	D 2216	
320-77655-28	21AKN-SS-19	Total/NA	Solid	D 2216	
320-77655-29	21AKN-SS-20	Total/NA	Solid	D 2216	
320-77655-20 DU	21AKN-SS-12	Total/NA	Solid	D 2216	

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-02 (0'-1')**

Date Collected: 08/14/21 09:40

Date Received: 08/17/21 10:32

**Lab Sample ID: 320-77655-1**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-02 (0'-1')**

Date Collected: 08/14/21 09:40

Date Received: 08/17/21 10:32

**Lab Sample ID: 320-77655-1**

Matrix: Solid

Percent Solids: 93.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.33 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 05:45	K1S	TAL SAC

**Client Sample ID: 21AKN-SB-02 (6'-7')**

Date Collected: 08/14/21 10:00

Date Received: 08/17/21 10:32

**Lab Sample ID: 320-77655-2**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-02 (6'-7')**

Date Collected: 08/14/21 10:00

Date Received: 08/17/21 10:32

**Lab Sample ID: 320-77655-2**

Matrix: Solid

Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.37 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 06:12	K1S	TAL SAC

**Client Sample ID: 21AKN-SB-01 (0'-1')**

Date Collected: 08/14/21 11:50

Date Received: 08/17/21 10:32

**Lab Sample ID: 320-77655-3**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-01 (0'-1')**

Date Collected: 08/14/21 11:50

Date Received: 08/17/21 10:32

**Lab Sample ID: 320-77655-3**

Matrix: Solid

Percent Solids: 88.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.14 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 06:21	K1S	TAL SAC

**Client Sample ID: 21AKN-SB-01 (6.5'-7.5')**

Date Collected: 08/14/21 12:05

Date Received: 08/17/21 10:32

**Lab Sample ID: 320-77655-4**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

Eurofins TestAmerica, Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SB-01 (6.5'-7.5')

## Lab Sample ID: 320-77655-4

Date Collected: 08/14/21 12:05

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 86.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.03 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 06:30	K1S	TAL SAC

## Client Sample ID: 21AKN-SB-101 (6.5-7.5')

## Lab Sample ID: 320-77655-5

Date Collected: 08/14/21 11:55

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SB-101 (6.5-7.5')

## Lab Sample ID: 320-77655-5

Date Collected: 08/14/21 11:55

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 85.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.30 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 06:40	K1S	TAL SAC

## Client Sample ID: 21AKN-SB-03 (0'-1')

## Lab Sample ID: 320-77655-6

Date Collected: 08/14/21 13:40

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SB-03 (0'-1')

## Lab Sample ID: 320-77655-6

Date Collected: 08/14/21 13:40

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 88.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE	DL		5.17 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	50			519850	08/26/21 01:12	S1M	TAL SAC
Total/NA	Prep	SHAKE			5.17 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		5			519850	08/26/21 01:21	S1M	TAL SAC

## Client Sample ID: 21AKN-SB-03 (7.3'-7.8')

## Lab Sample ID: 320-77655-7

Date Collected: 08/14/21 13:55

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SB-03 (7.3'-7.8')**

**Lab Sample ID: 320-77655-7**

Date Collected: 08/14/21 13:55

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 80.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.23 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 06:49	K1S	TAL SAC

**Client Sample ID: 21AKN-SS-01**

**Lab Sample ID: 320-77655-8**

Date Collected: 08/15/21 08:49

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SS-01**

**Lab Sample ID: 320-77655-8**

Date Collected: 08/15/21 08:49

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 78.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.59 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 07:07	K1S	TAL SAC

**Client Sample ID: 21AKN-SS-02**

**Lab Sample ID: 320-77655-9**

Date Collected: 08/15/21 09:00

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SS-02**

**Lab Sample ID: 320-77655-9**

Date Collected: 08/15/21 09:00

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 88.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.14 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 07:16	K1S	TAL SAC

**Client Sample ID: 21AKN-SS-03**

**Lab Sample ID: 320-77655-10**

Date Collected: 08/15/21 08:08

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-03

## Lab Sample ID: 320-77655-10

Date Collected: 08/15/21 08:08

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.45 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 07:25	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-04

## Lab Sample ID: 320-77655-11

Date Collected: 08/15/21 09:19

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-04

## Lab Sample ID: 320-77655-11

Date Collected: 08/15/21 09:19

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 93.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.28 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 07:34	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-05

## Lab Sample ID: 320-77655-12

Date Collected: 08/15/21 09:53

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-05

## Lab Sample ID: 320-77655-12

Date Collected: 08/15/21 09:53

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 93.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.33 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 07:43	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-06

## Lab Sample ID: 320-77655-13

Date Collected: 08/15/21 10:04

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-06

## Lab Sample ID: 320-77655-13

Date Collected: 08/15/21 10:04

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.19 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 07:52	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-07

## Lab Sample ID: 320-77655-14

Date Collected: 08/15/21 10:31

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-07

## Lab Sample ID: 320-77655-14

Date Collected: 08/15/21 10:31

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 91.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.10 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 08:02	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-08

## Lab Sample ID: 320-77655-15

Date Collected: 08/15/21 10:43

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-08

## Lab Sample ID: 320-77655-15

Date Collected: 08/15/21 10:43

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.35 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 08:11	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-09

## Lab Sample ID: 320-77655-16

Date Collected: 08/15/21 10:55

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-09

Lab Sample ID: 320-77655-16

Date Collected: 08/15/21 10:55

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 91.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.08 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 08:20	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-109

Lab Sample ID: 320-77655-17

Date Collected: 08/15/21 10:45

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-109

Lab Sample ID: 320-77655-17

Date Collected: 08/15/21 10:45

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 92.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.56 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 08:29	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-10

Lab Sample ID: 320-77655-18

Date Collected: 08/15/21 11:10

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-10

Lab Sample ID: 320-77655-18

Date Collected: 08/15/21 11:10

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 89.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.06 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 08:47	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-11

Lab Sample ID: 320-77655-19

Date Collected: 08/15/21 11:18

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517502	08/18/21 15:17	KDB	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-11

## Lab Sample ID: 320-77655-19

Date Collected: 08/15/21 11:18

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 93.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.03 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		10			518612	08/22/21 08:56	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-12

## Lab Sample ID: 320-77655-20

Date Collected: 08/15/21 11:33

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-12

## Lab Sample ID: 320-77655-20

Date Collected: 08/15/21 11:33

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 94.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.07 g	10.0 mL	517575	08/18/21 18:34	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518612	08/22/21 09:24	K1S	TAL SAC

## Client Sample ID: 21AKN-SS-13

## Lab Sample ID: 320-77655-21

Date Collected: 08/15/21 11:41

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-13

## Lab Sample ID: 320-77655-21

Date Collected: 08/15/21 11:41

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 95.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.23 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 11:09	S1M	TAL SAC

## Client Sample ID: 21AKN-SS-14

## Lab Sample ID: 320-77655-22

Date Collected: 08/15/21 11:52

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-14**

**Lab Sample ID: 320-77655-22**

Date Collected: 08/15/21 11:52

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 87.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.01 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 11:18	S1M	TAL SAC
Total/NA	Prep	SHAKE	DL		5.01 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			520530	08/27/21 20:20	JRB	TAL SAC

**Client Sample ID: 21AKN-SS-15**

**Lab Sample ID: 320-77655-23**

Date Collected: 08/15/21 12:17

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SS-15**

**Lab Sample ID: 320-77655-23**

Date Collected: 08/15/21 12:17

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 35.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.15 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 11:27	S1M	TAL SAC
Total/NA	Prep	SHAKE	DL		5.15 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	10			518606	08/22/21 03:55	K1S	TAL SAC

**Client Sample ID: 21AKN-SS-16**

**Lab Sample ID: 320-77655-24**

Date Collected: 08/15/21 12:37

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SS-16**

**Lab Sample ID: 320-77655-24**

Date Collected: 08/15/21 12:37

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 86.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.05 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 11:37	S1M	TAL SAC

**Client Sample ID: 21AKN-SS-17**

**Lab Sample ID: 320-77655-25**

Date Collected: 08/15/21 12:52

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

**Client Sample ID: 21AKN-SS-17**

**Lab Sample ID: 320-77655-25**

**Date Collected: 08/15/21 12:52**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

**Percent Solids: 85.7**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.21 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 11:46	S1M	TAL SAC

**Client Sample ID: 21AKN-SS-117**

**Lab Sample ID: 320-77655-26**

**Date Collected: 08/15/21 12:42**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SS-117**

**Lab Sample ID: 320-77655-26**

**Date Collected: 08/15/21 12:42**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

**Percent Solids: 85.3**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.15 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 11:55	S1M	TAL SAC

**Client Sample ID: 21AKN-SS-18**

**Lab Sample ID: 320-77655-27**

**Date Collected: 08/15/21 13:12**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

**Client Sample ID: 21AKN-SS-18**

**Lab Sample ID: 320-77655-27**

**Date Collected: 08/15/21 13:12**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

**Percent Solids: 88.5**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.17 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 12:04	S1M	TAL SAC

**Client Sample ID: 21AKN-SS-19**

**Lab Sample ID: 320-77655-28**

**Date Collected: 08/15/21 13:20**

**Matrix: Solid**

**Date Received: 08/17/21 10:32**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Client Sample ID: 21AKN-SS-19

## Lab Sample ID: 320-77655-28

Date Collected: 08/15/21 13:20

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 80.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.16 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 12:13	S1M	TAL SAC

## Client Sample ID: 21AKN-SS-20

## Lab Sample ID: 320-77655-29

Date Collected: 08/15/21 13:30

Matrix: Solid

Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			517510	08/18/21 15:17	KDB	TAL SAC

## Client Sample ID: 21AKN-SS-20

## Lab Sample ID: 320-77655-29

Date Collected: 08/15/21 13:30

Matrix: Solid

Date Received: 08/17/21 10:32

Percent Solids: 95.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.38 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			518192	08/20/21 12:40	S1M	TAL SAC
Total/NA	Prep	SHAKE	DL		5.38 g	10.0 mL	517585	08/18/21 19:44	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			518606	08/22/21 03:28	K1S	TAL SAC

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

## Laboratory: Eurofins TestAmerica, Sacramento

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

<u>Authority</u>	<u>Program</u>	<u>Identification Number</u>	<u>Expiration Date</u>
Alaska (UST)	State	17-020	02-20-24

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.

<u>Analysis Method</u>	<u>Prep Method</u>	<u>Matrix</u>	<u>Analyte</u>
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids



# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

#### Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-77655-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-77655-1	21AKN-SB-02 (0'-1')	Solid	08/14/21 09:40	08/17/21 10:32
320-77655-2	21AKN-SB-02 (6'-7')	Solid	08/14/21 10:00	08/17/21 10:32
320-77655-3	21AKN-SB-01 (0'-1')	Solid	08/14/21 11:50	08/17/21 10:32
320-77655-4	21AKN-SB-01 (6.5'-7.5')	Solid	08/14/21 12:05	08/17/21 10:32
320-77655-5	21AKN-SB-101 (6.5-7.5')	Solid	08/14/21 11:55	08/17/21 10:32
320-77655-6	21AKN-SB-03 (0'-1')	Solid	08/14/21 13:40	08/17/21 10:32
320-77655-7	21AKN-SB-03 (7.3'-7.8')	Solid	08/14/21 13:55	08/17/21 10:32
320-77655-8	21AKN-SS-01	Solid	08/15/21 08:49	08/17/21 10:32
320-77655-9	21AKN-SS-02	Solid	08/15/21 09:00	08/17/21 10:32
320-77655-10	21AKN-SS-03	Solid	08/15/21 08:08	08/17/21 10:32
320-77655-11	21AKN-SS-04	Solid	08/15/21 09:19	08/17/21 10:32
320-77655-12	21AKN-SS-05	Solid	08/15/21 09:53	08/17/21 10:32
320-77655-13	21AKN-SS-06	Solid	08/15/21 10:04	08/17/21 10:32
320-77655-14	21AKN-SS-07	Solid	08/15/21 10:31	08/17/21 10:32
320-77655-15	21AKN-SS-08	Solid	08/15/21 10:43	08/17/21 10:32
320-77655-16	21AKN-SS-09	Solid	08/15/21 10:55	08/17/21 10:32
320-77655-17	21AKN-SS-109	Solid	08/15/21 10:45	08/17/21 10:32
320-77655-18	21AKN-SS-10	Solid	08/15/21 11:10	08/17/21 10:32
320-77655-19	21AKN-SS-11	Solid	08/15/21 11:18	08/17/21 10:32
320-77655-20	21AKN-SS-12	Solid	08/15/21 11:33	08/17/21 10:32
320-77655-21	21AKN-SS-13	Solid	08/15/21 11:41	08/17/21 10:32
320-77655-22	21AKN-SS-14	Solid	08/15/21 11:52	08/17/21 10:32
320-77655-23	21AKN-SS-15	Solid	08/15/21 12:17	08/17/21 10:32
320-77655-24	21AKN-SS-16	Solid	08/15/21 12:37	08/17/21 10:32
320-77655-25	21AKN-SS-17	Solid	08/15/21 12:52	08/17/21 10:32
320-77655-26	21AKN-SS-117	Solid	08/15/21 12:42	08/17/21 10:32
320-77655-27	21AKN-SS-18	Solid	08/15/21 13:12	08/17/21 10:32
320-77655-28	21AKN-SS-19	Solid	08/15/21 13:20	08/17/21 10:32
320-77655-29	21AKN-SS-20	Solid	08/15/21 13:30	08/17/21 10:32





# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

**Turn Around Time:**  
 Normal     Rush  
 Please Specify

**Quote No:**  
**MSA Number:** TBD  
**J-Flags:**  Yes     No

PFAS x18									
Total Number of Containers									

Sample Identity	Lab No.	Time	Date Sampled	Analytical Methods						Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
21AKN-SS-04		0919	8/15/21	X						1	soil
21AKN-SS-05		0953		X						1	
21AKN-SS-06		1004		X						1	
21AKN-SS-07		1031		X						1	
21AKN-SS-08		1043		X						1	
21AKN-SS-09		1055		X						1	
21AKN-SS-109		1045		X						1	
21AKN-SS-10		1110		X						1	
21AKN-SS-11		1118		X						1	
21AKN-SS-12		1133		X						1	

**Project Information**  
 Number: 102582-011  
 Name: AKN PFAS  
 Contact: MXJ  
 Ongoing Project? Yes  No   
 Sampler: VTY, JLD

**Sample Receipt**  
 Total No. of Containers: 29  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond./Cold  
 Temp: 15°C  
 Delivery Method: goldstreet

**Relinquished By: 1.**  
 Signature: [Signature] Time: 0930  
 Printed Name: Keselgia Yakimova Date: 8/14/21  
 Company: Shannon & Wilson

**Relinquished By: 2.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Relinquished By: 3.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Notes:**

**Received By: 1.**  
 Signature: [Signature] Time: 1032  
 Printed Name: Nicholas Cahill Date: 8-17-21  
 Company: ETASAC

**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

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x The list 1917

No. \_\_\_\_\_



# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

**Turn Around Time:**  
 Normal     Rush  
 Please Specify

**Quote No:**  
**MSA Number:** TBD  
**J-Flags:**  Yes     No

Total Number of Containers

PFAS x 18

Sample Identity	Lab No.	Time	Date Sampled								Remarks/Matrix Composition/Grab? Sample Containers
21AKN-SS-13		1141	8/15/21	X						1	soil
21AKN-SS-14		1152	8/15/21	X						1	
21AKN-SS-15		1217		X						1	
21AKN-SS-16		1237		X						1	
21AKN-SS-17		1252		X						1	
21AKN-SS-17		1242		X						1	
21AKN-SS-18		1312		X						1	
21AKN-SS-19		1320		X						1	
21AKN-SS-20		1330		X						1	

**Project Information**  
 Number: 102582-011  
 Name: AKN PFAS  
 Contact: MXJ  
 Ongoing Project? Yes  No   
 Sampler: VY, SLD

**Sample Receipt**  
 Total No. of Containers: 29  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond./Cold  
 Temp: 1.5C  
 Delivery Method: goldstreak

**Relinquished By: 1.**  
 Signature: [Signature] Time: 0830  
 Printed Name: Veselin Jakimov Date: 8/16/21  
 Company: Shannon & Wilson

**Relinquished By: 2.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Relinquished By: 3.**  
 Signature: \_\_\_\_\_ Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Notes:**

**Received By: 1.**  
 Signature: [Signature] Time: 10:30  
 Printed Name: Nicholas Cahill Date: 081721  
 Company: ETASAC

**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



## Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-77655-1

**Login Number: 77655**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Her, David A**

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.	False	Refer to Job Narrative for details.
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	

**Laboratory Data Review Checklist**

Completed By:

Amber Masters

Title:

Environmental Scientist

Date:

9/7/2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes 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 ADEC CS approved?

Yes  No  N/A  Comments:

Samples were not transferred to another laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

Sample cooler temperature recorded at 1.5° C upon receipt at laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Analysis of PFAS does not require chemical preservation.

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples were received 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, etc.?

Yes  No  N/A  Comments:

The sample receipt form notes that the sample time on container label for sample 21AKN-SS-04 did not match the COC sample time. The sample was logged at the time listed on the COC, 9:19.

e. Data quality or usability affected?

Comments:

Data quality and/or usability is not affected.

4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The container label for sample *2IAKN-SS-04* did not match the information listed on the COC; container sample time lists 9:17, the COC lists 9:19. Sample time was logged in according to COC.

The "I" qualifier means the transition mass ratio was outside of the established ratio limits for the following:

- PFHxS in samples *2IAKN-SS-03*, *2IAKN-SS-16*, and *2IAKN-SS-19*;
- FFNA in samples *2IAKN-SS-01* and *2IAKN-SS-12*;
- PFOS in samples *2IAKN-SS-01*, *2IAKN-SS-02*, *2IAKN-SS-11*, and *2IAKN-SS-19*; and
- PFHxA and NMeFOSAA in sample *2IAKN-SS-20*.

The qualitative identification of the analyte has some degree of uncertainty with possible high bias. However, analyst judgment was used to positively identify the analyte.

The low level continuing calibration verification (CCVL) associated with batch 320-518606 recovered above the upper control limit for PFDA. The samples associated with this CCV were less than the reportin limit (RL) for the affected analyte. Additionally, the bracketing CCV were within control limits for the analyte. There is no impact on the data; therefore the data have been reported.

The samples *2IAKN-SB-01 (0'-1')*, *2IAKN-SS-03*, and *2IAKN-SS-18* exhibited matrix interferences for PFOS causing elevation of the RL. The RL for the affected analyte has been raised to be equal to the matrix interferences.

The matrix spike / matrix spike duplicate (MS/MSD) associate with preparation batch 320-517585 had recoveries for PFHxS, NMeFOSAA, 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, and/or ADONA outside control limits Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Due to the high concentration of PFOS, the MS/MSD for analytical batch 320-518606 could not be evaluated for accuracy and precision. The associated LCS met acceptance criteria.

Results for project samples *2IAKN-SB-03 (0'-1')*, *2IAKN-SS-11*, *2IAKN-SS-14*, *2IAKN-SS-15*, and *2IAKN-SS-20* as well as the MS/MSD associated with preparation batch 320-517585 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.



320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

The isotope dilution analyte (IDA) recovery associated with the following samples is below the recommended limit: 21AKN-SB-03 (0'-1'), 21AKN-SS-09, 21AKN-SS-11, 21AKN-SS-12, 21AKN-SS-17, 21AKN-SS-117, 21AKN-SS-20, and the MS/MSD samples associated with preparation batch 320-517585. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

The following samples were yellow after final volume/extraction: 21AKN-SS-13, 21AKN-SS-17, 21AKN-SS-117, 21AKN-SS-19, 21AKN-SS-20, 21AKN-SS-03, 21AKN-SS-11, 21AKN-SS-12, and MS/MSD samples associated with preparation batch 320-517585.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Sample results with "T" qualifiers are considered estimated, with high bias and are flagged "JH" in the analytical database.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Yes; see above. Refer to Sections 6.c and 6.d for further assessment of MS/MSD and surrogate recovery failures.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

The reporting limit for PFOA in sample 21AKN-SS-11 is above the applicable ADEC Cleanup Level. The sample was analyzed at a dilution due to high concentrations of target analytes.

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

e. Data quality or usability affected?

Data quality and or usability were not affected, the detected PFOA result for sample 21AKN-SS-11 is below the ADEC Cleanup Level.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected. See above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

There was not a method blank detection, therefore qualification is not required.

v. Data quality or usability affected?

Comments:

Data quality and or usability were not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – 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:

320-77655-1

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8/30/2021

CS Site Name:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and inorganics were not analyzed as part of this work order.

- iii. Accuracy – 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 – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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; analytical accuracy and precision 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. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and usability were not affected.

- c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

- i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

The MS and/or MSD associated with preparation batch 320-517585 had percent recovery failures for PFOS, PFHxS, NMeFOSAA, 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, and ADONA. The parent sample 21AKN-SS-20 is associated with the project sample set.

iv. Precision – 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 parent sample 21AKN-SS-20 had detections for PFOS and PFHxS that were greater than the spiking concentration. This leads to high uncertainty in the MS/MSD recovery calculations and sample results are not affected by the MS/MSD recovery failures for these analytes

The project sample 21AKN-SS-20 had a detection for the NMeFOSAA and the sample result is considered estimated, biased high, and flagged “JH” in the analytical database due to the high MSD recovery failure.

The project sample 21AKN-SS-20 did not have a detection for 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid and is not considered affected by the high MS recovery failure.

The project sample 21AKN-SS-20 did not have a detection for ADONA. The sample result is considered affected and the non-detect result is flagged “J” in the analytical database due to the low MSD recovery failure for this analyte.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A  Comments:

See above.

Laboratory Report Date:

8/30/2021

CS Site Name:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality and/or usability was affected; 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 – 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:

The IDA percent recovery associated with the following samples is below the recommended limit:

- 13C4 PFOS in sample 21AKN-SB-03 (0'-1'). However, the sample was analyzed at a 50x dilution due to high concentrations of PFOS. Sample result is not affected.
- 13C2 PFTeDA in sample 21AKN-SS-09.
- 13C2 PFHxA and 13C3 HFPO-DA in sample 21AKN-SS-11. However, the sample was analyzed at a 10x dilution due to high concentrations of target analytes. Sample result is not affected.
- 13C2 PFTeDA and d3NMeFOSAA in sample 21AKN-SS-20.
- 13C2 PFTeDA, d3-NMeFOSAA, and d5-NEtFOSAA in the MS and MSD samples associated with preparation batch 320-517585. Project samples are not affected by IDA recovery failures in QC samples.

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:

PFTeA results for sample 21AKN-SS-09 and 21AKN-SS-20 are considered estimated, no direction of bias, and are flagged "J" in the analytical database.

NMeFOSAA results for sample 21AKN-SS-20 are already flagged for transition mass ratio in the analytical database (see Section 4.c)

iv. Data quality or usability affected?

Comments:

Yes, see above.

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

No samples were affected.

- v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

Field duplicate pairs 21AKN-SB-01(6.5'-7.5')/ 21AKN-SB-101(6.5'-7.5'), 21AKN-SS-09/ 21AKN-SS-109, and 21AKN-SS-17/ 21AKN-SS-117 were included with this work order.

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

RPDs were less than the recommended 50% DQO for soil, where calculable.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and/or usability were not affected.

- g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable sampling equipment was not used, so an equipment blank was not necessary.

- i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A, see above.

- iii. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes  No  N/A  Comments:

Additional flags were not required.

320-77655-1

Laboratory Report Date:

8/30/2021

CS Site Name:



## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-78371-1  
Client Project/Site: AKN PFAS

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Michael X Jaramillo



*Authorized for release by:*  
*9/15/2021 3:10:56 PM*

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*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

### LINKS

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results through  
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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
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: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

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## Job ID: 320-78371-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

#### Job Narrative 320-78371-1

#### Receipt

The samples were received on 9/1/2021 3:57 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 1.5° C.

#### LCMS

Method EPA 537(Mod): Some results for samples 21AKN-SW-09 (320-78371-8) 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) recoveries associated with the following samples are below the method recommended limit: 21AKN-MW-04-45 (320-78371-5) and 21AKN-Drum-10 (320-78371-17). 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.

Method EPA 537(Mod): The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-522308 and analytical batch 320-522804 recovered outside control limits for the following analytes: Hexafluoropropylene Oxide Dimer Acid (HFPO-DA). This analyte was biased high in the LCS and LCSD and was not detected in the associated samples; therefore, the data have been reported.

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

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-522308.

Method 3535: The following samples were yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction: 21AKN-MW-05-15 (320-78371-1) and 21AKN-MW-105-15 (320-78371-2).

Water

Method 3535: The following samples were gray and contained a thin layer of sediment at the bottom of the bottle prior to extraction: 21AKN-MW-05-85 (320-78371-3), 21AKN-MW-05-85F (320-78371-4), 21AKN-MW-04-85 (320-78371-6) and 21AKN-MW-04-85F (320-78371-7).

Method 3535: During the solid phase extraction process, the following sample contained non-settable particulates which clogged the solid phase extraction column: 21AKN-MW-05-85 (320-78371-3).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-523724.

Method 3535: The following samples were light brown with sediment in the sample bottle prior to extraction: 21AKN-Drum-04 (320-78371-12), 21AKN-Drum-02 (320-78371-13), 21AKN-Drum-06 (320-78371-14), 21AKN-Drum-07 (320-78371-15), 21AKN-Drum-08 (320-78371-16) and 21AKN-Drum-10 (320-78371-17).

