



SUBMITTED TO:
RESPEC
2700 Gambell Street, Suite
500
Anchorage, AK 99503



BY:
Shannon & Wilson, Inc.
2355 Hill Road
Fairbanks, Alaska 99709

(907) 479-0600
www.shannonwilson.com

FINAL

ENVIRONMENTAL SUMMARY REPORT
Yakutat Water Line Extension
YAKUTAT, ALASKA



PAGE INTENTIONALLY LEFT BLANK FOR DOUBLE-SIDED PRINTING

Submitted To: RESPEC
2700 Gambell Street, Suite 500
Anchorage, AK 99503
Attn: Karen Brady, P.E.

Subject: FINAL ENVIRONMENTAL SUMMARY REPORT, YAKUTAT WATER LINE
EXTENSION, YAKUTAT, ALASKA

Shannon & Wilson prepared this summary report and participated in this project as a subconsultant to RESPEC Company, LLC (RESPEC). Our scope of services was specified in our proposals for geotechnical and environmental services dated March 19, 2024, July 17, 2024, and September 25, 2024. This summary report presents the results of field screening and analytical soil samples collected for this project and was prepared by the undersigned.

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

Sincerely,

SHANNON & WILSON, INC.



Ashley Jaramillo
Senior Chemist

CONTENTS

1	Introduction	1
1.1	Project Description	1
1.2	Environmental Review Summary	2
1.3	Environmental Scope of Services	4
2	Field Activities	4
2.1	Field, Exploration, and Drilling Methods	5
2.2	Environmental Field Screening	6
2.3	Drinking Water Sampling Collection	7
2.4	Environmental Analytical Testing	7
2.4.1	Soil Borings	7
2.4.2	Drinking Water	8
2.5	Investigation Derived Waste	9
3	Deviations from the Work Plan	9
4	Analytical Results	9
4.1	Soil Samples	10
4.2	Drinking Water Sample	10
5	Conclusions	10
6	Recommendations	11
7	Closure	11
8	References	12

Exhibits

Exhibit 1: Setting up drill rig on the roadside	5
Exhibit 2: Sheen observed in B-23 sample.	6
Exhibit 3: Sampling setup at the B-1 TWP.	7

Table

Table 1:	Soil Boring Results
Table 2:	Drinking Water Results

Figures

- Figure 1: Vicinity Map
- Figure 2: Site Plan Sheet 1 of 3
Site Plan Sheet 2 of 3
Site Plan Sheet 3 of 3
- Figure 3: Contaminated Sites

Appendices

- Appendix A: Boring Logs
- Appendix B: Field Forms
- Appendix C: Eurofins – Sacramento Laboratory Report and LDRC
- Appendix D: Eurofins – Seattle Laboratory Report and LDRC
- Appendix E: Eurofins – South Bend Laboratory Report and LDRC
- Appendix F: Quality Control and Quality Assurance
- Important Information

ACRONYMS

AAC	Alaska Administrative Code
bgs	below the ground surface
CaCO ₃	calcium carbonate
CBY	City and Borough of Yakutat
CFR	Code of Federal Regulations
COPC	contaminant of potential concern
DEC	Alaska Department of Environmental Conservation
Discovery	Discovery Drilling
DOT&PF	Alaska Department of Transportation and Public Facilities
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
Eurofins	Eurofins Environment Testing
FAA	Federal Aviation Administration
GRO	gasoline range organics
LDRC	laboratory data review checklist
MCL	Maximum Contaminant Levels
mg/kg	milligram per kilogram
NAPL	non-aqueous phase liquid
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PFAS	per- and polyfluoroalkyl substances
PFOS	perfluorooctanesulfonic acid
PID	photoionization detector
ppm	parts per million
QEP	Qualified Environmental Professional
RRO	residual range organics
SAP	Sampling and Analysis Plan
SMCL	Secondary Maximum Contaminant Level
TDS	total dissolved solids
TWP	temporary well point
UST	underground storage tank
VOC	volatile organic compound
WO	work order

1 INTRODUCTION

Shannon & Wilson prepared this summary report to document field screening and environmental soil sampling activities during our geotechnical and environmental exploration for the Yakutat Water Line Extension project ([Project], Figure 1) in Yakutat, Alaska.

Our services were performed in general accordance with our proposals dated March 19, 2024, July 17, 2024, and September 25, 2024. This report has been prepared by Shannon & Wilson personnel who are Qualified Environmental Professionals (QEPs) as defined in Title 18 Chapter 75 of the Alaska Administrative Code (18 AAC 75.333).