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: AKN PFAS

Job ID: 320-78371-1

## Client Sample ID: 21AKN-MW-05-15

## Lab Sample ID: 320-78371-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	48		1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.8	B	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	27	B	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	3.7	B	1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	32	B	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	46	B	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	10	B	1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.3	J	4.6	1.1	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-105-15

## Lab Sample ID: 320-78371-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	45		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.4	B	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	26	B	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	3.2	B	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	33	B	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	49	B	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	10	B	1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-05-85

## Lab Sample ID: 320-78371-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	23		1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.4	B	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	12	B	1.9	0.81	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.4	B	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.0	B	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.70	J B	1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-05-85F

## Lab Sample ID: 320-78371-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	37		1.8	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.6	B	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	35	B	1.8	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	16	B	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	32	B	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.6	B	1.8	0.50	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-04-45

## Lab Sample ID: 320-78371-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	110		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	25	B	1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	140	B	1.8	0.76	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	45	B	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	140	B	1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	11	B	1.8	0.48	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Client Sample ID: 21AKN-MW-04-85

Lab Sample ID: 320-78371-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.65	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.87	J B	1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.68	J B	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-04-85F

Lab Sample ID: 320-78371-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.68	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J B	1.8	0.78	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.91	J B	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SW-09

Lab Sample ID: 320-78371-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	55		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	24	B	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	120	B	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	9.5	B	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	14	B	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	460	B	19	5.3	ng/L	10		EPA 537(Mod)	Total/NA
- DL Perfluorooctanesulfonic acid (PFOS) - DL	1500	B	19	5.0	ng/L	10		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-Drum-01

Lab Sample ID: 320-78371-9

No Detections.

## Client Sample ID: 21AKN-Drum-101

Lab Sample ID: 320-78371-10

No Detections.

## Client Sample ID: 21AKN-Drum-03

Lab Sample ID: 320-78371-11

No Detections.

## Client Sample ID: 21AKN-Drum-04

Lab Sample ID: 320-78371-12

No Detections.

## Client Sample ID: 21AKN-Drum-02

Lab Sample ID: 320-78371-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-Drum-06

Lab Sample ID: 320-78371-14

No Detections.

## Client Sample ID: 21AKN-Drum-07

Lab Sample ID: 320-78371-15

No Detections.

## Client Sample ID: 21AKN-Drum-08

Lab Sample ID: 320-78371-16

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-10**

**Lab Sample ID: 320-78371-17**

No Detections.

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This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-05-15**

**Lab Sample ID: 320-78371-1**

Date Collected: 08/28/21 14:11

Matrix: Water

Date Received: 09/01/21 15:57

**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)	48		1.8	0.53	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluoroheptanoic acid (PFHpA)	8.8	B	1.8	0.23	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorooctanoic acid (PFOA)	27	B	1.8	0.78	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorononanoic acid (PFNA)	3.7	B	1.8	0.25	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorobutanesulfonic acid (PFBS)	32	B	1.8	0.18	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorohexanesulfonic acid (PFHxS)	46	B	1.8	0.52	ng/L		09/03/21 04:59	09/06/21 21:51	1
Perfluorooctanesulfonic acid (PFOS)	10	B	1.8	0.50	ng/L		09/03/21 04:59	09/06/21 21:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.3	J	4.6	1.1	ng/L		09/03/21 04:59	09/06/21 21:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 21:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/03/21 04:59	09/06/21 21:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 21:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/03/21 04:59	09/06/21 21:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/03/21 04:59	09/06/21 21:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	62		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C4 PFHpA	58		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C4 PFOA	88		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C5 PFNA	65		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C2 PFDA	86		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C2 PFUnA	76		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C2 PFDoA	93		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C2 PFTeDA	109		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C3 PFBS	52		50 - 150	09/03/21 04:59	09/06/21 21:51	1
18O2 PFHxS	83		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C4 PFOS	68		50 - 150	09/03/21 04:59	09/06/21 21:51	1
d3-NMeFOSAA	77		50 - 150	09/03/21 04:59	09/06/21 21:51	1
d5-NEtFOSAA	83		50 - 150	09/03/21 04:59	09/06/21 21:51	1
13C3 HFPO-DA	51		50 - 150	09/03/21 04:59	09/06/21 21:51	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-105-15**

**Lab Sample ID: 320-78371-2**

Date Collected: 08/28/21 14:01

Matrix: Water

Date Received: 09/01/21 15:57

**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)	45		1.9	0.54	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluoroheptanoic acid (PFHpA)	8.4	B	1.9	0.23	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorooctanoic acid (PFOA)	26	B	1.9	0.79	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorononanoic acid (PFNA)	3.2	B	1.9	0.25	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorobutanesulfonic acid (PFBS)	33	B	1.9	0.19	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorohexanesulfonic acid (PFHxS)	49	B	1.9	0.53	ng/L		09/03/21 04:59	09/06/21 22:00	1
Perfluorooctanesulfonic acid (PFOS)	10	B	1.9	0.50	ng/L		09/03/21 04:59	09/06/21 22:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/03/21 04:59	09/06/21 22:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 22:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/03/21 04:59	09/06/21 22:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 22:00	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 22:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/03/21 04:59	09/06/21 22:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	66		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C4 PFHpA	57		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C4 PFOA	95		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C5 PFNA	67		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C2 PFDA	88		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C2 PFUnA	80		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C2 PFDoA	98		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C2 PFTeDA	124		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C3 PFBS	53		50 - 150	09/03/21 04:59	09/06/21 22:00	1
18O2 PFHxS	85		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C4 PFOS	73		50 - 150	09/03/21 04:59	09/06/21 22:00	1
d3-NMeFOSAA	83		50 - 150	09/03/21 04:59	09/06/21 22:00	1
d5-NEtFOSAA	89		50 - 150	09/03/21 04:59	09/06/21 22:00	1
13C3 HFPO-DA	53		50 - 150	09/03/21 04:59	09/06/21 22:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-05-85**

**Lab Sample ID: 320-78371-3**

Date Collected: 08/28/21 17:48

Matrix: Water

Date Received: 09/01/21 15:57

**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)	23		1.9	0.55	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluoroheptanoic acid (PFHpA)	3.4	B	1.9	0.24	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorooctanoic acid (PFOA)	12	B	1.9	0.81	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorobutanesulfonic acid (PFBS)	8.4	B	1.9	0.19	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorohexanesulfonic acid (PFHxS)	5.0	B	1.9	0.54	ng/L		09/03/21 04:59	09/06/21 22:10	1
Perfluorooctanesulfonic acid (PFOS)	0.70	J B	1.9	0.51	ng/L		09/03/21 04:59	09/06/21 22:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		09/03/21 04:59	09/06/21 22:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:59	09/06/21 22:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:59	09/06/21 22:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	+	3.8	1.4	ng/L		09/03/21 04:59	09/06/21 22:10	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 22:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:59	09/06/21 22:10	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	64		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C4 PFHpA	62		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C4 PFOA	89		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C5 PFNA	68		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C2 PFDA	78		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C2 PFUnA	72		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C2 PFDoA	71		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C2 PFTeDA	50		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C3 PFBS	58		50 - 150				09/03/21 04:59	09/06/21 22:10	1
18O2 PFHxS	85		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C4 PFOS	73		50 - 150				09/03/21 04:59	09/06/21 22:10	1
d3-NMeFOSAA	79		50 - 150				09/03/21 04:59	09/06/21 22:10	1
d5-NEtFOSAA	83		50 - 150				09/03/21 04:59	09/06/21 22:10	1
13C3 HFPO-DA	51		50 - 150				09/03/21 04:59	09/06/21 22:10	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-05-85F**

**Lab Sample ID: 320-78371-4**

Date Collected: 08/28/21 17:50

Matrix: Water

Date Received: 09/01/21 15:57

**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)	37		1.8	0.54	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluoroheptanoic acid (PFHpA)	6.6	B	1.8	0.23	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorooctanoic acid (PFOA)	35	B	1.8	0.79	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorobutanesulfonic acid (PFBS)	16	B	1.8	0.18	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorohexanesulfonic acid (PFHxS)	32	B	1.8	0.53	ng/L		09/03/21 04:59	09/06/21 22:19	1
Perfluorooctanesulfonic acid (PFOS)	2.6	B	1.8	0.50	ng/L		09/03/21 04:59	09/06/21 22:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/03/21 04:59	09/06/21 22:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 22:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/03/21 04:59	09/06/21 22:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 22:19	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		09/03/21 04:59	09/06/21 22:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/03/21 04:59	09/06/21 22:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C4 PFHpA	74		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C4 PFOA	107		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C5 PFNA	83		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C2 PFDA	97		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C2 PFUnA	89		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C2 PFDoA	98		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C2 PFTeDA	101		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C3 PFBS	70		50 - 150	09/03/21 04:59	09/06/21 22:19	1
18O2 PFHxS	102		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C4 PFOS	88		50 - 150	09/03/21 04:59	09/06/21 22:19	1
d3-NMeFOSAA	98		50 - 150	09/03/21 04:59	09/06/21 22:19	1
d5-NEtFOSAA	105		50 - 150	09/03/21 04:59	09/06/21 22:19	1
13C3 HFPO-DA	62		50 - 150	09/03/21 04:59	09/06/21 22:19	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-04-45**

**Lab Sample ID: 320-78371-5**

Date Collected: 08/29/21 15:19

Matrix: Water

Date Received: 09/01/21 15:57

**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)	110		1.8	0.52	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluoroheptanoic acid (PFHpA)	25	B	1.8	0.22	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorooctanoic acid (PFOA)	140	B	1.8	0.76	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorobutanesulfonic acid (PFBS)	45	B	1.8	0.18	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorohexanesulfonic acid (PFHxS)	140	B	1.8	0.51	ng/L		09/03/21 04:59	09/06/21 22:29	1
Perfluorooctanesulfonic acid (PFOS)	11	B	1.8	0.48	ng/L		09/03/21 04:59	09/06/21 22:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/03/21 04:59	09/06/21 22:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/03/21 04:59	09/06/21 22:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		09/03/21 04:59	09/06/21 22:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.6	1.3	ng/L		09/03/21 04:59	09/06/21 22:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/03/21 04:59	09/06/21 22:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/03/21 04:59	09/06/21 22:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	55		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C4 PFHpA	60		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C4 PFOA	71		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C5 PFNA	57		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C2 PFDA	69		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C2 PFUnA	62		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C2 PFDoA	77		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C2 PFTeDA	87		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C3 PFBS	49	*5-	50 - 150	09/03/21 04:59	09/06/21 22:29	1
18O2 PFHxS	72		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C4 PFOS	62		50 - 150	09/03/21 04:59	09/06/21 22:29	1
d3-NMeFOSAA	67		50 - 150	09/03/21 04:59	09/06/21 22:29	1
d5-NEtFOSAA	75		50 - 150	09/03/21 04:59	09/06/21 22:29	1
13C3 HFPO-DA	47	*5-	50 - 150	09/03/21 04:59	09/06/21 22:29	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-04-85**

**Lab Sample ID: 320-78371-6**

Date Collected: 08/29/21 16:53

Matrix: Water

Date Received: 09/01/21 15:57

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.65</b>	<b>J</b>	1.8	0.53	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/03/21 04:59	09/06/21 22:38	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.87</b>	<b>J B</b>	1.8	0.77	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/03/21 04:59	09/06/21 22:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/03/21 04:59	09/06/21 22:38	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>1.1</b>	<b>J B</b>	1.8	0.52	ng/L		09/03/21 04:59	09/06/21 22:38	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.68</b>	<b>J B</b>	1.8	0.49	ng/L		09/03/21 04:59	09/06/21 22:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/03/21 04:59	09/06/21 22:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 22:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/03/21 04:59	09/06/21 22:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	+	3.6	1.4	ng/L		09/03/21 04:59	09/06/21 22:38	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/03/21 04:59	09/06/21 22:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/03/21 04:59	09/06/21 22:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	66		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C4 PFHpA	71		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C4 PFOA	88		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C5 PFNA	72		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C2 PFDA	83		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C2 PFUnA	76		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C2 PFDoA	89		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C2 PFTeDA	84		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C3 PFBS	58		50 - 150	09/03/21 04:59	09/06/21 22:38	1
18O2 PFHxS	83		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C4 PFOS	75		50 - 150	09/03/21 04:59	09/06/21 22:38	1
d3-NMeFOSAA	89		50 - 150	09/03/21 04:59	09/06/21 22:38	1
d5-NEtFOSAA	100		50 - 150	09/03/21 04:59	09/06/21 22:38	1
13C3 HFPO-DA	57		50 - 150	09/03/21 04:59	09/06/21 22:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-04-85F**

**Lab Sample ID: 320-78371-7**

Date Collected: 08/29/21 16:55

Matrix: Water

Date Received: 09/01/21 15:57

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.68</b>	<b>J</b>	1.8	0.53	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/03/21 04:59	09/06/21 22:47	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.1</b>	<b>J B</b>	1.8	0.78	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/03/21 04:59	09/06/21 22:47	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.91</b>	<b>J B</b>	1.8	0.52	ng/L		09/03/21 04:59	09/06/21 22:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		09/03/21 04:59	09/06/21 22:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/03/21 04:59	09/06/21 22:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 22:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/03/21 04:59	09/06/21 22:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 22:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/03/21 04:59	09/06/21 22:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/03/21 04:59	09/06/21 22:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	66		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C4 PFHpA	63		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C4 PFOA	95		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C5 PFNA	70		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C2 PFDA	85		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C2 PFUnA	81		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C2 PFDoA	91		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C2 PFTeDA	99		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C3 PFBS	62		50 - 150	09/03/21 04:59	09/06/21 22:47	1
18O2 PFHxS	85		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C4 PFOS	79		50 - 150	09/03/21 04:59	09/06/21 22:47	1
d3-NMeFOSAA	82		50 - 150	09/03/21 04:59	09/06/21 22:47	1
d5-NEtFOSAA	87		50 - 150	09/03/21 04:59	09/06/21 22:47	1
13C3 HFPO-DA	58		50 - 150	09/03/21 04:59	09/06/21 22:47	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-SW-09**

**Lab Sample ID: 320-78371-8**

Date Collected: 08/29/21 13:50

Matrix: Water

Date Received: 09/01/21 15:57

**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)	55		1.9	0.54	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluoroheptanoic acid (PFHpA)	24	B	1.9	0.23	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluorooctanoic acid (PFOA)	120	B	1.9	0.79	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluorononanoic acid (PFNA)	9.5	B	1.9	0.25	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/03/21 04:59	09/06/21 22:57	1
Perfluorobutanesulfonic acid (PFBS)	14	B	1.9	0.19	ng/L		09/03/21 04:59	09/06/21 22:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/03/21 04:59	09/06/21 22:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 22:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/03/21 04:59	09/06/21 22:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 22:57	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 22:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/03/21 04:59	09/06/21 22:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	63		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C4 PFHpA	62		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C4 PFOA	98		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C5 PFNA	62		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C2 PFDA	88		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C2 PFUnA	71		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C2 PFDoA	90		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C2 PFTeDA	118		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C3 PFBS	58		50 - 150	09/03/21 04:59	09/06/21 22:57	1
18O2 PFHxS	88		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C4 PFOS	70		50 - 150	09/03/21 04:59	09/06/21 22:57	1
d3-NMeFOSAA	81		50 - 150	09/03/21 04:59	09/06/21 22:57	1
d5-NEtFOSAA	87		50 - 150	09/03/21 04:59	09/06/21 22:57	1
13C3 HFPO-DA	58		50 - 150	09/03/21 04:59	09/06/21 22:57	1

**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)	460	B	19	5.3	ng/L		09/03/21 04:59	09/11/21 00:23	10
Perfluorooctanesulfonic acid (PFOS)	1500	B	19	5.0	ng/L		09/03/21 04:59	09/11/21 00:23	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	94		50 - 150	09/03/21 04:59	09/11/21 00:23	10
13C4 PFOS	87		50 - 150	09/03/21 04:59	09/11/21 00:23	10

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-01**

**Lab Sample ID: 320-78371-9**

Date Collected: 08/30/21 20:45

Matrix: Water

Date Received: 09/01/21 15:57

**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		09/10/21 04:46	09/11/21 18:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/10/21 04:46	09/11/21 18:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/10/21 04:46	09/11/21 18:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/10/21 04:46	09/11/21 18:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/10/21 04:46	09/11/21 18:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/10/21 04:46	09/11/21 18:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/10/21 04:46	09/11/21 18:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/10/21 04:46	09/11/21 18:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/10/21 04:46	09/11/21 18:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C4 PFHpA	86		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C4 PFOA	91		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C5 PFNA	84		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C2 PFDA	87		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C2 PFUnA	87		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C2 PFDoA	90		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C2 PFTeDA	85		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C3 PFBS	82		50 - 150	09/10/21 04:46	09/11/21 18:19	1
18O2 PFHxS	90		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C4 PFOS	86		50 - 150	09/10/21 04:46	09/11/21 18:19	1
d3-NMeFOSAA	93		50 - 150	09/10/21 04:46	09/11/21 18:19	1
d5-NEtFOSAA	99		50 - 150	09/10/21 04:46	09/11/21 18:19	1
13C3 HFPO-DA	79		50 - 150	09/10/21 04:46	09/11/21 18:19	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-101**

**Lab Sample ID: 320-78371-10**

Date Collected: 08/30/21 20:35

Matrix: Water

Date Received: 09/01/21 15:57

**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		09/10/21 04:46	09/11/21 18:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		09/10/21 04:46	09/11/21 18:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/10/21 04:46	09/11/21 18:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/10/21 04:46	09/11/21 18:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/10/21 04:46	09/11/21 18:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/10/21 04:46	09/11/21 18:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/10/21 04:46	09/11/21 18:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/10/21 04:46	09/11/21 18:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/10/21 04:46	09/11/21 18:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C4 PFHpA	88		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C4 PFOA	91		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C5 PFNA	86		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C2 PFDA	90		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C2 PFUnA	94		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C2 PFDoA	86		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C2 PFTeDA	81		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C3 PFBS	83		50 - 150	09/10/21 04:46	09/11/21 18:29	1
18O2 PFHxS	87		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C4 PFOS	85		50 - 150	09/10/21 04:46	09/11/21 18:29	1
d3-NMeFOSAA	89		50 - 150	09/10/21 04:46	09/11/21 18:29	1
d5-NEtFOSAA	101		50 - 150	09/10/21 04:46	09/11/21 18:29	1
13C3 HFPO-DA	82		50 - 150	09/10/21 04:46	09/11/21 18:29	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-03**

**Lab Sample ID: 320-78371-11**

**Date Collected: 08/30/21 21:05**

**Matrix: Water**

**Date Received: 09/01/21 15:57**

**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		09/10/21 04:46	09/11/21 18:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/10/21 04:46	09/11/21 18:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/10/21 04:46	09/11/21 18:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/10/21 04:46	09/11/21 18:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/10/21 04:46	09/11/21 18:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/10/21 04:46	09/11/21 18:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/10/21 04:46	09/11/21 18:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/10/21 04:46	09/11/21 18:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/10/21 04:46	09/11/21 18:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C4 PFHpA	84		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C4 PFOA	92		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C5 PFNA	81		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C2 PFDA	89		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C2 PFUnA	90		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C2 PFDoA	90		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C2 PFTeDA	83		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C3 PFBS	78		50 - 150	09/10/21 04:46	09/11/21 18:38	1
18O2 PFHxS	80		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C4 PFOS	79		50 - 150	09/10/21 04:46	09/11/21 18:38	1
d3-NMeFOSAA	87		50 - 150	09/10/21 04:46	09/11/21 18:38	1
d5-NEtFOSAA	100		50 - 150	09/10/21 04:46	09/11/21 18:38	1
13C3 HFPO-DA	81		50 - 150	09/10/21 04:46	09/11/21 18:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-04**

**Lab Sample ID: 320-78371-12**

Date Collected: 08/30/21 21:30

Matrix: Water

Date Received: 09/01/21 15:57

**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		09/10/21 04:46	09/13/21 15:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		09/10/21 04:46	09/13/21 15:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		09/10/21 04:46	09/13/21 15:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/10/21 04:46	09/13/21 15:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/10/21 04:46	09/13/21 15:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		09/10/21 04:46	09/13/21 15:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		09/10/21 04:46	09/13/21 15:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/10/21 04:46	09/13/21 15:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/10/21 04:46	09/13/21 15:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C4 PFHpA	91		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C4 PFOA	91		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C5 PFNA	84		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C2 PFDA	89		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C2 PFUnA	89		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C2 PFDoA	90		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C2 PFTeDA	77		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C3 PFBS	85		50 - 150	09/10/21 04:46	09/13/21 15:43	1
18O2 PFHxS	85		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C4 PFOS	82		50 - 150	09/10/21 04:46	09/13/21 15:43	1
d3-NMeFOSAA	95		50 - 150	09/10/21 04:46	09/13/21 15:43	1
d5-NEtFOSAA	99		50 - 150	09/10/21 04:46	09/13/21 15:43	1
13C3 HFPO-DA	84		50 - 150	09/10/21 04:46	09/13/21 15:43	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-02**

**Lab Sample ID: 320-78371-13**

**Date Collected: 08/30/21 21:00**

**Matrix: Water**

**Date Received: 09/01/21 15:57**

**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		09/10/21 04:46	09/11/21 18:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/10/21 04:46	09/11/21 18:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		09/10/21 04:46	09/11/21 18:47	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.3</b>	<b>J</b>	1.8	0.49	ng/L		09/10/21 04:46	09/11/21 18:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/10/21 04:46	09/11/21 18:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/10/21 04:46	09/11/21 18:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/10/21 04:46	09/11/21 18:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/10/21 04:46	09/11/21 18:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/10/21 04:46	09/11/21 18:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/10/21 04:46	09/11/21 18:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C4 PFHpA	88		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C4 PFOA	88		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C5 PFNA	86		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C2 PFDA	88		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C2 PFUnA	91		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C2 PFDoA	98		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C2 PFTeDA	87		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C3 PFBS	85		50 - 150	09/10/21 04:46	09/11/21 18:47	1
18O2 PFHxS	88		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C4 PFOS	87		50 - 150	09/10/21 04:46	09/11/21 18:47	1
d3-NMeFOSAA	89		50 - 150	09/10/21 04:46	09/11/21 18:47	1
d5-NEtFOSAA	106		50 - 150	09/10/21 04:46	09/11/21 18:47	1
13C3 HFPO-DA	86		50 - 150	09/10/21 04:46	09/11/21 18:47	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-06**

**Lab Sample ID: 320-78371-14**

**Date Collected: 08/30/21 22:00**

**Matrix: Water**

**Date Received: 09/01/21 15:57**

**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		09/10/21 04:46	09/11/21 18:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/10/21 04:46	09/11/21 18:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/10/21 04:46	09/11/21 18:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/10/21 04:46	09/11/21 18:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/10/21 04:46	09/11/21 18:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/10/21 04:46	09/11/21 18:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/10/21 04:46	09/11/21 18:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/10/21 04:46	09/11/21 18:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/10/21 04:46	09/11/21 18:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C4 PFHpA	88		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C4 PFOA	86		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C5 PFNA	84		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C2 PFDA	90		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C2 PFUnA	86		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C2 PFDoA	95		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C2 PFTeDA	83		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C3 PFBS	83		50 - 150	09/10/21 04:46	09/11/21 18:56	1
18O2 PFHxS	85		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C4 PFOS	85		50 - 150	09/10/21 04:46	09/11/21 18:56	1
d3-NMeFOSAA	92		50 - 150	09/10/21 04:46	09/11/21 18:56	1
d5-NEtFOSAA	95		50 - 150	09/10/21 04:46	09/11/21 18:56	1
13C3 HFPO-DA	81		50 - 150	09/10/21 04:46	09/11/21 18:56	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-07**

**Lab Sample ID: 320-78371-15**

Date Collected: 08/30/21 22:05

Matrix: Water

Date Received: 09/01/21 15:57

**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		09/10/21 04:46	09/11/21 19:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		09/10/21 04:46	09/11/21 19:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/10/21 04:46	09/11/21 19:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/10/21 04:46	09/11/21 19:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/10/21 04:46	09/11/21 19:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/10/21 04:46	09/11/21 19:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		09/10/21 04:46	09/11/21 19:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/10/21 04:46	09/11/21 19:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/10/21 04:46	09/11/21 19:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C4 PFHpA	87		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C4 PFOA	88		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C5 PFNA	76		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C2 PFDA	82		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C2 PFUnA	82		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C2 PFDoA	83		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C2 PFTeDA	78		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C3 PFBS	81		50 - 150	09/10/21 04:46	09/11/21 19:05	1
18O2 PFHxS	84		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C4 PFOS	81		50 - 150	09/10/21 04:46	09/11/21 19:05	1
d3-NMeFOSAA	82		50 - 150	09/10/21 04:46	09/11/21 19:05	1
d5-NEtFOSAA	87		50 - 150	09/10/21 04:46	09/11/21 19:05	1
13C3 HFPO-DA	85		50 - 150	09/10/21 04:46	09/11/21 19:05	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-08**

**Lab Sample ID: 320-78371-16**

Date Collected: 08/30/21 22:40

Matrix: Water

Date Received: 09/01/21 15:57

**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		09/10/21 04:46	09/11/21 19:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		09/10/21 04:46	09/11/21 19:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/10/21 04:46	09/11/21 19:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/10/21 04:46	09/11/21 19:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/10/21 04:46	09/11/21 19:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/10/21 04:46	09/11/21 19:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		09/10/21 04:46	09/11/21 19:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/10/21 04:46	09/11/21 19:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		09/10/21 04:46	09/11/21 19:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C4 PFHpA	86		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C4 PFOA	87		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C5 PFNA	81		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C2 PFDA	83		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C2 PFUnA	84		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C2 PFDoA	91		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C2 PFTeDA	79		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C3 PFBS	81		50 - 150	09/10/21 04:46	09/11/21 19:32	1
18O2 PFHxS	86		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C4 PFOS	82		50 - 150	09/10/21 04:46	09/11/21 19:32	1
d3-NMeFOSAA	86		50 - 150	09/10/21 04:46	09/11/21 19:32	1
d5-NEtFOSAA	85		50 - 150	09/10/21 04:46	09/11/21 19:32	1
13C3 HFPO-DA	79		50 - 150	09/10/21 04:46	09/11/21 19:32	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-Drum-10**

**Lab Sample ID: 320-78371-17**

**Date Collected: 08/31/21 10:30**

**Matrix: Water**

**Date Received: 09/01/21 15:57**

**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		09/10/21 04:46	09/11/21 19:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		09/10/21 04:46	09/11/21 19:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		09/10/21 04:46	09/11/21 19:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		09/10/21 04:46	09/11/21 19:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		09/10/21 04:46	09/11/21 19:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		09/10/21 04:46	09/11/21 19:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		09/10/21 04:46	09/11/21 19:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		09/10/21 04:46	09/11/21 19:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		09/10/21 04:46	09/11/21 19:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	66		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C4 PFHpA	68		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C4 PFOA	69		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C5 PFNA	66		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C2 PFDA	66		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C2 PFUnA	67		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C2 PFDoA	65		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C2 PFTeDA	45	*5-	50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C3 PFBS	55		50 - 150	09/10/21 04:46	09/11/21 19:42	1
18O2 PFHxS	58		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C4 PFOS	58		50 - 150	09/10/21 04:46	09/11/21 19:42	1
d3-NMeFOSAA	70		50 - 150	09/10/21 04:46	09/11/21 19:42	1
d5-NEtFOSAA	74		50 - 150	09/10/21 04:46	09/11/21 19:42	1
13C3 HFPO-DA	68		50 - 150	09/10/21 04:46	09/11/21 19:42	1



# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## 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)
320-78371-1	21AKN-MW-05-15	62	58	88	65	86	76	93	109
320-78371-2	21AKN-MW-105-15	66	57	95	67	88	80	98	124
320-78371-3	21AKN-MW-05-85	64	62	89	68	78	72	71	50
320-78371-4	21AKN-MW-05-85F	80	74	107	83	97	89	98	101
320-78371-5	21AKN-MW-04-45	55	60	71	57	69	62	77	87
320-78371-6	21AKN-MW-04-85	66	71	88	72	83	76	89	84
320-78371-7	21AKN-MW-04-85F	66	63	95	70	85	81	91	99
320-78371-8	21AKN-SW-09	63	62	98	62	88	71	90	118
320-78371-8 - DL	21AKN-SW-09								
320-78371-9	21AKN-Drum-01	92	86	91	84	87	87	90	85
320-78371-10	21AKN-Drum-101	93	88	91	86	90	94	86	81
320-78371-11	21AKN-Drum-03	89	84	92	81	89	90	90	83
320-78371-12	21AKN-Drum-04	89	91	91	84	89	89	90	77
320-78371-13	21AKN-Drum-02	94	88	88	86	88	91	98	87
320-78371-14	21AKN-Drum-06	85	88	86	84	90	86	95	83
320-78371-15	21AKN-Drum-07	86	87	88	76	82	82	83	78
320-78371-16	21AKN-Drum-08	86	86	87	81	83	84	91	79
320-78371-17	21AKN-Drum-10	66	68	69	66	66	67	65	45 *5-
LCS 320-522308/2-A	Lab Control Sample	83	83	92	83	86	82	91	96
LCS 320-523724/2-A	Lab Control Sample	84	84	87	76	85	85	88	84
LCSD 320-522308/3-A	Lab Control Sample Dup	77	87	92	76	89	81	91	101
LCSD 320-523724/3-A	Lab Control Sample Dup	91	89	89	82	91	93	97	84
MB 320-522308/1-A	Method Blank	84	90	94	79	89	85	95	102
MB 320-523724/1-A	Method Blank	88	89	95	80	87	86	97	86

### 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)
320-78371-1	21AKN-MW-05-15	52	83	68	77	83	51
320-78371-2	21AKN-MW-105-15	53	85	73	83	89	53
320-78371-3	21AKN-MW-05-85	58	85	73	79	83	51
320-78371-4	21AKN-MW-05-85F	70	102	88	98	105	62
320-78371-5	21AKN-MW-04-45	49 *5-	72	62	67	75	47 *5-
320-78371-6	21AKN-MW-04-85	58	83	75	89	100	57
320-78371-7	21AKN-MW-04-85F	62	85	79	82	87	58
320-78371-8	21AKN-SW-09	58	88	70	81	87	58
320-78371-8 - DL	21AKN-SW-09		94	87			
320-78371-9	21AKN-Drum-01	82	90	86	93	99	79
320-78371-10	21AKN-Drum-101	83	87	85	89	101	82
320-78371-11	21AKN-Drum-03	78	80	79	87	100	81
320-78371-12	21AKN-Drum-04	85	85	82	95	99	84
320-78371-13	21AKN-Drum-02	85	88	87	89	106	86
320-78371-14	21AKN-Drum-06	83	85	85	92	95	81
320-78371-15	21AKN-Drum-07	81	84	81	82	87	85
320-78371-16	21AKN-Drum-08	81	86	82	86	85	79
320-78371-17	21AKN-Drum-10	55	58	58	70	74	68
LCS 320-522308/2-A	Lab Control Sample	81	94	81	94	98	66
LCS 320-523724/2-A	Lab Control Sample	76	76	75	87	100	81
LCSD 320-522308/3-A	Lab Control Sample Dup	77	93	79	92	99	66
LCSD 320-523724/3-A	Lab Control Sample Dup	86	89	88	94	101	88

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# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AKN PFAS

Job ID: 320-78371-1

**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	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
MB 320-522308/1-A	Method Blank	73	91	86	93	104	72
MB 320-523724/1-A	Method Blank	84	90	82	92	94	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

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-522308/1-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluoroheptanoic acid (PFHpA)	0.582	J	2.0	0.25	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorooctanoic acid (PFOA)	0.888	J	2.0	0.85	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorononanoic acid (PFNA)	0.665	J	2.0	0.27	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorodecanoic acid (PFDA)	0.599	J	2.0	0.31	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorobutanesulfonic acid (PFBS)	0.542	J	2.0	0.20	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorohexanesulfonic acid (PFHxS)	0.835	J	2.0	0.57	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorooctanesulfonic acid (PFOS)	0.890	J	2.0	0.54	ng/L		09/03/21 04:59	09/06/21 19:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/03/21 04:59	09/06/21 19:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/03/21 04:59	09/06/21 19:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.578	J	2.0	0.24	ng/L		09/03/21 04:59	09/06/21 19:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/03/21 04:59	09/06/21 19:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0.543	J	2.0	0.32	ng/L		09/03/21 04:59	09/06/21 19:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.556	J	2.0	0.40	ng/L		09/03/21 04:59	09/06/21 19:49	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	84		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C4 PFHpA	90		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C4 PFOA	94		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C5 PFNA	79		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFDA	89		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFUnA	85		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFDoA	95		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFTeDA	102		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C3 PFBS	73		50 - 150	09/03/21 04:59	09/06/21 19:49	1
18O2 PFHxS	91		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C4 PFOS	86		50 - 150	09/03/21 04:59	09/06/21 19:49	1
d3-NMeFOSAA	93		50 - 150	09/03/21 04:59	09/06/21 19:49	1
d5-NEtFOSAA	104		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C3 HFPO-DA	72		50 - 150	09/03/21 04:59	09/06/21 19:49	1

**Lab Sample ID: LCS 320-522308/2-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.5		ng/L		96	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	41.7		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.0		ng/L		100	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.8		ng/L		110	69 - 130

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# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-522308/2-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	39.1		ng/L		98	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.8		ng/L		112	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	42.7		ng/L		107	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.2		ng/L		108	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.4		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	36.3		ng/L		103	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.0		ng/L		99	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	40.2		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	40.2		ng/L		101	65 - 136
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	42.0		ng/L		105	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.1		ng/L		105	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	55.9	*+	ng/L		140	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	42.8		ng/L		114	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.5		ng/L		116	81 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	83		50 - 150
13C4 PFHpA	83		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	83		50 - 150
13C2 PFDA	86		50 - 150
13C2 PFUnA	82		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	96		50 - 150
13C3 PFBS	81		50 - 150
18O2 PFHxS	94		50 - 150
13C4 PFOS	81		50 - 150
d3-NMeFOSAA	94		50 - 150
d5-NEtFOSAA	98		50 - 150
13C3 HFPO-DA	66		50 - 150

**Lab Sample ID: LCSD 320-522308/3-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	72 - 129	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.8		ng/L		99	72 - 130	5	30
Perfluorooctanoic acid (PFOA)	40.0	40.8		ng/L		102	71 - 133	2	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-522308/3-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	46.7		ng/L		117	69 - 130	6	30
Perfluorodecanoic acid (PFDA)	40.0	38.3		ng/L		96	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	44.1		ng/L		110	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.7		ng/L		112	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	43.1		ng/L		108	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.4	36.4		ng/L		103	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.6		ng/L		100	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	42.0		ng/L		113	65 - 140	4	30
N-methylperfluorooctanesulfonamide	40.0	41.9		ng/L		105	65 - 136	4	30
N-ethylperfluorooctanesulfonamide	40.0	40.9		ng/L		102	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.1		ng/L		108	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	53.2	*+	ng/L		133	72 - 132	5	30
11-Chloroeicosadecafluoro-3-oxadecane-1-sulfonic acid	37.7	43.5		ng/L		116	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.7		ng/L		113	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	77		50 - 150
13C4 PFHpA	87		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	76		50 - 150
13C2 PFDA	89		50 - 150
13C2 PFUnA	81		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	101		50 - 150
13C3 PFBS	77		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	79		50 - 150
d3-NMeFOSAA	92		50 - 150
d5-NEtFOSAA	99		50 - 150
13C3 HFPO-DA	66		50 - 150

**Lab Sample ID: MB 320-523724/1-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		09/10/21 04:46	09/11/21 17:43	1

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-523724/1-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		09/10/21 04:46	09/11/21 17:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		09/10/21 04:46	09/11/21 17:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/10/21 04:46	09/11/21 17:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/10/21 04:46	09/11/21 17:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		09/10/21 04:46	09/11/21 17:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/10/21 04:46	09/11/21 17:43	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		09/10/21 04:46	09/11/21 17:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		09/10/21 04:46	09/11/21 17:43	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	88		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C4 PFHpA	89		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C4 PFOA	95		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C5 PFNA	80		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFDA	87		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFUnA	86		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFDoA	97		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C2 PFTeDA	86		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C3 PFBS	84		50 - 150	09/10/21 04:46	09/11/21 17:43	1
18O2 PFHxS	90		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C4 PFOS	82		50 - 150	09/10/21 04:46	09/11/21 17:43	1
d3-NMeFOSAA	92		50 - 150	09/10/21 04:46	09/11/21 17:43	1
d5-NEtFOSAA	94		50 - 150	09/10/21 04:46	09/11/21 17:43	1
13C3 HFPO-DA	87		50 - 150	09/10/21 04:46	09/11/21 17:43	1

**Lab Sample ID: LCS 320-523724/2-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Perfluorohexanoic acid (PFHxA)	40.0	44.1		ng/L		110	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.8		ng/L		112	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	46.2		ng/L		116	71 - 133
Perfluorononanoic acid (PFNA)	40.0	49.3		ng/L		123	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	38.9		ng/L		97	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.6		ng/L		111	69 - 133

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-523724/2-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	45.3		ng/L		113	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	48.4		ng/L		121	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	44.1		ng/L		110	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	37.5		ng/L		106	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	41.7		ng/L		115	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	42.1		ng/L		113	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.9		ng/L		105	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.0		ng/L		97	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	43.1		ng/L		116	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.2		ng/L		111	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	44.3		ng/L		118	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.0		ng/L		125	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	84		50 - 150
13C4 PFHpA	84		50 - 150
13C4 PFOA	87		50 - 150
13C5 PFNA	76		50 - 150
13C2 PFDA	85		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	88		50 - 150
13C2 PFTeDA	84		50 - 150
13C3 PFBS	76		50 - 150
18O2 PFHxS	76		50 - 150
13C4 PFOS	75		50 - 150
d3-NMeFOSAA	87		50 - 150
d5-NEtFOSAA	100		50 - 150
13C3 HFPO-DA	81		50 - 150

**Lab Sample ID: LCSD 320-523724/3-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

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	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	45.9		ng/L		115	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	45.7		ng/L		114	71 - 133	1	30
Perfluorononanoic acid (PFNA)	40.0	48.8		ng/L		122	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	71 - 129	6	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-523724/3-A**  
**Matrix: Water**  
**Analysis Batch: 524271**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 523724**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	45.8		ng/L		115	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)	40.0	44.4		ng/L		111	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	45.9		ng/L		115	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	43.3		ng/L		108	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.1		ng/L		108	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.2		ng/L		108	68 - 131	6	30
Perfluorooctanesulfonic acid (PFOS)	37.1	40.5		ng/L		109	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.2		ng/L		111	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.5		ng/L		101	61 - 135	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.2		ng/L		105	77 - 137	9	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.8		ng/L		109	72 - 132	1	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	39.5		ng/L		105	76 - 136	11	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.1		ng/L		112	81 - 141	11	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	91		50 - 150
13C4 PFHpA	89		50 - 150
13C4 PFOA	89		50 - 150
13C5 PFNA	82		50 - 150
13C2 PFDA	91		50 - 150
13C2 PFUnA	93		50 - 150
13C2 PFDoA	97		50 - 150
13C2 PFTeDA	84		50 - 150
13C3 PFBS	86		50 - 150
18O2 PFHxS	89		50 - 150
13C4 PFOS	88		50 - 150
d3-NMeFOSAA	94		50 - 150
d5-NEtFOSAA	101		50 - 150
13C3 HFPO-DA	88		50 - 150



# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## LCMS

### Prep Batch: 522308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78371-1	21AKN-MW-05-15	Total/NA	Water	3535	
320-78371-2	21AKN-MW-105-15	Total/NA	Water	3535	
320-78371-3	21AKN-MW-05-85	Total/NA	Water	3535	
320-78371-4	21AKN-MW-05-85F	Total/NA	Water	3535	
320-78371-5	21AKN-MW-04-45	Total/NA	Water	3535	
320-78371-6	21AKN-MW-04-85	Total/NA	Water	3535	
320-78371-7	21AKN-MW-04-85F	Total/NA	Water	3535	
320-78371-8 - DL	21AKN-SW-09	Total/NA	Water	3535	
320-78371-8	21AKN-SW-09	Total/NA	Water	3535	
MB 320-522308/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-522308/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-522308/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 522804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78371-1	21AKN-MW-05-15	Total/NA	Water	EPA 537(Mod)	522308
320-78371-2	21AKN-MW-105-15	Total/NA	Water	EPA 537(Mod)	522308
320-78371-3	21AKN-MW-05-85	Total/NA	Water	EPA 537(Mod)	522308
320-78371-4	21AKN-MW-05-85F	Total/NA	Water	EPA 537(Mod)	522308
320-78371-5	21AKN-MW-04-45	Total/NA	Water	EPA 537(Mod)	522308
320-78371-6	21AKN-MW-04-85	Total/NA	Water	EPA 537(Mod)	522308
320-78371-7	21AKN-MW-04-85F	Total/NA	Water	EPA 537(Mod)	522308
320-78371-8	21AKN-SW-09	Total/NA	Water	EPA 537(Mod)	522308
MB 320-522308/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	522308
LCS 320-522308/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	522308
LCSD 320-522308/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	522308

### Prep Batch: 523724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78371-9	21AKN-Drum-01	Total/NA	Water	3535	
320-78371-10	21AKN-Drum-101	Total/NA	Water	3535	
320-78371-11	21AKN-Drum-03	Total/NA	Water	3535	
320-78371-12	21AKN-Drum-04	Total/NA	Water	3535	
320-78371-13	21AKN-Drum-02	Total/NA	Water	3535	
320-78371-14	21AKN-Drum-06	Total/NA	Water	3535	
320-78371-15	21AKN-Drum-07	Total/NA	Water	3535	
320-78371-16	21AKN-Drum-08	Total/NA	Water	3535	
320-78371-17	21AKN-Drum-10	Total/NA	Water	3535	
MB 320-523724/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-523724/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-523724/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 524180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78371-8 - DL	21AKN-SW-09	Total/NA	Water	EPA 537(Mod)	522308

### Analysis Batch: 524271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78371-9	21AKN-Drum-01	Total/NA	Water	EPA 537(Mod)	523724
320-78371-10	21AKN-Drum-101	Total/NA	Water	EPA 537(Mod)	523724
320-78371-11	21AKN-Drum-03	Total/NA	Water	EPA 537(Mod)	523724

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# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## LCMS (Continued)

### Analysis Batch: 524271 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78371-13	21AKN-Drum-02	Total/NA	Water	EPA 537(Mod)	523724
320-78371-14	21AKN-Drum-06	Total/NA	Water	EPA 537(Mod)	523724
320-78371-15	21AKN-Drum-07	Total/NA	Water	EPA 537(Mod)	523724
320-78371-16	21AKN-Drum-08	Total/NA	Water	EPA 537(Mod)	523724
320-78371-17	21AKN-Drum-10	Total/NA	Water	EPA 537(Mod)	523724
MB 320-523724/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	523724
LCS 320-523724/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	523724
LCSD 320-523724/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	523724

### Analysis Batch: 524585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78371-12	21AKN-Drum-04	Total/NA	Water	EPA 537(Mod)	523724



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

**Client Sample ID: 21AKN-MW-05-15**

**Lab Sample ID: 320-78371-1**

Date Collected: 08/28/21 14:11

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.6 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 21:51	RS1	TAL SAC

**Client Sample ID: 21AKN-MW-105-15**

**Lab Sample ID: 320-78371-2**

Date Collected: 08/28/21 14:01

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.6 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 22:00	RS1	TAL SAC

**Client Sample ID: 21AKN-MW-05-85**

**Lab Sample ID: 320-78371-3**

Date Collected: 08/28/21 17:48

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.9 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 22:10	RS1	TAL SAC

**Client Sample ID: 21AKN-MW-05-85F**

**Lab Sample ID: 320-78371-4**

Date Collected: 08/28/21 17:50

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.7 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 22:19	RS1	TAL SAC

**Client Sample ID: 21AKN-MW-04-45**

**Lab Sample ID: 320-78371-5**

Date Collected: 08/29/21 15:19

Matrix: Water

Date Received: 09/01/21 15:57

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	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 22:29	RS1	TAL SAC

**Client Sample ID: 21AKN-MW-04-85**

**Lab Sample ID: 320-78371-6**

Date Collected: 08/29/21 16:53

Matrix: Water

Date Received: 09/01/21 15:57

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	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 22:38	RS1	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Client Sample ID: 21AKN-MW-04-85F

Lab Sample ID: 320-78371-7

Date Collected: 08/29/21 16:55

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.7 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 22:47	RS1	TAL SAC

## Client Sample ID: 21AKN-SW-09

Lab Sample ID: 320-78371-8

Date Collected: 08/29/21 13:50

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.3 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 22:57	RS1	TAL SAC
Total/NA	Prep	3535	DL		269.3 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	10			524180	09/11/21 00:23	K1S	TAL SAC

## Client Sample ID: 21AKN-Drum-01

Lab Sample ID: 320-78371-9

Date Collected: 08/30/21 20:45

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268 mL	10.0 mL	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 18:19	D1R	TAL SAC

## Client Sample ID: 21AKN-Drum-101

Lab Sample ID: 320-78371-10

Date Collected: 08/30/21 20:35

Matrix: Water

Date Received: 09/01/21 15:57

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	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 18:29	D1R	TAL SAC

## Client Sample ID: 21AKN-Drum-03

Lab Sample ID: 320-78371-11

Date Collected: 08/30/21 21:05

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.4 mL	10.0 mL	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 18:38	D1R	TAL SAC

## Client Sample ID: 21AKN-Drum-04

Lab Sample ID: 320-78371-12

Date Collected: 08/30/21 21:30

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.2 mL	10.0 mL	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524585	09/13/21 15:43	S1M	TAL SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Client Sample ID: 21AKN-Drum-02

Lab Sample ID: 320-78371-13

Date Collected: 08/30/21 21:00

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.1 mL	10.0 mL	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 18:47	D1R	TAL SAC

## Client Sample ID: 21AKN-Drum-06

Lab Sample ID: 320-78371-14

Date Collected: 08/30/21 22:00

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.5 mL	10.0 mL	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 18:56	D1R	TAL SAC

## Client Sample ID: 21AKN-Drum-07

Lab Sample ID: 320-78371-15

Date Collected: 08/30/21 22:05

Matrix: Water

Date Received: 09/01/21 15:57

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	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 19:05	D1R	TAL SAC

## Client Sample ID: 21AKN-Drum-08

Lab Sample ID: 320-78371-16

Date Collected: 08/30/21 22:40

Matrix: Water

Date Received: 09/01/21 15:57

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.2 mL	10.0 mL	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 19:32	D1R	TAL SAC

## Client Sample ID: 21AKN-Drum-10

Lab Sample ID: 320-78371-17

Date Collected: 08/31/21 10:30

Matrix: Water

Date Received: 09/01/21 15:57

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	523724	09/10/21 04:46	NSS	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			524271	09/11/21 19:42	D1R	TAL SAC

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

## Laboratory: Eurofins TestAmerica, 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

1

2

3

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15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL 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:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78371-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78371-1	21AKN-MW-05-15	Water	08/28/21 14:11	09/01/21 15:57
320-78371-2	21AKN-MW-105-15	Water	08/28/21 14:01	09/01/21 15:57
320-78371-3	21AKN-MW-05-85	Water	08/28/21 17:48	09/01/21 15:57
320-78371-4	21AKN-MW-05-85F	Water	08/28/21 17:50	09/01/21 15:57
320-78371-5	21AKN-MW-04-45	Water	08/29/21 15:19	09/01/21 15:57
320-78371-6	21AKN-MW-04-85	Water	08/29/21 16:53	09/01/21 15:57
320-78371-7	21AKN-MW-04-85F	Water	08/29/21 16:55	09/01/21 15:57
320-78371-8	21AKN-SW-09	Water	08/29/21 13:50	09/01/21 15:57
320-78371-9	21AKN-Drum-01	Water	08/30/21 20:45	09/01/21 15:57
320-78371-10	21AKN-Drum-101	Water	08/30/21 20:35	09/01/21 15:57
320-78371-11	21AKN-Drum-03	Water	08/30/21 21:05	09/01/21 15:57
320-78371-12	21AKN-Drum-04	Water	08/30/21 21:30	09/01/21 15:57
320-78371-13	21AKN-Drum-02	Water	08/30/21 21:00	09/01/21 15:57
320-78371-14	21AKN-Drum-06	Water	08/30/21 22:00	09/01/21 15:57
320-78371-15	21AKN-Drum-07	Water	08/30/21 22:05	09/01/21 15:57
320-78371-16	21AKN-Drum-08	Water	08/30/21 22:40	09/01/21 15:57
320-78371-17	21AKN-Drum-10	Water	08/31/21 10:30	09/01/21 15:57





# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No:  
 MSA Number: TBD  
 J-Flags:  Yes  No

Total Number of Containers

Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
21AKN-MW-05-15	1411	8/28		[Signature]		
21AKN-MW-105-15	1401					
21AKN-MW-05-85	1748					
21AKN-MW-05-85F	1750					
21AKN-MW-04-45	1519	8/29				
21AKN-MW-04-85	1653					
21AKN-MW-04-85F	1655					
21AKN- <del>MW</del> SU-09	1350					
21AKN-Drum-01	2045	8/30				
21AKN-Drum-101	2035					



**Project Information**  
 Number: 402582-011  
 Name: ACN PFAS  
 Contact: MXS  
 Ongoing Project? Yes  No   
 Sampler: VTP

**Sample Receipt**  
 Total No. of Containers: 34  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond./Cold  
 Temp: 15.0  
 Delivery Method: goldstreak

**Notes:**

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: [Signature] Printed Name: <u>Keselona Johnson</u> Company: <u>Shannon &amp; Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1400</u> Date: <u>8/30/2021</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: [Signature] Signature: <u>[Signature]</u> Printed Name: <u>David H.</u> Company: _____	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>1400</u> Date: <u>8/30/2021</u>	Time: _____ Date: _____	Time: _____ Date: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Quote No: \_\_\_\_\_  
 MSA Number: 7BD  
 J-Flags:  Yes  No  
 Turn Around Time: \_\_\_\_\_  
 Normal  Rush  
 Please Specify \_\_\_\_\_

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers		Remarks/Matrix Composition/Grab? Sample Containers
				PFAS X 18	2	
21AKN-Drum-03		2105	8/30	X	2	groundwater
21AKN-Drum-04		2130		X	2	
21AKN-Drum-02		2100		X	2	
21AKN-Drum-06		2200		X	2	
21AKN-Drum-07		2205		X	2	
21AKN-Drum-08		2240		X	2	
21AKN-Drum-10		1030	8/31	X	2	

**Project Information**  
 Number: 102582-011  
 Name: AKN AFAS  
 Contact: MUS  
 Ongoing Project? Yes  No   
 Sampler: VTY

**Sample Receipt**  
 Total No. of Containers: 34  
 COC Seals/Intact? Y/N/NA \_\_\_\_\_  
 Received Good Cond./Cold \_\_\_\_\_  
 Temp: 15C  
 Delivery Method: goldstreak

**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:	Relinquished By:	Relinquished By:
Signature: <u>[Signature]</u> Printed Name: <u>Vegetha Jakimova</u> Company: <u>Shannon &amp; Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1600</u> Date: <u>8/30/21</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: <u>[Signature]</u> Time: <u>157</u> Date: <u>8/31/21</u>	Received By: _____ Time: _____ Date: _____	Received By: _____ Time: _____ Date: _____



## Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-78371-1

**Login Number: 78371**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Her, David A**

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	1519064
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	

## Laboratory Data Review Checklist

Completed By:

Ashley Jaramillo

Title:

Senior Chemist

Date:

September 23, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-78371-1

Laboratory Report Date:

September 15, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-78371-1

Laboratory Report Date:

September 15, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes 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 ADEC CS approved?