The work presented in this summary report is in support of the development of this project. Shannon & Wilson's field activities obtained information on subsurface conditions by collecting soil samples for chemical analyses. The work described in this summary report covers field-screening, analytical sampling, and environmental drilling activities. Our field services and analytical sampling results were used to identify potential soil contamination that will need to be addressed during construction. We submitted a draft geotechnical recommendations report titled *Draft Geotechnical Engineering Report, Yakutat Airport Water Line Extension*, dated February 2025, to you as a stand-alone document.

1.1 Project Description

We understand that the City and Borough of Yakutat (CBY) plans to expand their existing water line approximately 4.5 miles from the City of Yakutat to the Yakutat Airport (Figure 1). Some private water supply wells at the airport have been found to contain per- and polyfluoroalkyl substances (PFAS) in exceedance of Alaska Department of Environmental Conservation (DEC) drinking water action levels and are no longer used for drinking water. In addition, in April 2024 the U.S. Environmental Protection Agency (EPA) promulgated maximum contaminant levels (MCLs) for several PFAS compounds that are more stringent than the current DEC drinking water action levels. As of this writing, DEC has not yet changed their drinking water action level to match EPA's new MCLs; however, it is likely that DEC will align with EPA's PFAS MCLs in the future.

Additionally, we understand that concerns have been raised about potential contamination threatening the existing water supply well in Yakutat. We understand that that CBY is interested in determining a potential location for a future drinking water well in Yakutat.

1.2 Environmental Review Summary

We reviewed the DEC Contaminated Sites Database and identified two active contaminated sites that have potential to affect the project area (Figure 3):

- *DOT&PF Yakutat Airport Sitewide PFAS (DEC Hazard ID 27090, File Number 1530.38.022):*
Historic use of aqueous film forming foam at various locations at the Yakutat Airport has caused PFAS groundwater contamination in some water supply wells in the immediate vicinity of the airport. The extent of PFAS groundwater contamination or PFAS in soil near the airport is not fully defined. PFAS is mobile in groundwater and could be distributed downgradient from the airport to the project area.
- *DOT&PF Yakutat Airport Multiple Sites (DEC Hazard ID 25640, File Number 1530.38.018):*
Petroleum-contaminated soil has been discovered on state-owned property at the airport with no identified source, which prompted a 2012 Phase I Environmental Site Assessment (ESA) of 60 parcels at the Yakutat Airport. The Phase I ESA found that petroleum-impacted soil and groundwater at the airport may be widespread. The airport was a former Air Force Base during World War II and four formerly used defense sites are located within the airport boundary. In addition, there are many aboveground storage tanks, drums, floor drains with unknown discharge locations, a waste lagoon, and septic systems with unknown discharge destinations. The wide range of potential sources, documented and undocumented, presents a risk that the project may encounter previously unknown contamination.

Other nearby active contaminated sites are less likely to impact the project area but are included for completeness:

- *FAA Yakutat Bldg 607 (DEC Hazard ID 2377, File Number 1530.38.007):*
Petroleum and polychlorinated biphenyl (PCB) contamination from known and unknown releases is present at the Federal Aviation Administration (FAA) Building 607 near the Yakutat Airport. In 2010, a remedial action by Bethel Services Inc. excavated approximately 774 cubic yards of petroleum and PCB-contaminated soil from the former Building 607 location. During excavation they encountered areas with non-aqueous phase liquid (NAPL) fuel and/or oil on the groundwater table. They used sorbent booms to remove approximately 350 pounds of NAPL from groundwater entering the area of soil excavation; however, they observed that NAPL appeared to extend outside of the excavation area. The NAPL may be contaminated with PCBs. Diesel-contaminated soil remains in areas of the site. The petroleum and NAPL contamination is unlikely to migrate the distance from the source to the water line project area; however, the project area may be hydrologically downgradient from the FAA Bldg 607 site.
- *DOT&PF Yakutat Former Shop Building (DEC Hazard ID 25483, File Number 1530.38.017):*
During site characterization for the FAA Bldg 607 site, diesel-contaminated soil was encountered on the north side of the lot on the Alaska Department of Transportation

and Public Facilities (DOT&PF) Yakutat former shop building property. It was determined that the area of contamination was related to the DOT&PF former shop building. The petroleum contamination is unlikely to migrate due to distance from the area of contamination to the water line project area; however, the project may be downgradient from the DOT&PF former shop building.

- *NOAA NWS Former Employee Housing (DEC Hazard