Yes  No  N/A  Comments:

The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition, and where required, properly preserved and on ice were received 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, etc.?

Yes  No  N/A  Comments:

No discrepancies identified, therefore no documentation needed.

e. Data quality or usability affected?

Comments:

Not applicable, see above.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

Some results for samples 21AKN-SW-09 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. Data quality and/or usability not affected.

The Isotope Dilution Analyte (IDA) recoveries associated with the following samples are below the method recommended limit: 21AKN-MW-04-45 and 21AKN-Drum-10. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. See Section 6.c. for details regarding data quality and/or usability, as applicable.

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The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-522308 and analytical batch 320-522804 recovered outside control limits for the following analytes: HFPO-DA. This analyte was biased high in the LCS and LCSD and was not detected in the associated samples; therefore, the data have been reported. See Section 6.b. for details regarding data quality and/or usability, as applicable.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-522308. Data quality and/or usability not affected.

The following samples were yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction: *21AKN-MW-05-15* and *21AKN-MW-105-15*. Data quality and/or usability not affected.

535: The following samples were gray and contained a thin layer of sediment at the bottom of the bottle prior to extraction: *21AKN-MW-05-85*, *21AKN-MW-05-85F*, *21AKN-MW-04-85* and *21AKN-MW-04-85F*. Data quality and/or usability not affected.

During the solid phase extraction process, the following sample contained non-settable particulates which clogged the solid phase extraction column: *21AKN-MW-05-85*. Data quality and/or usability not affected.

Insufficient sample volume was available to perform a MS/MSD associated with preparation batch 320-523724.

The following samples were light brown with sediment in the sample bottle prior to extraction: *21AKN-Drum-04*, *21AKN-Drum-02*, *21AKN-Drum-06*, *21AKN-Drum-07*, *21AKN-Drum-08* and *21AKN-Drum-10*.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Case narrative does not discuss effect on data quality, it only discusses discrepancies and what was done considering them, as applicable. Any notable data quality issues mentioned in the case narrative are discussed above in Section 4.b. or elsewhere within this DEC checklist.

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CS Site Name:

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5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

Analytical sensitivity was evaluated to verify that reporting limits (RLs) met applicable DEC groundwater cleanup levels for non-detect results, as appropriate. RLs met applicable regulatory levels.

e. Data quality or usability affected?

Not applicable, see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:



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ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

No analytes were detected in method blank samples at concentrations exceeding the RL; however, the following PFAS were detected at concentrations below the RL in preparatory batch 320-522308: 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, ADONA, 9-chlorohexadecafluoro-3-oxanonane 1-sulfonic acid, PFBS, PFDA, PFHpA, PFHxS, PFNA, PFOS, and PFOA.

- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, ADONA, 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, PFDA, and PFHpA were not detected in any associated project sample. Data qualification not required, and data quality/and for usability not affected.
- PFBS was detected greater than ten times the concentration detected in the method blank sample. Data qualification not required, and data quality/and for usability not affected.
- PFHxS was detected in the following associated samples at concentrations below the RL and less than five-times the concentration detected in the method blank sample: *2IAKN-MW-04-85* and *2IAKN-MW-04-85F*. Therefore, the PFHxS results of these samples are considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the RL in the analytical tables.
- Additionally, PFHxS was detected in the following associated sample at a concentration within ten-times the concentration detected in the method blank sample: *2IAKN-MW-05-85*. Therefore, the PFHxS result in this sample is considered a biased high estimate due to potential laboratory cross-contamination and is flagged 'JH' at the reported concentration in the analytical tables.
- PFNA was detected in the following associated samples at a concentration below the RL and less than five-times the concentration detected in the method blank sample: *2IAKN-MW-105-15* and *2IAKN-MW-05-15*. Therefore, the PFNA results in these samples are considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the reported concentration in the analytical tables.
- PFOA was detected in the following associated samples at concentrations below the RL and less than five-times the concentration detected in the method blank sample: *2IAKN-MW-04-85* and *2IAKN-MW-04-85F*. Therefore, the PFOA results of these samples are considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the RL in the analytical tables.

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- PFOS was detected in the following associated samples at concentrations below the RL and less than five-times the concentration detected in the method blank sample: *21AKN-MW-05-85* and *21AKN-MW-04-85*. Therefore, the PFOS results of these samples are considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the reported concentration in the analytical tables.
- Additionally, PFOS was detected in the following associated sample at a concentration above the RL and less than five-times the concentration detected in the method blank sample: *21AKN-MW-05-85F*. Therefore, the PFOS result of this sample is considered not-detected due to potential laboratory cross-contamination and is flagged 'B' at the reported value.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Yes, 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?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – 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 – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

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iii. Accuracy – 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:

The LCS associated with preparation batch 320-522308 had a high recovery failure for HFPO-DA. HFPO-DA was not detected in any associated project sample. Data qualification not required, and data quality/and for usability not affected.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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:

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. Data quality or usability affected? (Use comment box to explain.)

Comments:

See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Project accuracy and precision were measured via the LCS/LCSD.

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ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS/MSD samples were not reported in this work order.

iv. Precision – 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:

MS/MSD samples were not reported in this work order.

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. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; 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:

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Laboratory Report Date:

September 15, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

- ii. Accuracy – 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:

The IDAs for analytes for the following analytes were recovered low in the noted samples:

- PFTeA - 21AKN-Drum-10: PFTeA was not detected in the associated project sample, is considered an estimate with no direction of bias, and has been flagged 'J' in the analytical tables.
- PFBS - 21AKN-MW-04-45: PFBS was detected in the associated sample, is considered an estimate with no direction of, and has been flagged 'J' in the analytical tables.
- HPFO-DA - 21AKN-MW-04-45: HPFO-DA was not detected in the associated project sample, is considered an estimate with no direction of bias, and has been flagged 'J' in the analytical tables.

- 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. Data quality or usability affected?

Comments:

See above.

- e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

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iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

21AKN-MW-105-15 and 21AKN-Drum-101 were field duplicates of 21AKN-MW-05-15 and 21AKN-Drum-01, respectively.

ii. Submitted blind to lab?

Yes  No  N/A  Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

Where calculable, analytical results met the comparison criterion ( $\leq 30\%$  for soil) for the field duplicate pairs.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Not applicable, see above.

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CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Decontamination or equipment blank were not required for this project.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

There were no additional flags/qualifiers required for this work order.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-78376-1  
Client Project/Site: PFAS AKN

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Michael X Jaramillo



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Authorized for release by:  
9/15/2021 3:16:57 PM

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### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*





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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
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: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

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## Job ID: 320-78376-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

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#### Job Narrative 320-78376-1

#### Receipt

The samples were received on 9/1/2021 3:56 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 3.3° C.

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. 21AKN-SB-05(3.1'-3.6') (320-78376-1), (320-78376-A-1-B MS) and (320-78376-A-1-C MSD)

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recoveries associated with the following samples are below the method recommended limit: 21AKN-SB-05(3.1'-3.6') (320-78376-1), 21AKN-SB-05(4.2'-4.7') (320-78376-2), 21AKN-SB-105(58'-63') (320-78376-4), (320-78376-A-1-B MS) and (320-78376-A-1-C MSD). 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.

#### General Chemistry

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: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Client Sample ID: 21AKN-SB-05(3.1'-3.6')

Lab Sample ID: 320-78376-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.081	J	0.24	0.038	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.095	J	0.24	0.065	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.13	J	0.24	0.035	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.34	I	0.24	0.053	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-05(4.2'-4.7')

Lab Sample ID: 320-78376-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.039	J	0.23	0.036	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	0.065	J	0.23	0.061	ug/Kg	1	✳	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.069	J	0.23	0.033	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-05(58'-63')

Lab Sample ID: 320-78376-3

No Detections.

## Client Sample ID: 21AKN-SB-105(58'-63')

Lab Sample ID: 320-78376-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.048	J	0.22	0.047	ug/Kg	1	✳	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-05(70'-70.5')

Lab Sample ID: 320-78376-5

No Detections.

## Client Sample ID: 21AKN-SB-05(82.8-83.3)

Lab Sample ID: 320-78376-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-05(3.1'-3.6')**

**Lab Sample ID: 320-78376-1**

Date Collected: 08/23/21 13:01

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 81.9

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.081</b>	<b>J</b>	0.24	0.038	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluoroheptanoic acid (PFHpA)	ND		0.24	0.046	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.095</b>	<b>J</b>	0.24	0.065	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluorononanoic acid (PFNA)	ND		0.24	0.027	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.059	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.051	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.037	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.026	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.045	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.24	0.046	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.13</b>	<b>J</b>	0.24	0.035	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.34</b>	<b>I</b>	0.24	0.053	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.24	0.028	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.24	0.059	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.24	0.050	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.038	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.048	ug/Kg	☼	09/06/21 18:24	09/10/21 13:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C4 PFHpA	66		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C4 PFOA	68		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C5 PFNA	71		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C2 PFDA	70		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C2 PFUnA	68		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C2 PFDoA	67		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C2 PFTeDA	48	*5-	50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C3 PFBS	64		50 - 150	09/06/21 18:24	09/10/21 13:54	1
18O2 PFHxS	62		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C4 PFOS	63		50 - 150	09/06/21 18:24	09/10/21 13:54	1
d3-NMeFOSAA	71		50 - 150	09/06/21 18:24	09/10/21 13:54	1
d5-NEtFOSAA	77		50 - 150	09/06/21 18:24	09/10/21 13:54	1
13C3 HFPO-DA	60		50 - 150	09/06/21 18:24	09/10/21 13:54	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>18.1</b>		0.1	0.1	%			09/02/21 11:27	1
<b>Percent Solids</b>	<b>81.9</b>		0.1	0.1	%			09/02/21 11:27	1

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-05(4.2'-4.7')**

**Lab Sample ID: 320-78376-2**

Date Collected: 08/23/21 12:55

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 82.5

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.039</b>	<b>J</b>	0.23	0.036	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.044	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>0.065</b>	<b>J</b>	0.23	0.061	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.025	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.055	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.048	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.034	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.024	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.044	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.069</b>	<b>J</b>	0.23	0.033	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.23	0.049	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.026	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.055	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.040	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.047	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.036	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.045	ug/Kg	☼	09/06/21 18:24	09/10/21 14:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	58		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C4 PFHpA	50		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C4 PFOA	51		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C5 PFNA	56		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C2 PFDA	60		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C2 PFUnA	58		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C2 PFDoA	47	*5-	50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C2 PFTeDA	31	*5-	50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C3 PFBS	57		50 - 150	09/06/21 18:24	09/10/21 14:21	1
18O2 PFHxS	54		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C4 PFOS	54		50 - 150	09/06/21 18:24	09/10/21 14:21	1
d3-NMeFOSAA	53		50 - 150	09/06/21 18:24	09/10/21 14:21	1
d5-NEtFOSAA	56		50 - 150	09/06/21 18:24	09/10/21 14:21	1
13C3 HFPO-DA	52		50 - 150	09/06/21 18:24	09/10/21 14:21	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>17.5</b>		0.1	0.1	%			09/02/21 11:27	1
<b>Percent Solids</b>	<b>82.5</b>		0.1	0.1	%			09/02/21 11:27	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-05(58'-63')**

**Lab Sample ID: 320-78376-3**

Date Collected: 08/24/21 10:30

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 87.3

**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		0.23	0.035	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.060	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.025	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.055	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.048	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.034	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.024	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.042	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.033	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.23	0.049	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.026	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.055	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.040	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.047	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.035	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.044	ug/Kg	☼	09/06/21 18:24	09/10/21 14:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	68		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C4 PFHpA	69		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C4 PFOA	74		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C5 PFNA	67		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C2 PFDA	72		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C2 PFUnA	68		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C2 PFDoA	71		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C2 PFTeDA	64		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C3 PFBS	64		50 - 150	09/06/21 18:24	09/10/21 14:30	1
18O2 PFHxS	68		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C4 PFOS	65		50 - 150	09/06/21 18:24	09/10/21 14:30	1
d3-NMeFOSAA	78		50 - 150	09/06/21 18:24	09/10/21 14:30	1
d5-NEtFOSAA	79		50 - 150	09/06/21 18:24	09/10/21 14:30	1
13C3 HFPO-DA	60		50 - 150	09/06/21 18:24	09/10/21 14:30	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	12.7		0.1	0.1	%			09/02/21 11:27	1
Percent Solids	87.3		0.1	0.1	%			09/02/21 11:27	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-105(58'-63')**

**Lab Sample ID: 320-78376-4**

Date Collected: 08/24/21 10:20

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 83.4

**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		0.22	0.034	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.042	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.058	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.024	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.053	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.046	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.033	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.023	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.041	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.042	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.22	0.032	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.048</b>	<b>J</b>	0.22	0.047	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.025	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.053	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.039	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.045	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.034	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 14:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	56		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C4 PFHpA	58		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C4 PFOA	60		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C5 PFNA	54		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C2 PFDA	54		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C2 PFUnA	55		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C2 PFDoA	62		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C2 PFTeDA	57		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C3 PFBS	55		50 - 150	09/06/21 18:24	09/10/21 14:39	1
18O2 PFHxS	57		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C4 PFOS	54		50 - 150	09/06/21 18:24	09/10/21 14:39	1
d3-NMeFOSAA	59		50 - 150	09/06/21 18:24	09/10/21 14:39	1
d5-NEtFOSAA	64		50 - 150	09/06/21 18:24	09/10/21 14:39	1
13C3 HFPO-DA	49	*5-	50 - 150	09/06/21 18:24	09/10/21 14:39	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>16.6</b>		0.1	0.1	%			09/02/21 11:27	1
<b>Percent Solids</b>	<b>83.4</b>		0.1	0.1	%			09/02/21 11:27	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-05(70'-70.5')**

**Lab Sample ID: 320-78376-5**

Date Collected: 08/27/21 10:30

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 88.4

**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		0.20	0.031	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.039	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.054	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.049	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.038	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.039	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.029	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.044	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.049	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.036	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.042	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.040	ug/Kg	☼	09/06/21 18:24	09/10/21 14:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	69		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C4 PFHpA	72		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C4 PFOA	76		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C5 PFNA	74		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C2 PFDA	74		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C2 PFUnA	71		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C2 PFDoA	73		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C2 PFTeDA	59		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C3 PFBS	66		50 - 150	09/06/21 18:24	09/10/21 14:48	1
18O2 PFHxS	69		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C4 PFOS	69		50 - 150	09/06/21 18:24	09/10/21 14:48	1
d3-NMeFOSAA	73		50 - 150	09/06/21 18:24	09/10/21 14:48	1
d5-NEtFOSAA	74		50 - 150	09/06/21 18:24	09/10/21 14:48	1
13C3 HFPO-DA	66		50 - 150	09/06/21 18:24	09/10/21 14:48	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	11.6		0.1	0.1	%			09/02/21 11:27	1
Percent Solids	88.4		0.1	0.1	%			09/02/21 11:27	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-05(82.8-83.3)**

**Lab Sample ID: 320-78376-6**

Date Collected: 08/27/21 14:40

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 83.9

**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		0.23	0.035	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.060	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.025	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.054	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.047	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.034	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.024	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.042	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.043	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.033	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.23	0.048	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.026	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.054	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.039	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.046	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.035	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.044	ug/Kg	☼	09/06/21 18:24	09/10/21 14:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	61		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C4 PFHpA	61		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C4 PFOA	59		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C5 PFNA	61		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C2 PFDA	59		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C2 PFUnA	61		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C2 PFDoA	62		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C2 PFTeDA	59		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C3 PFBS	58		50 - 150	09/06/21 18:24	09/10/21 14:57	1
18O2 PFHxS	59		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C4 PFOS	55		50 - 150	09/06/21 18:24	09/10/21 14:57	1
d3-NMeFOSAA	61		50 - 150	09/06/21 18:24	09/10/21 14:57	1
d5-NEtFOSAA	64		50 - 150	09/06/21 18:24	09/10/21 14:57	1
13C3 HFPO-DA	58		50 - 150	09/06/21 18:24	09/10/21 14:57	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	16.1		0.1	0.1	%			09/02/21 11:27	1
Percent Solids	83.9		0.1	0.1	%			09/02/21 11:27	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Solid

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)	PFDaA (50-150)	PFTDA (50-150)
320-78376-1	21AKN-SB-05(3.1'-3.6')	71	66	68	71	70	68	67	48 *5-
320-78376-1 MS	21AKN-SB-05(3.1'-3.6')	76	67	73	72	76	75	69	49 *5-
320-78376-1 MSD	21AKN-SB-05(3.1'-3.6')	70	61	68	68	72	69	65	46 *5-
320-78376-2	21AKN-SB-05(4.2'-4.7')	58	50	51	56	60	58	47 *5-	31 *5-
320-78376-3	21AKN-SB-05(58'-63')	68	69	74	67	72	68	71	64
320-78376-4	21AKN-SB-105(58'-63')	56	58	60	54	54	55	62	57
320-78376-5	21AKN-SB-05(70'-70.5')	69	72	76	74	74	71	73	59
320-78376-6	21AKN-SB-05(82.8-83.3)	61	61	59	61	59	61	62	59
LCS 320-522831/2-A	Lab Control Sample	62	61	64	57	60	60	64	56
MB 320-522831/1-A	Method Blank	70	73	73	71	70	69	73	60

### 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)
320-78376-1	21AKN-SB-05(3.1'-3.6')	64	62	63	71	77	60
320-78376-1 MS	21AKN-SB-05(3.1'-3.6')	67	69	64	71	76	66
320-78376-1 MSD	21AKN-SB-05(3.1'-3.6')	66	64	65	74	73	64
320-78376-2	21AKN-SB-05(4.2'-4.7')	57	54	54	53	56	52
320-78376-3	21AKN-SB-05(58'-63')	64	68	65	78	79	60
320-78376-4	21AKN-SB-105(58'-63')	55	57	54	59	64	49 *5-
320-78376-5	21AKN-SB-05(70'-70.5')	66	69	69	73	74	66
320-78376-6	21AKN-SB-05(82.8-83.3)	58	59	55	61	64	58
LCS 320-522831/2-A	Lab Control Sample	58	59	60	61	68	59
MB 320-522831/1-A	Method Blank	72	70	66	73	79	71

#### Surrogate Legend

PFHxA = 13C2 PFHxA  
C4PFHA = 13C4 PFHpA  
PFOA = 13C4 PFOA  
PFNA = 13C5 PFNA  
PFDA = 13C2 PFDA  
PFUnA = 13C2 PFUnA  
PFDaA = 13C2 PFDaA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-522831/1-A**  
**Matrix: Solid**  
**Analysis Batch: 523909**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 522831**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.031	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.053	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.029	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.043	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg		09/06/21 18:24	09/10/21 13:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg		09/06/21 18:24	09/10/21 13:35	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	70		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C4 PFHpA	73		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C4 PFOA	73		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C5 PFNA	71		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C2 PFDA	70		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C2 PFUnA	69		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C2 PFDoA	73		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C2 PFTeDA	60		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C3 PFBS	72		50 - 150	09/06/21 18:24	09/10/21 13:35	1
18O2 PFHxS	70		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C4 PFOS	66		50 - 150	09/06/21 18:24	09/10/21 13:35	1
d3-NMeFOSAA	73		50 - 150	09/06/21 18:24	09/10/21 13:35	1
d5-NEtFOSAA	79		50 - 150	09/06/21 18:24	09/10/21 13:35	1
13C3 HFPO-DA	71		50 - 150	09/06/21 18:24	09/10/21 13:35	1

**Lab Sample ID: LCS 320-522831/2-A**  
**Matrix: Solid**  
**Analysis Batch: 523909**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522831**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	2.00	1.98		ug/Kg		99	70 - 132
Perfluoroheptanoic acid (PFHpA)	2.00	2.20		ug/Kg		110	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	2.10		ug/Kg		105	69 - 133
Perfluorononanoic acid (PFNA)	2.00	2.38		ug/Kg		119	72 - 129

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-522831/2-A**  
**Matrix: Solid**  
**Analysis Batch: 523909**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522831**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	2.00	1.98		ug/Kg		99	69 - 133
Perfluoroundecanoic acid (PFUnA)	2.00	2.17		ug/Kg		108	64 - 136
Perfluorododecanoic acid (PFDoA)	2.00	2.18		ug/Kg		109	69 - 135
Perfluorotridecanoic acid (PFTriA)	2.00	2.09		ug/Kg		104	66 - 139
Perfluorotetradecanoic acid (PFTeA)	2.00	2.22		ug/Kg		111	69 - 133
Perfluorobutanesulfonic acid (PFBS)	1.77	1.96		ug/Kg		111	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	1.82	2.06		ug/Kg		113	67 - 130
Perfluorooctanesulfonic acid (PFOS)	1.86	1.91		ug/Kg		103	68 - 136
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	2.00	1.97		ug/Kg		99	63 - 144
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	2.00	1.94		ug/Kg		97	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.86	1.88		ug/Kg		101	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	1.98		ug/Kg		99	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	1.96		ug/Kg		104	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	1.98		ug/Kg		105	79 - 139

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	62		50 - 150
13C4 PFHpA	61		50 - 150
13C4 PFOA	64		50 - 150
13C5 PFNA	57		50 - 150
13C2 PFDA	60		50 - 150
13C2 PFUnA	60		50 - 150
13C2 PFDoA	64		50 - 150
13C2 PFTeDA	56		50 - 150
13C3 PFBS	58		50 - 150
18O2 PFHxS	59		50 - 150
13C4 PFOS	60		50 - 150
d3-NMeFOSAA	61		50 - 150
d5-NEtFOSAA	68		50 - 150
13C3 HFPO-DA	59		50 - 150

**Lab Sample ID: 320-78376-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 523909**

**Client Sample ID: 21AKN-SB-05(3.1'-3.6')**  
**Prep Type: Total/NA**  
**Prep Batch: 522831**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	0.081	J	2.37	2.32		ug/Kg	☼	94	70 - 132
Perfluoroheptanoic acid (PFHpA)	ND		2.37	2.69		ug/Kg	☼	114	71 - 131
Perfluorooctanoic acid (PFOA)	0.095	J	2.37	2.66		ug/Kg	☼	108	69 - 133

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-78376-1 MS**

**Matrix: Solid**

**Analysis Batch: 523909**

**Client Sample ID: 21AKN-SB-05(3.1'-3.6')**

**Prep Type: Total/NA**

**Prep Batch: 522831**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	ND		2.37	2.77		ug/Kg	⊛	117	72 - 129
Perfluorodecanoic acid (PFDA)	ND		2.37	2.28		ug/Kg	⊛	96	69 - 133
Perfluoroundecanoic acid (PFUnA)	ND		2.37	2.72		ug/Kg	⊛	115	64 - 136
Perfluorododecanoic acid (PFDoA)	ND		2.37	2.45		ug/Kg	⊛	103	69 - 135
Perfluorotridecanoic acid (PFTriA)	ND		2.37	2.23		ug/Kg	⊛	94	66 - 139
Perfluorotetradecanoic acid (PFTeA)	ND		2.37	2.51		ug/Kg	⊛	106	69 - 133
Perfluorobutanesulfonic acid (PFBS)	ND		2.09	2.30		ug/Kg	⊛	110	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	0.13	J	2.15	2.40		ug/Kg	⊛	105	67 - 130
Perfluorooctanesulfonic acid (PFOS)	0.34	I	2.20	2.98	I	ug/Kg	⊛	120	68 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.37	2.77		ug/Kg	⊛	117	63 - 144
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.37	2.67		ug/Kg	⊛	113	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.21	2.59		ug/Kg	⊛	117	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.37	2.42		ug/Kg	⊛	102	77 - 137
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.23	2.25		ug/Kg	⊛	101	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.23	2.32		ug/Kg	⊛	104	79 - 139

Isotope Dilution	%Recovery	MS Qualifier	MS Limits
13C2 PFHxA	76		50 - 150
13C4 PFHpA	67		50 - 150
13C4 PFOA	73		50 - 150
13C5 PFNA	72		50 - 150
13C2 PFDA	76		50 - 150
13C2 PFUnA	75		50 - 150
13C2 PFDoA	69		50 - 150
13C2 PFTeDA	49	*5-	50 - 150
13C3 PFBS	67		50 - 150
18O2 PFHxS	69		50 - 150
13C4 PFOS	64		50 - 150
d3-NMeFOSAA	71		50 - 150
d5-NEtFOSAA	76		50 - 150
13C3 HFPO-DA	66		50 - 150

**Lab Sample ID: 320-78376-1 MSD**

**Matrix: Solid**

**Analysis Batch: 523909**

**Client Sample ID: 21AKN-SB-05(3.1'-3.6')**

**Prep Type: Total/NA**

**Prep Batch: 522831**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perfluorohexanoic acid (PFHxA)	0.081	J	2.18	2.23		ug/Kg	⊛	99	70 - 132	4	30
Perfluoroheptanoic acid (PFHpA)	ND		2.18	2.39		ug/Kg	⊛	110	71 - 131	12	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-78376-1 MSD**

**Client Sample ID: 21AKN-SB-05(3.1'-3.6')**

**Matrix: Solid**

**Prep Type: Total/NA**

**Analysis Batch: 523909**

**Prep Batch: 522831**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
Perfluorooctanoic acid (PFOA)	0.095	J	2.18	2.41		ug/Kg	⊛	106	69 - 133	10	30
Perfluorononanoic acid (PFNA)	ND		2.18	2.43		ug/Kg	⊛	112	72 - 129	13	30
Perfluorodecanoic acid (PFDA)	ND		2.18	2.16		ug/Kg	⊛	99	69 - 133	6	30
Perfluoroundecanoic acid (PFUnA)	ND		2.18	2.46		ug/Kg	⊛	113	64 - 136	10	30
Perfluorododecanoic acid (PFDoA)	ND		2.18	2.17		ug/Kg	⊛	100	69 - 135	12	30
Perfluorotridecanoic acid (PFTriA)	ND		2.18	2.02		ug/Kg	⊛	93	66 - 139	10	30
Perfluorotetradecanoic acid (PFTeA)	ND		2.18	2.26		ug/Kg	⊛	104	69 - 133	11	30
Perfluorobutanesulfonic acid (PFBS)	ND		1.92	2.12		ug/Kg	⊛	110	72 - 128	8	30
Perfluorohexanesulfonic acid (PFHxS)	0.13	J	1.98	2.26		ug/Kg	⊛	108	67 - 130	6	30
Perfluorooctanesulfonic acid (PFOS)	0.34	I	2.02	2.52	I	ug/Kg	⊛	108	68 - 136	17	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.18	2.29		ug/Kg	⊛	105	63 - 144	19	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.18	2.45		ug/Kg	⊛	112	61 - 139	9	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.03	2.08		ug/Kg	⊛	103	75 - 135	22	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.18	2.14		ug/Kg	⊛	98	77 - 137	12	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.05	1.94		ug/Kg	⊛	94	76 - 136	15	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.05	2.04		ug/Kg	⊛	99	79 - 139	13	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	70		50 - 150
13C4 PFHpA	61		50 - 150
13C4 PFOA	68		50 - 150
13C5 PFNA	68		50 - 150
13C2 PFDA	72		50 - 150
13C2 PFUnA	69		50 - 150
13C2 PFDoA	65		50 - 150
13C2 PFTeDA	46	*5-	50 - 150
13C3 PFBS	66		50 - 150
18O2 PFHxS	64		50 - 150
13C4 PFOS	65		50 - 150
d3-NMeFOSAA	74		50 - 150
d5-NEtFOSAA	73		50 - 150
13C3 HFPO-DA	64		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## LCMS

### Prep Batch: 522831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78376-1	21AKN-SB-05(3.1'-3.6')	Total/NA	Solid	SHAKE	
320-78376-2	21AKN-SB-05(4.2'-4.7')	Total/NA	Solid	SHAKE	
320-78376-3	21AKN-SB-05(58'-63')	Total/NA	Solid	SHAKE	
320-78376-4	21AKN-SB-105(58'-63')	Total/NA	Solid	SHAKE	
320-78376-5	21AKN-SB-05(70'-70.5')	Total/NA	Solid	SHAKE	
320-78376-6	21AKN-SB-05(82.8-83.3)	Total/NA	Solid	SHAKE	
MB 320-522831/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-522831/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-78376-1 MS	21AKN-SB-05(3.1'-3.6')	Total/NA	Solid	SHAKE	
320-78376-1 MSD	21AKN-SB-05(3.1'-3.6')	Total/NA	Solid	SHAKE	

### Analysis Batch: 523909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78376-1	21AKN-SB-05(3.1'-3.6')	Total/NA	Solid	EPA 537(Mod)	522831
320-78376-2	21AKN-SB-05(4.2'-4.7')	Total/NA	Solid	EPA 537(Mod)	522831
320-78376-3	21AKN-SB-05(58'-63')	Total/NA	Solid	EPA 537(Mod)	522831
320-78376-4	21AKN-SB-105(58'-63')	Total/NA	Solid	EPA 537(Mod)	522831
320-78376-5	21AKN-SB-05(70'-70.5')	Total/NA	Solid	EPA 537(Mod)	522831
320-78376-6	21AKN-SB-05(82.8-83.3)	Total/NA	Solid	EPA 537(Mod)	522831
MB 320-522831/1-A	Method Blank	Total/NA	Solid	EPA 537(Mod)	522831
LCS 320-522831/2-A	Lab Control Sample	Total/NA	Solid	EPA 537(Mod)	522831
320-78376-1 MS	21AKN-SB-05(3.1'-3.6')	Total/NA	Solid	EPA 537(Mod)	522831
320-78376-1 MSD	21AKN-SB-05(3.1'-3.6')	Total/NA	Solid	EPA 537(Mod)	522831

## General Chemistry

### Analysis Batch: 522075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78376-1	21AKN-SB-05(3.1'-3.6')	Total/NA	Solid	D 2216	
320-78376-2	21AKN-SB-05(4.2'-4.7')	Total/NA	Solid	D 2216	
320-78376-3	21AKN-SB-05(58'-63')	Total/NA	Solid	D 2216	
320-78376-4	21AKN-SB-105(58'-63')	Total/NA	Solid	D 2216	
320-78376-5	21AKN-SB-05(70'-70.5')	Total/NA	Solid	D 2216	
320-78376-6	21AKN-SB-05(82.8-83.3)	Total/NA	Solid	D 2216	



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-05(3.1'-3.6')**

**Lab Sample ID: 320-78376-1**

Date Collected: 08/23/21 13:01

Matrix: Solid

Date Received: 09/01/21 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522075	09/02/21 11:27	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-05(3.1'-3.6')**

**Lab Sample ID: 320-78376-1**

Date Collected: 08/23/21 13:01

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.00 g	10.0 mL	522831	09/06/21 18:24	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523909	09/10/21 13:54	JY1	TAL SAC

**Client Sample ID: 21AKN-SB-05(4.2'-4.7')**

**Lab Sample ID: 320-78376-2**

Date Collected: 08/23/21 12:55

Matrix: Solid

Date Received: 09/01/21 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522075	09/02/21 11:27	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-05(4.2'-4.7')**

**Lab Sample ID: 320-78376-2**

Date Collected: 08/23/21 12:55

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 82.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.27 g	10.0 mL	522831	09/06/21 18:24	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523909	09/10/21 14:21	JY1	TAL SAC

**Client Sample ID: 21AKN-SB-05(58'-63')**

**Lab Sample ID: 320-78376-3**

Date Collected: 08/24/21 10:30

Matrix: Solid

Date Received: 09/01/21 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522075	09/02/21 11:27	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-05(58'-63')**

**Lab Sample ID: 320-78376-3**

Date Collected: 08/24/21 10:30

Matrix: Solid

Date Received: 09/01/21 15:56

Percent Solids: 87.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.02 g	10.0 mL	522831	09/06/21 18:24	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523909	09/10/21 14:30	JY1	TAL SAC

**Client Sample ID: 21AKN-SB-105(58'-63')**

**Lab Sample ID: 320-78376-4**

Date Collected: 08/24/21 10:20

Matrix: Solid

Date Received: 09/01/21 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522075	09/02/21 11:27	KDB	TAL SAC

Eurofins TestAmerica, Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

**Client Sample ID: 21AKN-SB-105(58'-63')**

**Lab Sample ID: 320-78376-4**

**Date Collected: 08/24/21 10:20**

**Matrix: Solid**

**Date Received: 09/01/21 15:56**

**Percent Solids: 83.4**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.44 g	10.0 mL	522831	09/06/21 18:24	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523909	09/10/21 14:39	JY1	TAL SAC

**Client Sample ID: 21AKN-SB-05(70'-70.5')**

**Lab Sample ID: 320-78376-5**

**Date Collected: 08/27/21 10:30**

**Matrix: Solid**

**Date Received: 09/01/21 15:56**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522075	09/02/21 11:27	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-05(70'-70.5')**

**Lab Sample ID: 320-78376-5**

**Date Collected: 08/27/21 10:30**

**Matrix: Solid**

**Date Received: 09/01/21 15:56**

**Percent Solids: 88.4**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.57 g	10.0 mL	522831	09/06/21 18:24	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523909	09/10/21 14:48	JY1	TAL SAC

**Client Sample ID: 21AKN-SB-05(82.8-83.3)**

**Lab Sample ID: 320-78376-6**

**Date Collected: 08/27/21 14:40**

**Matrix: Solid**

**Date Received: 09/01/21 15:56**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522075	09/02/21 11:27	KDB	TAL SAC

**Client Sample ID: 21AKN-SB-05(82.8-83.3)**

**Lab Sample ID: 320-78376-6**

**Date Collected: 08/27/21 14:40**

**Matrix: Solid**

**Date Received: 09/01/21 15:56**

**Percent Solids: 83.9**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.29 g	10.0 mL	522831	09/06/21 18:24	AM	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			523909	09/10/21 14:57	JY1	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

## Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

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
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

#### Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: PFAS AKN

Job ID: 320-78376-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78376-1	21AKN-SB-05(3.1'-3.6')	Solid	08/23/21 13:01	09/01/21 15:56
320-78376-2	21AKN-SB-05(4.2'-4.7')	Solid	08/23/21 12:55	09/01/21 15:56
320-78376-3	21AKN-SB-05(58'-63')	Solid	08/24/21 10:30	09/01/21 15:56
320-78376-4	21AKN-SB-105(58'-63')	Solid	08/24/21 10:20	09/01/21 15:56
320-78376-5	21AKN-SB-05(70'-70.5')	Solid	08/27/21 10:30	09/01/21 15:56
320-78376-6	21AKN-SB-05(82.8-83.3)	Solid	08/27/21 14:40	09/01/21 15:56

1

2

3

4

5

6

7

8

9

10

11

12

13


14

15

# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Turn Around Time:  Normal  Rush  
 Please Specify:  Yes  No  
 Quote No: \_\_\_\_\_  
 MSA Number: TBD  
 J-Flags:  Yes  No

Barcode:   
 320-78376 Chain of Custody  
 Total Number of Containers: 1  
 Remarks/Matrix Composition/Grab? Sample Containers

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers
21AKN-SB-05(3.1'-3.6')	1301	8/23/21		
21AKN-SB-05(4.2'-4.7')	1255	↓		
21AKN-SB-05(5.8'-6.3')	1030	8/24/21		
21AKN-SB-05(5.8'-6.3')	1020	↓		
21AKN-SB-05(7.0'-7.5')	1030	8/27/21		
21AKN-SB-05(8.2'-8.3.3')	1440	↓		

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Number: <u>102582-011</u>	Total No. of Containers: <u>6</u>	Signature: <u>[Signature]</u>	Signature: _____	Signature: _____
Name: <u>PFAS AKN</u>	COC Seals/Intact? Y/N/NA	Printed Name: <u>Veselina Jakimova</u>	Printed Name: _____	Printed Name: _____
Contact: <u>WXJ</u>	Received Good Cond./Cold Temp.	Company: <u>Shannon &amp; Wilson</u>	Company: _____	Company: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method: <u>goldstreak</u>	Time: <u>1000</u>	Time: _____	Time: _____
Sampler: <u>VTY</u>	Notes: _____	Date: <u>8/23/21</u>	Date: _____	Date: _____
		Received By: 1. <u>[Signature]</u>	Received By: 2. _____	Received By: 3. _____
		Time: <u>0556</u>	Time: _____	Time: _____
		Date: <u>8/23/21</u>	Date: _____	Date: _____
		Signature: <u>[Signature]</u>	Signature: _____	Signature: _____
		Printed Name: <u>David Aettker</u>	Printed Name: _____	Printed Name: _____
		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



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-78376-1

**Login Number: 78376**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Her, David A**

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	1504549
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	



**Laboratory Data Review Checklist**

Completed By:

Michael Jaramillo

Title:

Senior Chemist

Date:

09/23/2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981



320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes 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 ADEC CS approved?

Yes  No  N/A  Comments:

Samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

Analysis of PFAS does not require chemical preservation.

320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition, and where required, properly preserved and on ice were received 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, etc.?

Yes  No  N/A  Comments:

There were no discrepancies noted by the laboratory.

e. Data quality or usability affected?

Comments:

Not applicable, see above.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

The "I" qualifier means the transition mass ratio was outside of the established ratio limits for PFOS in the project sample *2IAKN-SB-05(3.1'-3.6')*, and the matrix spike (MS) and matrix spike duplicate (MSD) associated with this sample and preparation batch 320-522831. The qualitative identification of the analyte has some degree of uncertainty with possible high bias. However, analyst judgment was used to positively identify the analyte. Consequently, the PFOS result in in sample *2IAKN-SB-05(3.1'-3.6')* is considered a high biased estimate and has been flagged 'JH' in the analytical tables.

The isotope dilution analyte (IDA) recovery associated with the following samples is below the recommended limit: *2IAKN-SB-05(3.1'-3.6')*, *2IAKN-SB-05(4.2'-4.7')*, *2IAKN-SB-105(58'-63')* and the MS and MSD samples associated with preparation batch 320-522831. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. See Section 6.c. for details regarding data quality and/or usability, as applicable.

320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Corrective actions not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Any notable data quality issues mentioned in the case narrative are discussed above in Section 4.b. or elsewhere within this DEC checklist.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

Analytical sensitivity was evaluated to verify that reporting limits (RLs) met applicable DEC soil cleanup levels for non-detect results, as appropriate. RLs met applicable regulatory levels.

e. Data quality or usability affected?

Not applicable, see above.

320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

iii. If above LOQ or project specified objectives, 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?

Comments:

Not applicable, see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – 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:

An LCS was reported for PFAS analysis.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and inorganics were not analyzed as part of this work order.

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Laboratory Report Date:

9/15/2021

CS Site Name:

iii. Accuracy – 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 – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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:

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. Data quality or usability affected? (Use comment box to explain.)

Comments:

Not applicable, see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

iv. Precision – 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:

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. Data quality or usability affected? (Use comment box to explain.)

Comments:

Not applicable, 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:

320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

- ii. Accuracy – 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:

The IDAs percent recoveries for the following analytes were below the QC criteria in the noted samples:

- PFTeA - 2IAKN-SB-05(3.1'-3.6') and 2IAKN-SB-05(4.2'-4.7'): PFTeA was not detected in the associated project samples, is considered an estimate with no direction of bias, and has been flagged 'J' in the analytical tables.
- PFD<sub>o</sub>A - 2IAKN-SB-05(4.2'-4.7') - PFD<sub>o</sub>A was not detected in the associated project samples, is considered an estimate with no direction of bias, and has been flagged 'J' in the analytical tables.
- HFPO-DA - 2IAKN-SB-05(58'-63') – HFPO-DA was not detected in the associated project samples, is considered an estimate with no direction of bias, and has been flagged 'J' in the analytical tables.

- 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:

- iv. Data quality or usability affected?

Comments:

See above.

e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds; therefore, a trip blank is not required.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

v. Data quality or usability affected?

Comments:

Not applicable, see above.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

ii. Submitted blind to lab?

Yes  No  N/A  Comments:

Field duplicate pairs 21AKN-SB-05(58'-63') / 21AKN-SB-105(58'-63') were included with this work order.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R<sub>1</sub> = Sample Concentration  
R<sub>2</sub> = Field Duplicate Concentration

Yes  No  N/A  Comments:

Field duplicate RPDs could not be calculated due to non-detect results observed in the field duplicate samples. Data quality and/or usability were not affected.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

See above.



320-78376-1

Laboratory Report Date:

9/15/2021

CS Site Name:

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Reusable sampling equipment was not used, so an equipment blank was not necessary.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A  Comments:

Other flags not required.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-78378-1  
Client Project/Site: AKN PFAS

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Michael X Jaramillo



---

Authorized for release by:  
9/15/2021 3:25:48 PM

Linda C. Laver, Senior Project Manager  
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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
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.
α	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: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

**Job ID: 320-78378-1**

**Laboratory: Eurofins TestAmerica, Sacramento**

## Narrative

### Job Narrative 320-78378-1

#### Receipt

The samples were received on 9/1/2021 3:56 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 3.3° C.

#### LCMS

Method EPA 537(Mod): Some results for samples 21AKN-MW-01 (320-78378-1), 21AKN-MW-101 (320-78378-2) and 21AKN-MW-03 (320-78378-4) 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 samples are below the method recommended limits: 21AKN-MW-01 (320-78378-1) and 21AKN-MW-02 (320-78378-3). 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 samples.

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. 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. 21AKN-MW-02 (320-78378-3)

Method EPA 537(Mod): The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-522308 and analytical batch 320-522804 recovered outside control limits for the following analytes: Hexafluoropropylene Oxide Dimer Acid (HFPO-DA). This analyte was biased high in the LCS and LCSD and was not detected in the associated samples; therefore, the data have been reported.

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

#### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-522308.

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: AKN PFAS

Job ID: 320-78378-1

## Client Sample ID: 21AKN-MW-01

## Lab Sample ID: 320-78378-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	70		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	34	B	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	180	B	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.9	B	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	18	B	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	380	B	9.3	2.6	ng/L	5		EPA 537(Mod)	Total/NA
- DL									
Perfluorooctanesulfonic acid (PFOS) - DL	360	B	9.3	2.5	ng/L	5		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-101

## Lab Sample ID: 320-78378-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	63		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	29	B	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	170	B	1.9	0.82	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	1.8	J B	1.9	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	18	B	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	370	B	9.6	2.7	ng/L	5		EPA 537(Mod)	Total/NA
- DL									
Perfluorooctanesulfonic acid (PFOS) - DL	360	B	9.6	2.6	ng/L	5		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-02

## Lab Sample ID: 320-78378-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	7.7		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J B	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	35	B	1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.87	J   B	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	7.3	B	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	200	B	1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	56	B	1.9	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-MW-03

## Lab Sample ID: 320-78378-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	190	B	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	250	B	1.9	0.80	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	270	B	1.9	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.39	J B	1.9	0.29	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroundecanoic acid (PFUnA)	2.3		1.9	1.0	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	1300		19	5.5	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	390	B	19	1.9	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	2100	B	19	5.4	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	800	B	19	5.1	ng/L	10		EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-EB-03

## Lab Sample ID: 320-78378-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

**Client Sample ID: 21AKN-MW-01**

**Lab Sample ID: 320-78378-1**

Date Collected: 08/25/21 15:08

Matrix: Water

Date Received: 09/01/21 15:56

**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		1.9	0.54	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluoroheptanoic acid (PFHpA)	34	B	1.9	0.23	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluorooctanoic acid (PFOA)	180	B	1.9	0.79	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluorononanoic acid (PFNA)	1.9	B	1.9	0.25	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/03/21 04:59	09/06/21 20:17	1
Perfluorobutanesulfonic acid (PFBS)	18	B	1.9	0.19	ng/L		09/03/21 04:59	09/06/21 20:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/03/21 04:59	09/06/21 20:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 20:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/03/21 04:59	09/06/21 20:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 20:17	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 20:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/03/21 04:59	09/06/21 20:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	66		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C4 PFHpA	57		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C4 PFOA	92		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C5 PFNA	70		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C2 PFDA	88		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C2 PFUnA	81		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C2 PFDoA	93		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C2 PFTeDA	117		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C3 PFBS	60		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C4 PFOS	77		50 - 150	09/03/21 04:59	09/06/21 20:17	1
d3-NMeFOSAA	81		50 - 150	09/03/21 04:59	09/06/21 20:17	1
d5-NEtFOSAA	89		50 - 150	09/03/21 04:59	09/06/21 20:17	1
13C3 HFPO-DA	49	*5-	50 - 150	09/03/21 04:59	09/06/21 20:17	1

**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)	380	B	9.3	2.6	ng/L		09/03/21 04:59	09/10/21 23:55	5
Perfluorooctanesulfonic acid (PFOS)	360	B	9.3	2.5	ng/L		09/03/21 04:59	09/10/21 23:55	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	92		50 - 150	09/03/21 04:59	09/10/21 23:55	5
13C4 PFOS	86		50 - 150	09/03/21 04:59	09/10/21 23:55	5

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

**Client Sample ID: 21AKN-MW-101**

**Lab Sample ID: 320-78378-2**

Date Collected: 08/25/21 14:58

Matrix: Water

Date Received: 09/01/21 15:56

**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)	63		1.9	0.56	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluoroheptanoic acid (PFHpA)	29	B	1.9	0.24	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluorooctanoic acid (PFOA)	170	B	1.9	0.82	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluorononanoic acid (PFNA)	1.8	J B	1.9	0.26	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		09/03/21 04:59	09/06/21 20:26	1
Perfluorobutanesulfonic acid (PFBS)	18	B	1.9	0.19	ng/L		09/03/21 04:59	09/06/21 20:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:59	09/06/21 20:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		09/03/21 04:59	09/06/21 20:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:59	09/06/21 20:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.8	1.4	ng/L		09/03/21 04:59	09/06/21 20:26	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		09/03/21 04:59	09/06/21 20:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:59	09/06/21 20:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	68		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C4 PFHpA	59		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C4 PFOA	94		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C5 PFNA	69		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C2 PFDA	90		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C2 PFUnA	77		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C2 PFDoA	98		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C2 PFTeDA	120		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C3 PFBS	60		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C4 PFOS	80		50 - 150	09/03/21 04:59	09/06/21 20:26	1
d3-NMeFOSAA	90		50 - 150	09/03/21 04:59	09/06/21 20:26	1
d5-NEtFOSAA	94		50 - 150	09/03/21 04:59	09/06/21 20:26	1
13C3 HFPO-DA	53		50 - 150	09/03/21 04:59	09/06/21 20:26	1

**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)	370	B	9.6	2.7	ng/L		09/03/21 04:59	09/11/21 00:04	5
Perfluorooctanesulfonic acid (PFOS)	360	B	9.6	2.6	ng/L		09/03/21 04:59	09/11/21 00:04	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	93		50 - 150	09/03/21 04:59	09/11/21 00:04	5
13C4 PFOS	79		50 - 150	09/03/21 04:59	09/11/21 00:04	5

Eurofins TestAmerica, Sacramento



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

**Client Sample ID: 21AKN-MW-02**

**Lab Sample ID: 320-78378-3**

Date Collected: 08/25/21 16:18

Matrix: Water

Date Received: 09/01/21 15:56

**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)	7.7		1.9	0.54	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluoroheptanoic acid (PFHpA)	1.5	J B	1.9	0.23	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorooctanoic acid (PFOA)	35	B	1.9	0.80	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorononanoic acid (PFNA)	0.87	J I B	1.9	0.25	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorobutanesulfonic acid (PFBS)	7.3	B	1.9	0.19	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorohexanesulfonic acid (PFHxS)	200	B	1.9	0.53	ng/L		09/03/21 04:59	09/06/21 20:36	1
Perfluorooctanesulfonic acid (PFOS)	56	B	1.9	0.51	ng/L		09/03/21 04:59	09/06/21 20:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:59	09/06/21 20:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:59	09/06/21 20:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/03/21 04:59	09/06/21 20:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 20:36	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 20:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/03/21 04:59	09/06/21 20:36	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C2 PFHxA	61		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C4 PFHpA	54		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C4 PFOA	96		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C5 PFNA	66		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C2 PFDA	87		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C2 PFUnA	78		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C2 PFDoA	98		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C2 PFTeDA	123		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C3 PFBS	52		50 - 150				09/03/21 04:59	09/06/21 20:36	1
18O2 PFHxS	81		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C4 PFOS	74		50 - 150				09/03/21 04:59	09/06/21 20:36	1
d3-NMeFOSAA	83		50 - 150				09/03/21 04:59	09/06/21 20:36	1
d5-NEtFOSAA	92		50 - 150				09/03/21 04:59	09/06/21 20:36	1
13C3 HFPO-DA	47	*5-	50 - 150				09/03/21 04:59	09/06/21 20:36	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

**Client Sample ID: 21AKN-MW-03**

**Lab Sample ID: 320-78378-4**

Date Collected: 08/25/21 17:20

Matrix: Water

Date Received: 09/01/21 15:56

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	190	B	1.9	0.24	ng/L		09/03/21 04:59	09/06/21 20:45	1
Perfluorooctanoic acid (PFOA)	250	B	1.9	0.80	ng/L		09/03/21 04:59	09/06/21 20:45	1
Perfluorononanoic acid (PFNA)	270	B	1.9	0.25	ng/L		09/03/21 04:59	09/06/21 20:45	1
Perfluorodecanoic acid (PFDA)	0.39	J B	1.9	0.29	ng/L		09/03/21 04:59	09/06/21 20:45	1
Perfluoroundecanoic acid (PFUnA)	2.3		1.9	1.0	ng/L		09/03/21 04:59	09/06/21 20:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		09/03/21 04:59	09/06/21 20:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 20:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		09/03/21 04:59	09/06/21 20:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		09/03/21 04:59	09/06/21 20:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		09/03/21 04:59	09/06/21 20:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		09/03/21 04:59	09/06/21 20:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	3.8	1.4	ng/L		09/03/21 04:59	09/06/21 20:45	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 20:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		09/03/21 04:59	09/06/21 20:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	69		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C4 PFHpA	53		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C4 PFOA	92		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C5 PFNA	71		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C2 PFDA	92		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C2 PFUnA	92		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C2 PFDoA	114		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C2 PFTeDA	137		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C4 PFOS	79		50 - 150	09/03/21 04:59	09/06/21 20:45	1
d3-NMeFOSAA	91		50 - 150	09/03/21 04:59	09/06/21 20:45	1
d5-NEtFOSAA	99		50 - 150	09/03/21 04:59	09/06/21 20:45	1
13C3 HFPO-DA	64		50 - 150	09/03/21 04:59	09/06/21 20:45	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	1300		19	5.5	ng/L		09/03/21 04:59	09/11/21 00:14	10
Perfluorobutanesulfonic acid (PFBS)	390	B	19	1.9	ng/L		09/03/21 04:59	09/11/21 00:14	10
Perfluorohexanesulfonic acid (PFHxS)	2100	B	19	5.4	ng/L		09/03/21 04:59	09/11/21 00:14	10
Perfluorooctanesulfonic acid (PFOS)	800	B	19	5.1	ng/L		09/03/21 04:59	09/11/21 00:14	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	09/03/21 04:59	09/11/21 00:14	10
13C3 PFBS	80		50 - 150	09/03/21 04:59	09/11/21 00:14	10
18O2 PFHxS	97		50 - 150	09/03/21 04:59	09/11/21 00:14	10
13C4 PFOS	78		50 - 150	09/03/21 04:59	09/11/21 00:14	10

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

**Client Sample ID: 21AKN-EB-03**

**Lab Sample ID: 320-78378-5**

Date Collected: 08/25/21 18:00

Matrix: Water

Date Received: 09/01/21 15:56

**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		09/03/21 04:59	09/06/21 20:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		09/03/21 04:59	09/06/21 20:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		09/03/21 04:59	09/06/21 20:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		09/03/21 04:59	09/06/21 20:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		09/03/21 04:59	09/06/21 20:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		09/03/21 04:59	09/06/21 20:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	+	3.7	1.4	ng/L		09/03/21 04:59	09/06/21 20:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		09/03/21 04:59	09/06/21 20:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		09/03/21 04:59	09/06/21 20:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C4 PFHpA	84		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C4 PFOA	94		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C5 PFNA	82		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C2 PFDA	89		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C2 PFUnA	86		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C2 PFDoA	89		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C2 PFTeDA	105		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C3 PFBS	83		50 - 150	09/03/21 04:59	09/06/21 20:55	1
18O2 PFHxS	95		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C4 PFOS	82		50 - 150	09/03/21 04:59	09/06/21 20:55	1
d3-NMeFOSAA	87		50 - 150	09/03/21 04:59	09/06/21 20:55	1
d5-NEtFOSAA	100		50 - 150	09/03/21 04:59	09/06/21 20:55	1
13C3 HFPO-DA	74		50 - 150	09/03/21 04:59	09/06/21 20:55	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## 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)	PFDaA (50-150)	PFTDA (50-150)
320-78378-1	21AKN-MW-01	66	57	92	70	88	81	93	117
320-78378-1 - DL	21AKN-MW-01								
320-78378-2	21AKN-MW-101	68	59	94	69	90	77	98	120
320-78378-2 - DL	21AKN-MW-101								
320-78378-3	21AKN-MW-02	61	54	96	66	87	78	98	123
320-78378-4	21AKN-MW-03	69	53	92	71	92	92	114	137
320-78378-4 - DL	21AKN-MW-03	90							
320-78378-5	21AKN-EB-03	84	84	94	82	89	86	89	105
LCS 320-522308/2-A	Lab Control Sample	83	83	92	83	86	82	91	96
LCSD 320-522308/3-A	Lab Control Sample Dup	77	87	92	76	89	81	91	101
MB 320-522308/1-A	Method Blank	84	90	94	79	89	85	95	102

		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)
320-78378-1	21AKN-MW-01	60		77	81	89	49 *5-
320-78378-1 - DL	21AKN-MW-01		92	86			
320-78378-2	21AKN-MW-101	60		80	90	94	53
320-78378-2 - DL	21AKN-MW-101		93	79			
320-78378-3	21AKN-MW-02	52	81	74	83	92	47 *5-
320-78378-4	21AKN-MW-03			79	91	99	64
320-78378-4 - DL	21AKN-MW-03	80	97	78			
320-78378-5	21AKN-EB-03	83	95	82	87	100	74
LCS 320-522308/2-A	Lab Control Sample	81	94	81	94	98	66
LCSD 320-522308/3-A	Lab Control Sample Dup	77	93	79	92	99	66
MB 320-522308/1-A	Method Blank	73	91	86	93	104	72

### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-522308/1-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluoroheptanoic acid (PFHpA)	0.582	J	2.0	0.25	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorooctanoic acid (PFOA)	0.888	J	2.0	0.85	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorononanoic acid (PFNA)	0.665	J	2.0	0.27	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorodecanoic acid (PFDA)	0.599	J	2.0	0.31	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorobutanesulfonic acid (PFBS)	0.542	J	2.0	0.20	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorohexanesulfonic acid (PFHxS)	0.835	J	2.0	0.57	ng/L		09/03/21 04:59	09/06/21 19:49	1
Perfluorooctanesulfonic acid (PFOS)	0.890	J	2.0	0.54	ng/L		09/03/21 04:59	09/06/21 19:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		09/03/21 04:59	09/06/21 19:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		09/03/21 04:59	09/06/21 19:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.578	J	2.0	0.24	ng/L		09/03/21 04:59	09/06/21 19:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		09/03/21 04:59	09/06/21 19:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0.543	J	2.0	0.32	ng/L		09/03/21 04:59	09/06/21 19:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.556	J	2.0	0.40	ng/L		09/03/21 04:59	09/06/21 19:49	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	84		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C4 PFHpA	90		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C4 PFOA	94		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C5 PFNA	79		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFDA	89		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFUnA	85		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFDoA	95		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C2 PFTeDA	102		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C3 PFBS	73		50 - 150	09/03/21 04:59	09/06/21 19:49	1
18O2 PFHxS	91		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C4 PFOS	86		50 - 150	09/03/21 04:59	09/06/21 19:49	1
d3-NMeFOSAA	93		50 - 150	09/03/21 04:59	09/06/21 19:49	1
d5-NEtFOSAA	104		50 - 150	09/03/21 04:59	09/06/21 19:49	1
13C3 HFPO-DA	72		50 - 150	09/03/21 04:59	09/06/21 19:49	1

**Lab Sample ID: LCS 320-522308/2-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.5		ng/L		96	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	41.7		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.0		ng/L		100	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.8		ng/L		110	69 - 130

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-522308/2-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	39.1		ng/L		98	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.8		ng/L		112	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	42.7		ng/L		107	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.2		ng/L		108	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.4		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	36.3		ng/L		103	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.0		ng/L		99	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.1	40.2		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.2		ng/L		101	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.0		ng/L		105	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	39.1		ng/L		105	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	55.9	*+	ng/L		140	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.7	42.8		ng/L		114	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.5		ng/L		116	81 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	83		50 - 150
13C4 PFHpA	83		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	83		50 - 150
13C2 PFDA	86		50 - 150
13C2 PFUnA	82		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	96		50 - 150
13C3 PFBS	81		50 - 150
18O2 PFHxS	94		50 - 150
13C4 PFOS	81		50 - 150
d3-NMeFOSAA	94		50 - 150
d5-NEtFOSAA	98		50 - 150
13C3 HFPO-DA	66		50 - 150

**Lab Sample ID: LCSD 320-522308/3-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	72 - 129	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.8		ng/L		99	72 - 130	5	30
Perfluorooctanoic acid (PFOA)	40.0	40.8		ng/L		102	71 - 133	2	30

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-522308/3-A**  
**Matrix: Water**  
**Analysis Batch: 522804**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 522308**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	46.7		ng/L		117	69 - 130	6	30
Perfluorodecanoic acid (PFDA)	40.0	38.3		ng/L		96	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	44.1		ng/L		110	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.7		ng/L		112	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	43.1		ng/L		108	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.4	36.4		ng/L		103	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.6		ng/L		100	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	42.0		ng/L		113	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.9		ng/L		105	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.9		ng/L		102	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.3	40.1		ng/L		108	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	53.2	*+	ng/L		133	72 - 132	5	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.7	43.5		ng/L		116	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.7		ng/L		113	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	77		50 - 150
13C4 PFHpA	87		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	76		50 - 150
13C2 PFDA	89		50 - 150
13C2 PFUnA	81		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	101		50 - 150
13C3 PFBS	77		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	79		50 - 150
d3-NMeFOSAA	92		50 - 150
d5-NEtFOSAA	99		50 - 150
13C3 HFPO-DA	66		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## LCMS

### Prep Batch: 522308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78378-1 - DL	21AKN-MW-01	Total/NA	Water	3535	
320-78378-1	21AKN-MW-01	Total/NA	Water	3535	
320-78378-2	21AKN-MW-101	Total/NA	Water	3535	
320-78378-2 - DL	21AKN-MW-101	Total/NA	Water	3535	
320-78378-3	21AKN-MW-02	Total/NA	Water	3535	
320-78378-4	21AKN-MW-03	Total/NA	Water	3535	
320-78378-4 - DL	21AKN-MW-03	Total/NA	Water	3535	
320-78378-5	21AKN-EB-03	Total/NA	Water	3535	
MB 320-522308/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-522308/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-522308/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 522804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78378-1	21AKN-MW-01	Total/NA	Water	EPA 537(Mod)	522308
320-78378-2	21AKN-MW-101	Total/NA	Water	EPA 537(Mod)	522308
320-78378-3	21AKN-MW-02	Total/NA	Water	EPA 537(Mod)	522308
320-78378-4	21AKN-MW-03	Total/NA	Water	EPA 537(Mod)	522308
320-78378-5	21AKN-EB-03	Total/NA	Water	EPA 537(Mod)	522308
MB 320-522308/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	522308
LCS 320-522308/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	522308
LCSD 320-522308/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	522308

### Analysis Batch: 524180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78378-1 - DL	21AKN-MW-01	Total/NA	Water	EPA 537(Mod)	522308
320-78378-2 - DL	21AKN-MW-101	Total/NA	Water	EPA 537(Mod)	522308
320-78378-4 - DL	21AKN-MW-03	Total/NA	Water	EPA 537(Mod)	522308



# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## Client Sample ID: 21AKN-MW-01

## Lab Sample ID: 320-78378-1

Date Collected: 08/25/21 15:08

Matrix: Water

Date Received: 09/01/21 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.2 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 20:17	RS1	TAL SAC
Total/NA	Prep	3535	DL		270.2 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			524180	09/10/21 23:55	K1S	TAL SAC

## Client Sample ID: 21AKN-MW-101

## Lab Sample ID: 320-78378-2

Date Collected: 08/25/21 14:58

Matrix: Water

Date Received: 09/01/21 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.6 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 20:26	RS1	TAL SAC
Total/NA	Prep	3535	DL		260.6 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	5			524180	09/11/21 00:04	K1S	TAL SAC

## Client Sample ID: 21AKN-MW-02

## Lab Sample ID: 320-78378-3

Date Collected: 08/25/21 16:18

Matrix: Water

Date Received: 09/01/21 15:56

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	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 20:36	RS1	TAL SAC

## Client Sample ID: 21AKN-MW-03

## Lab Sample ID: 320-78378-4

Date Collected: 08/25/21 17:20

Matrix: Water

Date Received: 09/01/21 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.7 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 20:45	RS1	TAL SAC
Total/NA	Prep	3535	DL		265.7 mL	10.0 mL	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)	DL	10			524180	09/11/21 00:14	K1S	TAL SAC

## Client Sample ID: 21AKN-EB-03

## Lab Sample ID: 320-78378-5

Date Collected: 08/25/21 18:00

Matrix: Water

Date Received: 09/01/21 15:56

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	522308	09/03/21 04:59	HK	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522804	09/06/21 20:55	RS1	TAL SAC

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

## Laboratory: Eurofins TestAmerica, 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

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# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	TAL SAC TAL 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:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKN PFAS

Job ID: 320-78378-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78378-1	21AKN-MW-01	Water	08/25/21 15:08	09/01/21 15:56
320-78378-2	21AKN-MW-101	Water	08/25/21 14:58	09/01/21 15:56
320-78378-3	21AKN-MW-02	Water	08/25/21 16:18	09/01/21 15:56
320-78378-4	21AKN-MW-03	Water	08/25/21 17:20	09/01/21 15:56
320-78378-5	21AKN-EB-03	Water	08/25/21 18:00	09/01/21 15:56

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2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Laboratory Page 1 of 1  
Attn: Test America  
David Accluctor

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify \_\_\_\_\_

Quote No: \_\_\_\_\_  
 MSA Number: TBD  
 J-Flags:  Yes  No

Total Number of Containers

320-78378 Chain of Custody

08/15/18

Remarks/Matrix  
Composition/Grab?  
Sample Containers

Sample Identity	Lab No.	Time	Date Sampled					
21AKN-HW-01		1508	8/25/21	X				2
21AKN-HW-101		1458		X				2
21AKN-HW-02		1618		X				2
21AKN-HW-03		1720		X				2
21AKN-EP-03		1800		X				2
AKNPW-903		1311	8/27/21	X				2
AKNPW-021		0800	8/30/21	X				2
AKNPW-121		0900		X				2

groundwater

Project Information  
 Number: 102582-011  
 Name: AKN PFAS  
 Contact: MX J  
 Ongoing Project? Yes  No   
 Sampler: VY

Sample Receipt  
 Total No. of Containers: 16  
 COC Seals/Intact? Y/N/NA \_\_\_\_\_  
 Received Good Cond /Cold \_\_\_\_\_  
 Temp: \_\_\_\_\_  
 Delivery Method: goldstreak

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>[Signature]</u> Printed Name: <u>Veselina Jakimova</u> Company: <u>Shannon &amp; Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>1200</u> Date: <u>8/30/21</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: <u>[Signature]</u> Signature: <u>[Signature]</u> Printed Name: <u>David Accluctor</u> Company: _____	Received By: 2. Signature: _____ Printed Name: _____ Company: _____	Received By: 3. Signature: _____ Printed Name: _____ Company: _____
Time: <u>1330</u> Date: <u>8/11/18</u>	Time: _____ Date: _____	Time: _____ Date: _____

Notes: \_\_\_\_\_

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-78378-1

**Login Number: 78378**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Her, David A**

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	1504549
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	



**Laboratory Data Review Checklist**

Completed By:

Michael Jaramillo

Title:

Senior Chemist

Date:

September 28, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-78378-1

Laboratory Report Date:

September 15, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-78378-1

Laboratory Report Date:

September 15, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes 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 ADEC CS approved?

Yes  No  N/A  Comments:

The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:



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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition, and where required, properly preserved and on ice were received 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, etc.?

Yes  No  N/A  Comments:

No discrepancies identified, therefore no documentation needed.

e. Data quality or usability affected?

Comments:

Not applicable, see above.

#### 4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

Some results for samples *2IAKN-MW-01*, *2IAKN-MW-101*, and *2IAKN-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 were within acceptance limits. Data quality and/or usability not affected.

The isotope dilution analyte (IDA) recoveries associated with the following samples are below the method recommended limit: *2IAKN-MW-01* and *2IAKN-MW-02*. 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.c. for details regarding data quality and/or usability, as applicable.

The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit for PFNA in sample *2IAKN-MW-02*. 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.

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The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-522308 and analytical batch 320-522804 recovered outside control limits for the following analytes: HFPO-DA. This analyte was biased high in the LCS and LCSD and was not detected in the associated samples; therefore, the data have been reported. See Section 6.b. for details regarding data quality and/or usability, as applicable.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-522308. Data quality and/or usability not affected.

c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The PFNA in sample 21AKN-MW-02 is considered estimated, biased high, due to the transition mass ratio failure. However, the analyte was also affected by a method blank detection. Refer to Section 6.a. for further assessment.

In addition, the case narrative does not discuss effect on data quality, it only discusses discrepancies and what was done considering them, as applicable. Any notable data quality issues mentioned in the case narrative are discussed above in Section 4.b. or elsewhere within this DEC checklist.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

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d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

Analytical sensitivity was evaluated to verify that reporting limits (RLs) met applicable DEC groundwater cleanup levels for non-detect results, as appropriate. RLs met applicable regulatory levels.

e. Data quality or usability affected?

Not applicable, see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

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ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

No analytes were detected in method blank samples at concentrations exceeding the RL; however, the following PFAS were detected at concentrations below the RL in preparatory batch 320-522308: 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, ADONA, 9-chlorohexadecafluoro-3-oxanonane 1-sulfonic acid, PFBS, PFDA, PFHpA, PFHxS, PFNA, PFOS, and PFOA.

- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, ADONA, and 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid were not detected in any associated project sample. Data qualification not required, and data quality/and for usability not affected.
- PFBS, PFHxS, PFOS, and PFOA were detected greater than ten times the concentration detected in the method blank sample. Data qualification not required, and data quality/and for usability not affected.
- PFDA was detected in sample *2IAKN-MW-3* at a concentration below the RL and less than five-times the concentration detected in the method blank sample. Therefore, the PFDA result for this sample is considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the RL in the analytical tables.
- PFHpA was detected in sample *2IAKN-MW-2* at a concentration below the RL and less than five-times the concentration detected in the method blank sample. Therefore, the PFHpA result for this sample is considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the RL in the analytical tables.
- PFNA was detected in samples *2IAKN-MW-01*, *2IAKN-MW-101*, and *2IAKN-MW-02* at concentrations less than five-times the concentration detected in the method blank sample. Therefore, the PFNA results in these samples are considered not-detected due to potential laboratory cross-contamination and are flagged 'B' at the reported concentration in the analytical tables.

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Yes, 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.

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v. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – 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 – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – 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:

The LCS associated with preparation batch 320-522308 had a high recovery failure for HFPO-DA. HFPO-DA was not detected in any associated project sample. Data qualification not required, and data quality/and for usability not affected.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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:

See above.

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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. Data quality or usability affected? (Use comment box to explain.)

Comments:

See above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Project accuracy and precision were measured via the LCS/LCSD.

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

MS/MSD samples were not reported in this work order.

iv. Precision – 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:

MS/MSD samples were not reported in this work order.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable, see above.

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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. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; 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 – 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:

The IDAs associated with HPFO-DA was recovered low in samples 21AKN-MW-01 and 21AKN-MW-02. HPFO-DA was not detected in the associated project samples and the results are considered estimated with no direction of bias, and have been flagged 'J' in the analytical tables.

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. Data quality or usability affected?

Comments:

See above.

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e. Trip Blanks

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?  
(If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

- v. Data quality or usability affected?

Comments:

Not applicable, see above.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

21AKN-MW-101 was a field duplicate of 21AKN-MW-01.

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:



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iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

Where calculable, analytical results met the comparison criterion ( $\leq 30\%$  for water) for the field duplicate pairs.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Not applicable, see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Decontamination or equipment blank were not required for this project.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

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CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

There were no additional flags/qualifiers required for this work order.

## ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

Laboratory Job ID: 320-78391-1  
Client Project/Site: AKU PFAS

**For:**

Shannon & Wilson, Inc  
2355 Hill Rd.  
Fairbanks, Alaska 99709-5244

Attn: Michael X Jaramillo



---

*Authorized for release by:*  
9/10/2021 9:53:04 AM

David Alltucker, Project Manager I  
(916)374-4383  
[David.Alltucker@Eurofinset.com](mailto:David.Alltucker@Eurofinset.com)

### LINKS

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results through  
**TotalAccess**

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*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
F1	MS and/or MSD recovery exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
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: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

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## Job ID: 320-78391-1

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### Laboratory: Eurofins TestAmerica, Sacramento

#### Narrative

#### Job Narrative 320-78391-1

#### Receipt

The samples were received on 9/2/2021 11:25 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 11.1° C.

#### Receipt Exceptions

Samples were sent to the lab via Alaska Air on the 23rd of August and were to be picked up on the 24th of August. Due to missed internal communication, the samples were not picked up till September 2nd, 2021. samples were out of temperature at 11.1C. 21AKN-SB-04(12.1-12.7) (320-78391-1), 21AKN-SB-04(18.6-19.3) (320-78391-2), 21AKN-SB-04(63.7-64.5) (320-78391-3), 21AKN-SB-04(82-82.6) (320-78391-4) and 21AKN-SB-04(87-87.5) (320-78391-5)

#### LCMS

Method EPA 537(Mod): The laboratory control sample (LCS) for preparation batch 320-522305 and analytical batch 320-522809 recovered outside control limits for the following analytes: Perfluorononanoic acid (PFNA). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method EPA 537(Mod): The laboratory control sample (LCS) for preparation batch 320-522305 and analytical batch 320-522809 recovered outside control limits for the following analytes: Perfluorononanoic acid (PFNA). These analytes were biased high in the LCS and were lower 1/2RL in the associated samples; therefore, the data have been reported.

Method EPA 537(Mod): The matrix spike (MS) recoveries for Perfluorononanoic acid (PFNA) preparation batch 320-522305 and analytical batch 320-522809 were outside control limits. Sample matrix interference is suspected.

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: 21AKN-SB-04(12.1-12.7) (320-78391-1). 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.

#### General Chemistry

Method Moisture: The reference method does not list a specific holding time for this procedure; therefore, the laboratory defaults to an in-house holding time of 14 days. The following samples in 320-522177 were prepared and/or analyzed outside this time period: 21AKN-SB-04(12.1-12.7) (320-78391-1), 21AKN-SB-04(18.6-19.3) (320-78391-2), 21AKN-SB-04(63.7-64.5) (320-78391-3) and 21AKN-SB-04(82-82.6) (320-78391-4).

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

#### Organic Prep

Method SHAKE: The following samples were prepared outside of preparation holding time due to being logged in past holding time: 21AKN-SB-04(12.1-12.7) (320-78391-1), 21AKN-SB-04(18.6-19.3) (320-78391-2), 21AKN-SB-04(63.7-64.5) (320-78391-3) and 21AKN-SB-04(82-82.6) (320-78391-4).  
preparation batch 320-522305

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: AKU PFAS

Job ID: 320-78391-1

## Client Sample ID: 21AKN-SB-04(12.1-12.7)

Lab Sample ID: 320-78391-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	0.060	J H **	0.24	0.026	ug/Kg	1	*	EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.19	J H	0.24	0.058	ug/Kg	1	*	EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.048	J H	0.24	0.035	ug/Kg	1	*	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.5	H	0.24	0.052	ug/Kg	1	*	EPA 537(Mod)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.33	H	0.24	0.028	ug/Kg	1	*	EPA 537(Mod)	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.9	H	0.24	0.058	ug/Kg	1	*	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-04(18.6-19.3)

Lab Sample ID: 320-78391-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.036	J H	0.23	0.033	ug/Kg	1	*	EPA 537(Mod)	Total/NA

## Client Sample ID: 21AKN-SB-04(63.7-64.5)

Lab Sample ID: 320-78391-3

No Detections.

## Client Sample ID: 21AKN-SB-04(82-82.6)

Lab Sample ID: 320-78391-4

No Detections.

## Client Sample ID: 21AKN-SB-04(87-87.5)

Lab Sample ID: 320-78391-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.48		0.21	0.044	ug/Kg	1	*	EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

**Client Sample ID: 21AKN-SB-04(12.1-12.7)**

**Lab Sample ID: 320-78391-1**

Date Collected: 08/17/21 09:45

Matrix: Solid

Date Received: 09/02/21 11:25

Percent Solids: 82.4

**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	H	0.24	0.037	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Perfluoroheptanoic acid (PFHpA)	ND	H	0.24	0.046	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Perfluorooctanoic acid (PFOA)	ND	H	0.24	0.064	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>0.060</b>	<b>J H *+</b>	0.24	0.026	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
<b>Perfluorodecanoic acid (PFDA)</b>	<b>0.19</b>	<b>J H</b>	0.24	0.058	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Perfluoroundecanoic acid (PFUnA)	ND	H	0.24	0.050	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Perfluorododecanoic acid (PFDoA)	ND	H	0.24	0.036	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Perfluorotridecanoic acid (PFTriA)	ND	H	0.24	0.025	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	0.24	0.044	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	0.24	0.046	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.048</b>	<b>J H</b>	0.24	0.035	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>3.5</b>	<b>H</b>	0.24	0.052	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
<b>N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)</b>	<b>0.33</b>	<b>H</b>	0.24	0.028	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
<b>N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)</b>	<b>2.9</b>	<b>H</b>	0.24	0.058	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND	H	0.24	0.042	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	0.24	0.049	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	ND	H	0.24	0.037	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	0.24	0.047	ug/Kg	☼	09/02/21 11:47	09/06/21 23:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	51		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C4 PFHpA	55		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C4 PFOA	63		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C5 PFNA	48	*5-	50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C2 PFDA	54		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C2 PFUnA	51		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C2 PFDoA	57		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C2 PFTeDA	65		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C3 PFBS	51		50 - 150	09/02/21 11:47	09/06/21 23:53	1
18O2 PFHxS	65		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C4 PFOS	52		50 - 150	09/02/21 11:47	09/06/21 23:53	1
d3-NMeFOSAA	51		50 - 150	09/02/21 11:47	09/06/21 23:53	1
d5-NEtFOSAA	60		50 - 150	09/02/21 11:47	09/06/21 23:53	1
13C3 HFPO-DA	43	*5-	50 - 150	09/02/21 11:47	09/06/21 23:53	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>17.6</b>	<b>H H3</b>	0.1	0.1	%			09/02/21 15:00	1
<b>Percent Solids</b>	<b>82.4</b>	<b>H H3</b>	0.1	0.1	%			09/02/21 15:00	1



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

**Client Sample ID: 21AKN-SB-04(18.6-19.3)**

**Lab Sample ID: 320-78391-2**

**Date Collected: 08/17/21 09:50**

**Matrix: Solid**

**Date Received: 09/02/21 11:25**

**Percent Solids: 86.8**

**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	H	0.23	0.035	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluoroheptanoic acid (PFHpA)	ND	H	0.23	0.043	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorooctanoic acid (PFOA)	ND	H	0.23	0.060	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorononanoic acid (PFNA)	ND	H **	0.23	0.025	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorodecanoic acid (PFDA)	ND	H	0.23	0.054	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluoroundecanoic acid (PFUnA)	ND	H	0.23	0.047	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorododecanoic acid (PFDoA)	ND	H	0.23	0.034	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorotridecanoic acid (PFTriA)	ND	H	0.23	0.024	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	0.23	0.042	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	0.23	0.043	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.036</b>	<b>J H</b>	0.23	0.033	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	0.23	0.049	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	0.23	0.026	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	0.23	0.054	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	0.23	0.040	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	0.23	0.046	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	H	0.23	0.035	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	0.23	0.044	ug/Kg	✱	09/02/21 11:47	09/07/21 00:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	63		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C4 PFHpA	69		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C4 PFOA	73		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C5 PFNA	58		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C2 PFDA	70		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C2 PFUnA	66		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C2 PFDoA	71		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C2 PFTeDA	83		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C3 PFBS	61		50 - 150	09/02/21 11:47	09/07/21 00:03	1
18O2 PFHxS	76		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C4 PFOS	69		50 - 150	09/02/21 11:47	09/07/21 00:03	1
d3-NMeFOSAA	76		50 - 150	09/02/21 11:47	09/07/21 00:03	1
d5-NEtFOSAA	84		50 - 150	09/02/21 11:47	09/07/21 00:03	1
13C3 HFPO-DA	57		50 - 150	09/02/21 11:47	09/07/21 00:03	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Moisture</b>	<b>13.2</b>	<b>H H3</b>	0.1	0.1	%			09/02/21 15:00	1
<b>Percent Solids</b>	<b>86.8</b>	<b>H H3</b>	0.1	0.1	%			09/02/21 15:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

**Client Sample ID: 21AKN-SB-04(63.7-64.5)**

**Lab Sample ID: 320-78391-3**

Date Collected: 08/17/21 14:40

Matrix: Solid

Date Received: 09/02/21 11:25

Percent Solids: 88.9

**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	H	0.22	0.035	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluoroheptanoic acid (PFHpA)	ND	H	0.22	0.043	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorooctanoic acid (PFOA)	ND	H	0.22	0.059	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorononanoic acid (PFNA)	ND	H **	0.22	0.025	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorodecanoic acid (PFDA)	ND	H	0.22	0.054	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluoroundecanoic acid (PFUnA)	ND	H	0.22	0.047	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorododecanoic acid (PFDoA)	ND	H	0.22	0.034	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorotridecanoic acid (PFTriA)	ND	H	0.22	0.024	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	0.22	0.042	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	0.22	0.043	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	0.22	0.033	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	0.22	0.048	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	0.22	0.026	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	0.22	0.054	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	0.22	0.039	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	0.22	0.046	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	H	0.22	0.035	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	0.22	0.044	ug/Kg	✱	09/02/21 11:47	09/07/21 00:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	60		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C4 PFHpA	68		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C4 PFOA	70		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C5 PFNA	55		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C2 PFDA	65		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C2 PFUnA	64		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C2 PFDoA	69		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C2 PFTeDA	78		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C3 PFBS	57		50 - 150	09/02/21 11:47	09/07/21 00:12	1
18O2 PFHxS	70		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C4 PFOS	59		50 - 150	09/02/21 11:47	09/07/21 00:12	1
d3-NMeFOSAA	69		50 - 150	09/02/21 11:47	09/07/21 00:12	1
d5-NEtFOSAA	85		50 - 150	09/02/21 11:47	09/07/21 00:12	1
13C3 HFPO-DA	52		50 - 150	09/02/21 11:47	09/07/21 00:12	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	11.1	H H3	0.1	0.1	%			09/02/21 15:00	1
Percent Solids	88.9	H H3	0.1	0.1	%			09/02/21 15:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

**Client Sample ID: 21AKN-SB-04(82-82.6)**

**Lab Sample ID: 320-78391-4**

Date Collected: 08/18/21 10:20

Matrix: Solid

Date Received: 09/02/21 11:25

Percent Solids: 87.0

**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	H	0.22	0.034	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluoroheptanoic acid (PFHpA)	ND	H	0.22	0.042	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorooctanoic acid (PFOA)	ND	H	0.22	0.058	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorononanoic acid (PFNA)	ND	H **	0.22	0.024	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorodecanoic acid (PFDA)	ND	H	0.22	0.053	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluoroundecanoic acid (PFUnA)	ND	H	0.22	0.046	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorododecanoic acid (PFDoA)	ND	H	0.22	0.033	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorotridecanoic acid (PFTriA)	ND	H	0.22	0.023	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	0.22	0.041	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	0.22	0.042	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	0.22	0.032	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	0.22	0.047	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	0.22	0.025	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	0.22	0.053	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	0.22	0.038	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	0.22	0.045	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	H	0.22	0.034	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	0.22	0.043	ug/Kg	☼	09/02/21 11:47	09/07/21 00:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	66		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C4 PFHpA	74		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C4 PFOA	74		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C5 PFNA	63		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C2 PFDA	71		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C2 PFUnA	65		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C2 PFDoA	77		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C2 PFTeDA	86		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C3 PFBS	64		50 - 150	09/02/21 11:47	09/07/21 00:21	1
18O2 PFHxS	77		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C4 PFOS	74		50 - 150	09/02/21 11:47	09/07/21 00:21	1
d3-NMeFOSAA	80		50 - 150	09/02/21 11:47	09/07/21 00:21	1
d5-NEtFOSAA	81		50 - 150	09/02/21 11:47	09/07/21 00:21	1
13C3 HFPO-DA	61		50 - 150	09/02/21 11:47	09/07/21 00:21	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	13.0	H H3	0.1	0.1	%			09/02/21 15:00	1
Percent Solids	87.0	H H3	0.1	0.1	%			09/02/21 15:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

**Client Sample ID: 21AKN-SB-04(87-87.5)**

**Lab Sample ID: 320-78391-5**

Date Collected: 08/19/21 08:30

Matrix: Solid

Date Received: 09/02/21 11:25

Percent Solids: 95.6

**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		0.21	0.032	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluoroheptanoic acid (PFHpA)	ND		0.21	0.039	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorooctanoic acid (PFOA)	ND		0.21	0.054	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorononanoic acid (PFNA)	ND	F1 **	0.21	0.023	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorodecanoic acid (PFDA)	ND		0.21	0.049	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluoroundecanoic acid (PFUnA)	ND		0.21	0.043	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorododecanoic acid (PFDoA)	ND		0.21	0.031	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorotridecanoic acid (PFTriA)	ND		0.21	0.022	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.21	0.038	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.21	0.039	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.21	0.030	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.48</b>		0.21	0.044	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.21	0.024	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.21	0.049	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.21	0.036	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.21	0.042	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		0.21	0.032	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.21	0.040	ug/Kg	✱	09/02/21 11:47	09/07/21 00:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	62		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C4 PFHpA	62		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C4 PFOA	70		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C5 PFNA	60		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C2 PFDA	66		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C2 PFUnA	66		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C2 PFDoA	74		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C2 PFTeDA	81		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C3 PFBS	54		50 - 150	09/02/21 11:47	09/07/21 00:31	1
18O2 PFHxS	69		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C4 PFOS	60		50 - 150	09/02/21 11:47	09/07/21 00:31	1
d3-NMeFOSAA	70		50 - 150	09/02/21 11:47	09/07/21 00:31	1
d5-NEtFOSAA	81		50 - 150	09/02/21 11:47	09/07/21 00:31	1
13C3 HFPO-DA	54		50 - 150	09/02/21 11:47	09/07/21 00:31	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.4		0.1	0.1	%			09/02/21 15:00	1
Percent Solids	95.6		0.1	0.1	%			09/02/21 15:00	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Solid

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)
320-78391-1	21AKN-SB-04(12.1-12.7)	51	55	63	48 *5-	54	51	57	65
320-78391-2	21AKN-SB-04(18.6-19.3)	63	69	73	58	70	66	71	83
320-78391-3	21AKN-SB-04(63.7-64.5)	60	68	70	55	65	64	69	78
320-78391-4	21AKN-SB-04(82-82.6)	66	74	74	63	71	65	77	86
320-78391-5	21AKN-SB-04(87-87.5)	62	62	70	60	66	66	74	81
320-78391-5 MS	21AKN-SB-04(87-87.5)	65	69	72	61	67	66	74	81
320-78391-5 MSD	21AKN-SB-04(87-87.5)	59	66	69	56	66	63	70	79
LCS 320-522305/2-A	Lab Control Sample	63	69	69	53	60	60	70	73
MB 320-522305/1-A	Method Blank	61	68	66	56	61	63	70	74

### 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)
320-78391-1	21AKN-SB-04(12.1-12.7)	51	65	52	51	60	43 *5-
320-78391-2	21AKN-SB-04(18.6-19.3)	61	76	69	76	84	57
320-78391-3	21AKN-SB-04(63.7-64.5)	57	70	59	69	85	52
320-78391-4	21AKN-SB-04(82-82.6)	64	77	74	80	81	61
320-78391-5	21AKN-SB-04(87-87.5)	54	69	60	70	81	54
320-78391-5 MS	21AKN-SB-04(87-87.5)	60	72	65	73	85	54
320-78391-5 MSD	21AKN-SB-04(87-87.5)	58	69	62	71	80	56
LCS 320-522305/2-A	Lab Control Sample	59	68	57	72	75	51
MB 320-522305/1-A	Method Blank	59	73	64	71	81	52

#### 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

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-522305/1-A**  
**Matrix: Solid**  
**Analysis Batch: 522809**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 522305**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.031	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.038	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.053	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.022	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.048	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.042	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.030	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.021	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.037	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.038	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.029	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.043	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.023	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.048	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.035	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.041	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.031	ug/Kg		09/02/21 11:47	09/06/21 23:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.039	ug/Kg		09/02/21 11:47	09/06/21 23:34	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	61		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C4 PFHpA	68		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C4 PFOA	66		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C5 PFNA	56		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C2 PFDA	61		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C2 PFUnA	63		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C2 PFDoA	70		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C2 PFTeDA	74		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C3 PFBS	59		50 - 150	09/02/21 11:47	09/06/21 23:34	1
18O2 PFHxS	73		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C4 PFOS	64		50 - 150	09/02/21 11:47	09/06/21 23:34	1
d3-NMeFOSAA	71		50 - 150	09/02/21 11:47	09/06/21 23:34	1
d5-NEtFOSAA	81		50 - 150	09/02/21 11:47	09/06/21 23:34	1
13C3 HFPO-DA	52		50 - 150	09/02/21 11:47	09/06/21 23:34	1

**Lab Sample ID: LCS 320-522305/2-A**  
**Matrix: Solid**  
**Analysis Batch: 522809**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522305**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	2.00	1.92		ug/Kg		96	70 - 132
Perfluoroheptanoic acid (PFHpA)	2.00	1.89		ug/Kg		94	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	2.20		ug/Kg		110	69 - 133
Perfluorononanoic acid (PFNA)	2.00	2.75	*+	ug/Kg		138	72 - 129

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-522305/2-A**  
**Matrix: Solid**  
**Analysis Batch: 522809**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 522305**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	2.00	2.29		ug/Kg		114	69 - 133
Perfluoroundecanoic acid (PFUnA)	2.00	2.23		ug/Kg		111	64 - 136
Perfluorododecanoic acid (PFDoA)	2.00	2.15		ug/Kg		107	69 - 135
Perfluorotridecanoic acid (PFTriA)	2.00	2.29		ug/Kg		114	66 - 139
Perfluorotetradecanoic acid (PFTeA)	2.00	2.21		ug/Kg		111	69 - 133
Perfluorobutanesulfonic acid (PFBS)	1.77	2.05		ug/Kg		116	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	1.82	2.05		ug/Kg		113	67 - 130
Perfluorooctanesulfonic acid (PFOS)	1.86	2.22		ug/Kg		120	68 - 136
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	2.00	2.09		ug/Kg		104	63 - 144
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	2.00	2.02		ug/Kg		101	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.86	2.19		ug/Kg		117	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.66		ug/Kg		133	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.88	2.46		ug/Kg		130	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.58		ug/Kg		137	79 - 139

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	63		50 - 150
13C4 PFHpA	69		50 - 150
13C4 PFOA	69		50 - 150
13C5 PFNA	53		50 - 150
13C2 PFDA	60		50 - 150
13C2 PFUnA	60		50 - 150
13C2 PFDoA	70		50 - 150
13C2 PFTeDA	73		50 - 150
13C3 PFBS	59		50 - 150
18O2 PFHxS	68		50 - 150
13C4 PFOS	57		50 - 150
d3-NMeFOSAA	72		50 - 150
d5-NEtFOSAA	75		50 - 150
13C3 HFPO-DA	51		50 - 150

**Lab Sample ID: 320-78391-5 MS**  
**Matrix: Solid**  
**Analysis Batch: 522809**

**Client Sample ID: 21AKN-SB-04(87-87.5)**  
**Prep Type: Total/NA**  
**Prep Batch: 522305**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	ND		1.90	1.86		ug/Kg	☼	98	70 - 132
Perfluoroheptanoic acid (PFHpA)	ND		1.90	1.91		ug/Kg	☼	100	71 - 131
Perfluorooctanoic acid (PFOA)	ND		1.90	2.20		ug/Kg	☼	116	69 - 133

Eurofins TestAmerica, Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-78391-5 MS**

**Client Sample ID: 21AKN-SB-04(87-87.5)**

**Matrix: Solid**

**Prep Type: Total/NA**

**Analysis Batch: 522809**

**Prep Batch: 522305**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Perfluorononanoic acid (PFNA)	ND	F1 *+	1.90	2.43		ug/Kg	⊛	128	72 - 129	
Perfluorodecanoic acid (PFDA)	ND		1.90	2.06		ug/Kg	⊛	108	69 - 133	
Perfluoroundecanoic acid (PFUnA)	ND		1.90	2.18		ug/Kg	⊛	115	64 - 136	
Perfluorododecanoic acid (PFDoA)	ND		1.90	2.05		ug/Kg	⊛	108	69 - 135	
Perfluorotridecanoic acid (PFTriA)	ND		1.90	2.18		ug/Kg	⊛	115	66 - 139	
Perfluorotetradecanoic acid (PFTeA)	ND		1.90	2.09		ug/Kg	⊛	110	69 - 133	
Perfluorobutanesulfonic acid (PFBS)	ND		1.68	2.03		ug/Kg	⊛	121	72 - 128	
Perfluorohexanesulfonic acid (PFHxS)	ND		1.73	1.89		ug/Kg	⊛	109	67 - 130	
Perfluorooctanesulfonic acid (PFOS)	0.48		1.76	1.99		ug/Kg	⊛	85	68 - 136	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.90	2.16		ug/Kg	⊛	114	63 - 144	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.90	2.15		ug/Kg	⊛	113	61 - 139	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.77	2.04		ug/Kg	⊛	115	75 - 135	
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.90	2.53		ug/Kg	⊛	133	77 - 137	
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.79	2.18		ug/Kg	⊛	122	76 - 136	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.79	2.29		ug/Kg	⊛	128	79 - 139	

Isotope Dilution	MS	MS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	65		50 - 150
13C4 PFHpA	69		50 - 150
13C4 PFOA	72		50 - 150
13C5 PFNA	61		50 - 150
13C2 PFDA	67		50 - 150
13C2 PFUnA	66		50 - 150
13C2 PFDoA	74		50 - 150
13C2 PFTeDA	81		50 - 150
13C3 PFBS	60		50 - 150
18O2 PFHxS	72		50 - 150
13C4 PFOS	65		50 - 150
d3-NMeFOSAA	73		50 - 150
d5-NEtFOSAA	85		50 - 150
13C3 HFPO-DA	54		50 - 150

**Lab Sample ID: 320-78391-5 MSD**

**Client Sample ID: 21AKN-SB-04(87-87.5)**

**Matrix: Solid**

**Prep Type: Total/NA**

**Analysis Batch: 522809**

**Prep Batch: 522305**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.09	2.13		ug/Kg	⊛	102	70 - 132	13	30	
Perfluoroheptanoic acid (PFHpA)	ND		2.09	2.24		ug/Kg	⊛	107	71 - 131	16	30	

Eurofins TestAmerica, Sacramento



# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-78391-5 MSD**

**Client Sample ID: 21AKN-SB-04(87-87.5)**

**Matrix: Solid**

**Prep Type: Total/NA**

**Analysis Batch: 522809**

**Prep Batch: 522305**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
	Result	Qualifier	Added	Result	Qualifier						
Perfluorooctanoic acid (PFOA)	ND		2.09	2.33		ug/Kg	⊛	111	69 - 133	6	30
Perfluorononanoic acid (PFNA)	ND	F1 *+	2.09	2.71	F1	ug/Kg	⊛	130	72 - 129	11	30
Perfluorodecanoic acid (PFDA)	ND		2.09	2.28		ug/Kg	⊛	109	69 - 133	10	30
Perfluoroundecanoic acid (PFUnA)	ND		2.09	2.42		ug/Kg	⊛	116	64 - 136	10	30
Perfluorododecanoic acid (PFDoA)	ND		2.09	2.32		ug/Kg	⊛	111	69 - 135	12	30
Perfluorotridecanoic acid (PFTriA)	ND		2.09	2.41		ug/Kg	⊛	115	66 - 139	10	30
Perfluorotetradecanoic acid (PFTeA)	ND		2.09	2.16		ug/Kg	⊛	103	69 - 133	3	30
Perfluorobutanesulfonic acid (PFBS)	ND		1.85	2.01		ug/Kg	⊛	109	72 - 128	1	30
Perfluorohexanesulfonic acid (PFHxS)	ND		1.90	2.17		ug/Kg	⊛	114	67 - 130	14	30
Perfluorooctanesulfonic acid (PFOS)	0.48		1.94	2.13		ug/Kg	⊛	85	68 - 136	7	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.09	2.16		ug/Kg	⊛	103	63 - 144	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.09	2.27		ug/Kg	⊛	109	61 - 139	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.95	2.08		ug/Kg	⊛	107	75 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.09	2.78		ug/Kg	⊛	133	77 - 137	9	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.97	2.41		ug/Kg	⊛	122	76 - 136	10	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.97	2.48		ug/Kg	⊛	126	79 - 139	8	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	59		50 - 150
13C4 PFHpA	66		50 - 150
13C4 PFOA	69		50 - 150
13C5 PFNA	56		50 - 150
13C2 PFDA	66		50 - 150
13C2 PFUnA	63		50 - 150
13C2 PFDoA	70		50 - 150
13C2 PFTeDA	79		50 - 150
13C3 PFBS	58		50 - 150
18O2 PFHxS	69		50 - 150
13C4 PFOS	62		50 - 150
d3-NMeFOSAA	71		50 - 150
d5-NEtFOSAA	80		50 - 150
13C3 HFPO-DA	56		50 - 150

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Method: D 2216 - Percent Moisture

Lab Sample ID: 320-78391-1 DU

Matrix: Solid

Analysis Batch: 522177

Client Sample ID: 21AKN-SB-04(12.1-12.7)

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	17.6	H H3	18.4		%		4	20
Percent Solids	82.4	H H3	81.6		%		0.9	20

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# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AKU PFAS

Job ID: 320-78391-1

## LCMS

### Prep Batch: 522305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78391-1	21AKN-SB-04(12.1-12.7)	Total/NA	Solid	SHAKE	
320-78391-2	21AKN-SB-04(18.6-19.3)	Total/NA	Solid	SHAKE	
320-78391-3	21AKN-SB-04(63.7-64.5)	Total/NA	Solid	SHAKE	
320-78391-4	21AKN-SB-04(82-82.6)	Total/NA	Solid	SHAKE	
320-78391-5	21AKN-SB-04(87-87.5)	Total/NA	Solid	SHAKE	
MB 320-522305/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-522305/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-78391-5 MS	21AKN-SB-04(87-87.5)	Total/NA	Solid	SHAKE	
320-78391-5 MSD	21AKN-SB-04(87-87.5)	Total/NA	Solid	SHAKE	

### Analysis Batch: 522809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78391-1	21AKN-SB-04(12.1-12.7)	Total/NA	Solid	EPA 537(Mod)	522305
320-78391-2	21AKN-SB-04(18.6-19.3)	Total/NA	Solid	EPA 537(Mod)	522305
320-78391-3	21AKN-SB-04(63.7-64.5)	Total/NA	Solid	EPA 537(Mod)	522305
320-78391-4	21AKN-SB-04(82-82.6)	Total/NA	Solid	EPA 537(Mod)	522305
320-78391-5	21AKN-SB-04(87-87.5)	Total/NA	Solid	EPA 537(Mod)	522305
MB 320-522305/1-A	Method Blank	Total/NA	Solid	EPA 537(Mod)	522305
LCS 320-522305/2-A	Lab Control Sample	Total/NA	Solid	EPA 537(Mod)	522305
320-78391-5 MS	21AKN-SB-04(87-87.5)	Total/NA	Solid	EPA 537(Mod)	522305
320-78391-5 MSD	21AKN-SB-04(87-87.5)	Total/NA	Solid	EPA 537(Mod)	522305

## General Chemistry

### Analysis Batch: 522177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78391-1	21AKN-SB-04(12.1-12.7)	Total/NA	Solid	D 2216	
320-78391-2	21AKN-SB-04(18.6-19.3)	Total/NA	Solid	D 2216	
320-78391-3	21AKN-SB-04(63.7-64.5)	Total/NA	Solid	D 2216	
320-78391-4	21AKN-SB-04(82-82.6)	Total/NA	Solid	D 2216	
320-78391-5	21AKN-SB-04(87-87.5)	Total/NA	Solid	D 2216	
320-78391-1 DU	21AKN-SB-04(12.1-12.7)	Total/NA	Solid	D 2216	

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

**Client Sample ID: 21AKN-SB-04(12.1-12.7)**

**Lab Sample ID: 320-78391-1**

Date Collected: 08/17/21 09:45

Matrix: Solid

Date Received: 09/02/21 11:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522177	09/02/21 15:00	TCS	TAL SAC

**Client Sample ID: 21AKN-SB-04(12.1-12.7)**

**Lab Sample ID: 320-78391-1**

Date Collected: 08/17/21 09:45

Matrix: Solid

Date Received: 09/02/21 11:25

Percent Solids: 82.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.05 g	10.0 mL	522305	09/02/21 11:47	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522809	09/06/21 23:53	S1M	TAL SAC

**Client Sample ID: 21AKN-SB-04(18.6-19.3)**

**Lab Sample ID: 320-78391-2**

Date Collected: 08/17/21 09:50

Matrix: Solid

Date Received: 09/02/21 11:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522177	09/02/21 15:00	TCS	TAL SAC

**Client Sample ID: 21AKN-SB-04(18.6-19.3)**

**Lab Sample ID: 320-78391-2**

Date Collected: 08/17/21 09:50

Matrix: Solid

Date Received: 09/02/21 11:25

Percent Solids: 86.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.10 g	10.0 mL	522305	09/02/21 11:47	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522809	09/07/21 00:03	S1M	TAL SAC

**Client Sample ID: 21AKN-SB-04(63.7-64.5)**

**Lab Sample ID: 320-78391-3**

Date Collected: 08/17/21 14:40

Matrix: Solid

Date Received: 09/02/21 11:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522177	09/02/21 15:00	TCS	TAL SAC

**Client Sample ID: 21AKN-SB-04(63.7-64.5)**

**Lab Sample ID: 320-78391-3**

Date Collected: 08/17/21 14:40

Matrix: Solid

Date Received: 09/02/21 11:25

Percent Solids: 88.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.01 g	10.0 mL	522305	09/02/21 11:47	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522809	09/07/21 00:12	S1M	TAL SAC

**Client Sample ID: 21AKN-SB-04(82-82.6)**

**Lab Sample ID: 320-78391-4**

Date Collected: 08/18/21 10:20

Matrix: Solid

Date Received: 09/02/21 11:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522177	09/02/21 15:00	TCS	TAL SAC

Eurofins TestAmerica, Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: AKU PFAS

Job ID: 320-78391-1

**Client Sample ID: 21AKN-SB-04(82-82.6)**

**Lab Sample ID: 320-78391-4**

**Date Collected: 08/18/21 10:20**

**Matrix: Solid**

**Date Received: 09/02/21 11:25**

**Percent Solids: 87.0**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.25 g	10.0 mL	522305	09/02/21 11:47	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522809	09/07/21 00:21	S1M	TAL SAC

**Client Sample ID: 21AKN-SB-04(87-87.5)**

**Lab Sample ID: 320-78391-5**

**Date Collected: 08/19/21 08:30**

**Matrix: Solid**

**Date Received: 09/02/21 11:25**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			522177	09/02/21 15:00	TCS	TAL SAC

**Client Sample ID: 21AKN-SB-04(87-87.5)**

**Lab Sample ID: 320-78391-5**

**Date Collected: 08/19/21 08:30**

**Matrix: Solid**

**Date Received: 09/02/21 11:25**

**Percent Solids: 95.6**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.10 g	10.0 mL	522305	09/02/21 11:47	FX	TAL SAC
Total/NA	Analysis	EPA 537(Mod)		1			522809	09/07/21 00:31	S1M	TAL SAC

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

## Laboratory: Eurofins TestAmerica, Sacramento

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

<u>Authority</u>	<u>Program</u>	<u>Identification Number</u>	<u>Expiration Date</u>
Alaska (UST)	State	17-020	02-20-24

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.

<u>Analysis Method</u>	<u>Prep Method</u>	<u>Matrix</u>	<u>Analyte</u>
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids



# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

**Protocol References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AKU PFAS

Job ID: 320-78391-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78391-1	21AKN-SB-04(12.1-12.7)	Solid	08/17/21 09:45	09/02/21 11:25
320-78391-2	21AKN-SB-04(18.6-19.3)	Solid	08/17/21 09:50	09/02/21 11:25
320-78391-3	21AKN-SB-04(63.7-64.5)	Solid	08/17/21 14:40	09/02/21 11:25
320-78391-4	21AKN-SB-04(82-82.6)	Solid	08/18/21 10:20	09/02/21 11:25
320-78391-5	21AKN-SB-04(87-87.5)	Solid	08/19/21 08:30	09/02/21 11:25

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# CHAIN-OF-CUSTODY RECORD

Page 1 of 1  
 Laboratory Test America  
 Attn: David Ackicker

Analytical Methods (include preservative if used)

Turn Around Time:  
 Normal  Rush  
 Please Specify

Quote No:  
 MSA Number: TBD  
 J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix Composition/Grab? Sample Containers	Total Number of Containers
21AKN-SB-04(12.1'-12.7')	0945	8/17/21	X		1 Soie
21AKN-SB-04(18.6'-19.3')	0950	↓	X		1
21AKN-SB-04(63.7'-64.5')	1440	↓	X		1
21AKN-SB-04(82'-82.6')	1020	8/18/21	X		1
21AKN-SB-04(87'-87.5')	0830	8/19/21	X		1



**Project Information**  
 Number: 102582-011  
 Name: AKU PFAS  
 Contact: MXS  
 Ongoing Project? Yes  No   
 Sampler: VTY, JLD

**Sample Receipt**  
 Total No. of Containers: 5  
 COC Seals/Intact? Y/N/NA  
 Received Good Cond./Cold  
 Temp:  
 Delivery Method: goldstreak

**Notes:**  
11.10c

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

Relinquished By:	Relinquished By:	Relinquished By:
Signature: <u>[Signature]</u> Printed Name: <u>Veselina Satimova</u> Company: <u>Shannon &amp; Wilson</u>	Signature: _____ Printed Name: _____ Company: _____	Signature: _____ Printed Name: _____ Company: _____
Time: <u>0900</u> Date: <u>8/17/21</u>	Time: _____ Date: _____	Time: _____ Date: _____
Received By: <u>[Signature]</u> Printed Name: <u>[Signature]</u> Company: <u>[Signature]</u>	Received By: _____ Printed Name: _____ Company: _____	Received By: _____ Printed Name: _____ Company: _____
Time: <u>11:25</u> Date: <u>9/17/21</u>	Time: _____ Date: _____	Time: _____ Date: _____



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-78391-1

**Login Number: 78391**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 1**

**Creator: Alltucker, David R**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1519061
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.	False	Cooler temperature outside required temperature criteria.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Laboratory Data Review Checklist

Completed By:

Michael Jaramillo

Title:

Senior Chemist

Date:

September 23, 2021

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

Eurofins / TestAmerica Laboratories, Inc. (TestAmerica)

Laboratory Report Number:

320-78391-1

Laboratory Report Date:

September 10, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

ADEC File Number:

2569.38.033

Hazard Identification Number:

26981

320-78391-1

Laboratory Report Date:

September 10, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A  Comments:

The DEC certified TestAmerica of West Sacramento, CA for the analysis of per- and polyfluorinated alkyl substances (PFAS) on February 11, 2021 by LCMSMS compliant with QSM Version 5.3 Table B-15. These reported analytes 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 ADEC CS approved?

Yes  No  N/A  Comments:

Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A  Comments:

b. Correct analyses requested?

Yes  No  N/A  Comments:

320-78391-1

Laboratory Report Date:

September 10, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A  Comments:

Shannon & Wilson notified Eurofins TestAmerica that the samples were shipped to the laboratory via Alaska Air on August 23, 2021. The project samples were scheduled to be picked up August 24, 2021. However, due to an internal laboratory missed communication, the samples were not picked up until September 2, 2021 and the cooler temperature was received at 11.1 °C.

Due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the high cooler temperature. In an e-mail dated August 3, 2015, one of the DEC project managers noted that he had spoken with their chemist, who "agrees the high temperature probably would not affect the PFC results." PFAS are also known as PFCs.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes  No  N/A  Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes  No  N/A  Comments:

The sample receipt form notes that the samples arrived in good condition, and where required, properly preserved and on ice were received 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, etc.?

Yes  No  N/A  Comments:

Refer to Section 3.a. for assessment of temperature exceedance.

e. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

320-78391-1

Laboratory Report Date:

September 10, 2021

CS Site Name:

ADOT&PF King Salmon Airport Statewide PFAS

4. Case Narrative

a. Present and understandable?

Yes  No  N/A  Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A  Comments:

As mentioned in Section 3.a., Shannon & Wilson notified Eurofins TestAmerica that the samples were shipped to the laboratory via Alaska Air on August 23, 2021. The project samples were scheduled to be picked up August 24, 2021. However, due to an internal laboratory missed communication, the samples were not picked up until September 2, 2021 and the cooler temperature was received at 11.1 °C. Refer to Section 3.a. for further assessment.

The laboratory control sample (LCS) associated with preparation batch 320-522305 had a high recovery failure for perfluorononanoic acid (PFNA). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported. Refer to Section 6.b. for further assessment.

The laboratory control sample (LCS) for preparation batch 320-522305 and analytical batch 320-522809 recovered outside control limits for the following analytes: PFNA. These analytes were biased high in the LCS and were lower 1/2RL in the associated samples; therefore, the data have been reported. Refer to Section 6.b. for further assessment.

The matrix spike (MS) recovery for PFNA associated with preparation batch 320-522305 was outside control limits. Sample matrix interference is suspected. Refer to Section 6.c. for further assessment.

The isotope dilution analyte (IDA) recovery associated with sample *21AKN-SB-04(12.1-12.7)* was outside control limits. 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. Refer to Section 6.d. for further assessment.

The following samples were prepared outside of preparation holding time due to being logged in past holding time: *21AKN-SB-04(12.1-12.7)*, *21AKN-SB 04(18.6-19.3)*, *21AKN-SB-04(63.7-64.5)* and *21AKN-SB-04(82-82.6)* for preparation batch 320-522305. The reference method does not list a specific holding time for this procedure; therefore, the laboratory defaults to an in-house holding time of 14 days. Due to a laboratory error, samples *21AKN-SB-04(12.1-12.7)*, *21AKN-SB-04(18.6-19.3)*, *21AKN-SB-04(63.7-64.5)*, and *21AKN-SB-04(82-82.6)* were prepared outside the recommended hold time. Refer to Section 5.b. for further assessment.

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c. Were all corrective actions documented?

Yes  No  N/A  Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Case narrative does not discuss effect on data quality, it only discusses discrepancies and what was done considering them, as applicable. Any notable data quality issues mentioned in the case narrative are discussed above in Section 4.b. or elsewhere within this DEC checklist.

## 5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes  No  N/A  Comments:

b. All applicable holding times met?

Yes  No  N/A  Comments:

As mentioned in Section 3.a., Shannon & Wilson notified Eurofins TestAmerica that the samples were shipped to the laboratory via Alaska Air on August 23, 2021. The project samples were scheduled to be picked up August 24, 2021. However, due to an internal laboratory missed communication, the samples were not picked up until September 2, 2021 and the cooler temperature was received at 11.1 °C and outside of the method recognized hold time for samples 21AKN-SB-04(12.1-12.7), 21AKN-SB-04(18.6-19.3), 21AKN-SB-04(63.7-64.5), and 21AKN-SB-04(82-82.6).

Per discussions with DEC, PFAS analytes analyzed outside of hold time will be marked as tentatively identified and not rejected due to the high chemical and biological stability of these analytes. In addition, the reported results are comparable to historical results for the sampled locations. The results of each PFAS in samples 21AKN-SB-04(12.1-12.7), 21AKN-SB-04(18.6-19.3), 21AKN-SB-04(63.7-64.5), and 21AKN-SB-04(82-82.6) are flagged with an "N" in the analytical database.

c. All soils reported on a dry weight basis?

Yes  No  N/A  Comments:

Soil samples were not submitted with this work order.

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d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes  No  N/A  Comments:

Analytical sensitivity was evaluated to verify that reporting limits (RLs) met applicable DEC groundwater cleanup levels for non-detect results, as appropriate. RLs met applicable regulatory levels.

e. Data quality or usability affected?

Not applicable, see above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes  No  N/A  Comments:

iii. If above LOQ or project specified objectives, 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?

Comments:

Not applicable, see above.



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b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – 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 – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

- iii. Accuracy – 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:

The LCS associated with preparation batch 320-522305 had a high recovery failure for PFNA. PFNA was not detected in the samples associated with preparation batch 320-522305, except for 21AKN-SB-04(12.1-12.7). However, the results for 21AKN-SB-04(12.1-12.7) were previously qualified due to a hold time exceedance. Further qualification is not required.

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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:

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.

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vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality and/or usability was not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A  Comments:

Metals and/or inorganics were not analyzed as part of this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A  Comments:

The MSD recovery for PFNA was outside acceptance criteria, biased high, for the MSD associated with parent sample 21AKN-SB-04(87-87.5). PFNA was not detected in the project sample, data qualification not required, and data quality/and for usability not affected.

iv. Precision – 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.

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vii. Data quality or usability affected? (Use comment box to explain.)

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 – 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:

The IDAs percent recoveries for PFNA and HFPO-DA were below the QC criteria in sample 21AKN-SB-04(12.1-12.7). However, the results for 21AKN-SB-04(12.1-12.7) was previously qualified due to a hold time exceedance. Further qualification is not required.

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. Data quality or usability affected?

Comments:

The data quality and/or usability was not affected; see above.

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes  No  N/A  Comments:

PFAS are not volatile compounds. A trip blank is not required for the requested analysis.

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- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?  
(If not, a comment explaining why must be entered below)

Yes  No  N/A  Comments:

See above.

- iii. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

- iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

- v. Data quality or usability affected?

Comments:

Not applicable, see above.

f. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A  Comments:

A field duplicate was not provided with this work order. However, field duplicates were reported at the required frequency for the overall project.

- ii. Submitted blind to lab?

Yes  No  N/A  Comments:

See above.

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iii. Precision – All relative percent differences (RPD) less than specified project objectives?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes  No  N/A  Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and usability were not affected; see above.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes  No  N/A  Comments:

Decontamination or equipment blank were not required for this project.

i. All results less than LOQ and project specified objectives?

Yes  No  N/A  Comments:

See above.

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Not applicable, see above.

iii. Data quality or usability affected?

Comments:

Not applicable, see above.

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7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes  No  N/A       Comments:

There were no additional flags/qualifiers required for this work order.

Appendix D

# QA/QC Summary

## CONTENTS

- Quality assurance/quality control (QA/QC) summary

## OVERVIEW

QC/QA procedures assist in producing data of acceptable quality and reliability. We reviewed the analytical results for laboratory QC samples and conducted our own QA assessment for this project. We reviewed the chain-of-custody records and laboratory receipt forms to check that custody was not breached, sample-holding times were met, and the samples were kept chilled (between 0 degrees Celsius [°C] and 6 °C) during shipping. Our QA-review procedures allowed us to document the accuracy and precision of the analytical data, as well as check that the analyses were sufficiently sensitive to detect analytes at levels below regulatory standards.

Laboratory QC procedures included evaluating surrogate recovery, performing continuing calibration checks, and analyzing method blanks, laboratory control samples (LCS), and matrix spikes (MS) to assess accuracy and precision. LCS, LCS duplicate (LCSD), MS, MS duplicate (MSD), and surrogate recovery analyses were performed to evaluate the accuracy of the analytical process. Analytical precision was assessed by comparing the results of duplicate analyses performed on LCS/LCSD, MS/MSD, and duplicate-sample pairs.

QC procedures in the field included using single-use equipment where available, to reduce the potential for sample cross-contamination. We used a new, clean pair of nitrile gloves when sampling at each monitoring well. The laboratory reports contain a case narrative and forms documenting sample-receipt conditions. Details regarding the results of our QA review are presented below.

Refer to the SGS laboratory reports 1215191 and 1215513 and the TestAmerica laboratory reports 320-77653-1, 320-77655-1, 320-78371-1, 320-78376-1, 320-78378-1, and 320-78391-1 and corresponding DEC Laboratory Data Review Checklist for details (Appendix C).

## SAMPLE HANDLING

Samples were shipped from King Salmon on August 16, 23, 26, 30, and 31 to the SGS laboratory in Anchorage, Alaska, and TestAmerica laboratories in West Sacramento, California. The samples were received in good condition at the laboratory and within the acceptable temperature range of 0 °C to 6 °C, with the exception of WO 320-78391-1. Due to an internal laboratory miscommunication, samples associated with WO 320-78391-1 were picked up over a week later than scheduled and were outside of temperature requirements and the hold time. However, due to the high chemical and biological stability of PFAS, it is unlikely the integrity of the project samples was adversely affected by the temperature exceedance; therefore, the results are considered unaffected by the temperature exceedance. Due to the hold time exceedance PFAS analytes in project samples 21AKN-SB-04(12.1-12.7),



21AKN-SB-04(18.6-19.3), 21AKN-SB-04(63.7-64.5), and 21AKN-SB-04(82-82.6) are considered tentatively identified or unidentified and are flagged “N” in the analytical table. Refer to the LDRC and Appendix C for details. We completed chain-of-custody form, which were signed upon release and receipt. The project samples were then shipped to the SGS laboratory in Anchorage and the TestAmerica laboratory in West Sacramento and analyzed for the concentrations of project specific analytes.

Additional minor discrepancies were observed that did not affect the laboratory data. Refer to the LDRCs for additional details.

## ANALYTICAL SENSITIVITY

The laboratory’s detection limit (DL) is the lowest analyte concentration that can be measured. The laboratory’s LOQ or reporting limit (RL) is the lowest analyte concentration that can be routinely measured in the sampled matrix with confidence, the point at which a concentration is considered quantitative. Sample matrix, instrument performance, sample dilutions, and other factors may affect the DL and LOQ/RL. Analytes may be present in samples at concentrations below the reporting limits. In cases where analytes were not detected at concentrations above their DL, the analytical results are presented in our data-summary tables with reference to their LODs or RLs. For example, a sample that does not contain an analyte at a concentration greater than its DL and has an LOD of 1.5 would be tabulated as “<1.5,” where “<” indicates the analyte was not detected above the DL. If the analyte is detected between the DL and the LOQ/RL, its concentration is considered an estimate; in our tables, this value is flagged with a ‘J’. The flag is applied by the laboratory.

Laboratory LODs/RLs for the sampled analytes in the August 2021 sampling event were adequate for report preparation and data analysis (below the proposed project-specific sensitivity [DQOs]). Laboratory LODs/RLs were below project-specified sensitivity limits, where applicable for non-detect results.

The transition mass ratios in several samples associate with the TestAmerica WOs 320-77655-1 and 320-78376-1 were outside QC criteria; however, analyst judgement was used to positively identify the analyte. Analytes affected by this failure were identified by the lab and are considered estimated, with a high bias, and flagged accordingly. Refer to the LDRCs for details.

To evaluate the potential for cross-contamination between samples or introduction of contamination from an outside source, laboratory-supplied trip blanks were carried with the VOC samples in their cooler during sampling and shipping. A trip blank was analyzed as part of this sampling event for VOCs. The project analytes were not detected in the trip

blank, except for GRO in WO 1215191. However, the GRO detection was attributed to a method blank contamination, and the results are not affected by the trip blank detection for this analyte.

Laboratory method blanks (MBs) were also analyzed in association with samples collected for this project to check for contributions to the analytical results possibly attributable to laboratory-based contamination. The project analytes were not detected in the reported MB samples with the exceptions noted below.

- WOs 320-78378-1 and 320-78371-1 had detections of 11Cl-PF3OUdS, ADONA, 9Cl-PF3ONS, PFBS, PFDA, PFHpA, PFHxS, PFNA, PFOS, and PFOA below the RL in preparatory batch 320-522308. Several project samples were affected by these method blank detections. Refer to the LDRCs for details.
- WO 1215191 had detections for GRO below the RL in preparatory batch VXX37679. GRO were detected in project samples *21AKN-SB-01(0'-1')*, *21AKN-SB-01(6.5'-7.5')*, *21AKN-SB-101(6.5'-7.5')*, *21AKN-SB-02(0'-1')*, *21AKN-SB-02(6'-7')*, *21AKN-SB-03(0'-1')*, and *21AKN-SB-03(7.3'-7.8')* below the RL and less than five-times the method blank detection; therefore, the GRO results were considered not-detected and flagged accordingly. Refer to the LDRC for details.
- WO 1215513 had detections for phenanthrene below the RL in preparatory batch XXX45479. Phenanthrene was detected in project samples *21AKN-MW-01*, *21AKN-MW-101*, *21AKN-MW-02*, and *21AKN-MW-03* and equipment blank *21AKN-EB-03* below the RL and less than five-times the method blank detection; therefore, the phenanthrene results were considered not-detected and flagged accordingly. Refer to the LDRC for details.

Additional analytes were detected in the project samples due to method blank detections; however, qualifications were not required. Refer to the LDRCs for details.

An EB was collected to assess the possibility of sample contamination from reusable sampling equipment. The EB was collected post decontamination after collecting the project samples from the monitoring well *21AKN-MW-03*. PAH analytes 2-methylnaphthalene, naphthalene, and phenanthrene were detected below the RL in the equipment blank. 2-methylnaphthalene was detected in project samples *21AKN-MW-01* and *21AKN-MW02* below the RL and less than five-times the equipment blank detection; therefore, the 2-methylnaphthalene results are considered not-detected and flagged accordingly. The project samples did not have detections for naphthalene and are not affected by the EB detection for this analyte. The EB detection for phenanthrene was attributed to the method blank detection noted above. No other qualifications for the data were necessary. The analyses were sufficiently sensitive for the purposes of groundwater monitoring.

## ACCURACY

Accuracy refers to determining the correct analyte concentration and is a comparison between the measured value and a known or expected value. Laboratory analytical accuracy may be assessed through the analyte recoveries from LCS/LCSD analyses and MS/MSD analyses, and the recovery of analyte surrogates (for organic analytes) added to project samples. The LCS/LCSDs are spikes of known analyte concentrations added to a clean matrix; the MS/MSDs are spikes of known analyte concentrations in a matrix similar to field samples.

The laboratories' LCS, LCSD, MS, MSD, and surrogate/IDA recoveries were within laboratory acceptance criteria, except for the following that affect the analytical results:

- WO 320-7655-1 The MS and MSD associated with preparatory batch 320-517585 had high recovery failures for PFOS, PFHxS, NMeFOSAA, 9Cl-PF3ONS, and ADONA. The parent sample, 21AKN-SS-20, had a detection for NMeFOSAA and ADONA that were considered estimated and biased high, and are flagged "JH\*" in the summary tables.
- WO 320-78376-1 IDA recoveries associated with analytes PFTeA, PFD<sub>o</sub>A, and HFPO-DA in a number of samples were outside the QC criteria. These analytes were not detected in the samples associated with the failures; the results were considered estimated, with no direction of bias, and flagged "J\*" in the summary tables.
- WO 320-77655-1 IDA recoveries associated with analytes PFOS, PFTeDA, PFHxA, HFPO-DA, and NMeFOSAA in several samples were outside the QC criteria. PFTeA results in samples 21AKN-SS-09 and 21AKN-SS-20, HFPO-DA in sample 21AKN-SS-11, and PFHxA in sample 21AKN-SS-11 were considered estimated and flagged "J\*" in the analytical summary tables.
- WO 320-77653-1 IDA recoveries associated with all analytes in project sample 21AKN-SW-08 and NMeFOSAA in project sample 21AKN-SW-07 were outside QC acceptance criteria. These results were considered estimated with no direction of bias and flagged "J\*" in the analytical summary tables.
- WO 320-78378-1 IDA recoveries associated with the analyte HFPO-DA in project samples 21AKN-MW-01 and 21AKN-MW-02 were outside QC acceptance criteria. These results were considered estimated with no direction of bias and flagged "J\*" in the analytical summary tables.
- WO 320-78371-1 IDA recoveries associated with the analytes PFTeA in sample 21AKN-Drum-10, PFBS in sample 21AKN-MW-04-45, and HFPO-DA in sample 21AKN-MW-04-45 were outside QC acceptance criteria. These results were considered estimate with no direction of bias and flagged "J\*" in the analytical summary tables.

Refer to the LDRC and Appendix C regarding additional accuracy details.

## PRECISION

We collected field-duplicate samples at a frequency of ten percent of the total number of samples to evaluate the precision of analytical measurements and reproducibility of our sampling technique. 12 duplicate samples were collected for the project and submitted “blind” (i.e., the laboratory could not identify it as a duplicate). The duplicates were analyzed by the same test methods as the original samples. To evaluate the precision of the data, we calculated the relative percent difference (RPD; difference between the sample and its duplicate divided by the mean of the two). RPDs can be evaluated only if the results of the analyses for both the sample and its duplicate are reported above the DL.

The data quality objective for water samples’ RPD is 30 percent and soil samples’ RPD is 50 percent for field-duplicate samples. Where concentrations were reported in both samples, we calculated the RPDs. The RPDs were within acceptance criteria, where calculable, except for PFTTrDA in field duplicate pair 21AKN-SW-07 / 21AKN-SW-107. The results in both samples are considered estimated with no direction of bias and flagged “J\*” in the analytical summary tables.

Laboratory analytical precision can also be assessed by comparing the results of duplicate analyses performed on LCS/LCSD, MS/MSD, and laboratory-duplicate samples, and evaluating the associated RPDs. The data-quality objectives vary by analyte for the laboratory QC samples and these objectives are reported in the laboratory report. The laboratory RPDs were within laboratory acceptance criteria, except for the LCS/LCSD associated with WO 1215513 preparatory batch XXX45479. PAH analytes 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, and naphthalene. These results are considered estimated with no direction of bias and flagged “J\*” in the analytical summary tables.

## DATA QUALITY SUMMARY

By conducting our field activities in general accordance with our standard QC/QA procedures, the samples we collected are considered representative of site conditions at the locations and times they were obtained. Based on our QA review, our completeness goal of obtaining 90-percent useable data was met. In our opinion, the data produced by SGS and TestAmerica for this project are suitable for characterizing groundwater quality at the locations sampled.

Appendix E

# Conceptual Site Model

## CONTENTS

- Human Health Conceptual Site Model (CSM) Scoping Form
- Human Health CSM Graphic Form

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

**Site Name:**

**File Number:**

**Completed by:**

### 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)*

- |  |  |
|--|--|
| <input type="checkbox"/> USTs                          | <input type="checkbox"/> Vehicles  |
| <input type="checkbox"/> ASTs                          | <input type="checkbox"/> Landfills   |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers  |
| <input type="checkbox"/> Drums                         | <input checked="" type="checkbox"/> Other: <input type="text" value="Aqueous Film Forming Foam (AFFF) release"/> |

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

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Spills | <input checked="" type="checkbox"/> Direct discharge |
| <input checked="" type="checkbox"/> Leaks  | <input type="checkbox"/> Burning                     |
|  | <input type="checkbox"/> Other: <input type="text"/> |

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

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Surface soil (0-2 feet bgs*)  | <input checked="" type="checkbox"/> Groundwater      |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input checked="" type="checkbox"/> Surface water    |
| <input type="checkbox"/> Air                                      | <input checked="" type="checkbox"/> Biota            |
| <input checked="" type="checkbox"/> Sediment                      | <input type="checkbox"/> Other: <input type="text"/> |

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

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Residents (adult or child)                      | <input checked="" type="checkbox"/> Site visitor      |
| <input checked="" type="checkbox"/> Commercial or industrial worker                 | <input checked="" type="checkbox"/> Trespasser        |
| <input checked="" type="checkbox"/> Construction worker                             | <input checked="" type="checkbox"/> Recreational user |
| <input checked="" type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer                       |
| <input checked="" type="checkbox"/> Subsistence consumer (i.e. eats wild foods)     | <input type="checkbox"/> Other: <input type="text"/>  |

\* 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:

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:

PFOS and PFOA are listed as contaminants that can permeate the skin, per the 2017 CSM Guidance - Appendix B. However, according to the Alaska Department of Health and Social Services, PFOS and PFOA are not appreciably absorbed through the skin. We therefore consider dermal exposure to these compounds to be insignificant.

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 groundwater 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:

PFOS and PFOA have been detected in water supply wells used for drinking water at concentrations greater than the EPA LHA.

## 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:

## 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:

PFOS and PFOA are listed as contaminants that can bioaccumulate, per the 2017 CSM Guidance - Appendix B. These analytes were detected in several samples at concentrations greater than the DEC CULs.

### 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:

Volatile compounds were not detected in the soil samples collected during this investigation.



## 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 contaminated 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:

Volatile compounds were not detected in the soil samples collected during this investigation.

**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:

No volatile compounds were detected in the groundwater samples.

## 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<sub>10</sub>). 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:

PFOS, PFOA, and DRO are present in the top interval of the soil.

## 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.)*

[Empty rectangular box for providing other comments]

# HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: ADOT&PF King Salmon Airport Sitewide PFAS

Completed By: Michael Jaramillo

Date Completed: Revised March 2022

**Instructions:** Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Media	(2) Transport Mechanisms			
<input checked="" type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to subsurface <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Runoff or erosion <i>check surface water</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____			
	<input checked="" type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input checked="" type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____		
	<input checked="" type="checkbox"/> Ground-water	<input checked="" type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Flow to surface water body <i>check surface water</i> <input checked="" type="checkbox"/> Flow to sediment <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____		
		<input checked="" type="checkbox"/> Surface Water	<input checked="" type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Sedimentation <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____	
			<input checked="" type="checkbox"/> Sediment	<input checked="" type="checkbox"/> Direct release to sediment <i>check sediment</i> <input checked="" type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Exposure Media	(4) Exposure Pathway/Route	(5) Current & Future Receptors						
		Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or harvesters	Subsistence consumers	Other
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion <input checked="" type="checkbox"/> Dermal Absorption of Contaminants from Soil <input checked="" type="checkbox"/> Inhalation of Fugitive Dust		C/F	C/F	C/F			
	<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	C/F	C/F	C/F	C/F		
		<input type="checkbox"/> air	<input type="checkbox"/> Inhalation of Outdoor Air <input type="checkbox"/> Inhalation of Indoor Air <input type="checkbox"/> Inhalation of Fugitive Dust					
<input checked="" type="checkbox"/> surface water			<input checked="" type="checkbox"/> Ingestion of Surface Water <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water					
	<input checked="" type="checkbox"/> sediment		<input checked="" type="checkbox"/> Direct Contact with Sediment					
	<input checked="" type="checkbox"/> biota	<input checked="" type="checkbox"/> Ingestion of Wild or Farmed Foods	C/F				C/F	C/F

# Important Information

About Your Environmental Report

IMPORTANT INFORMATION

## 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 ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland**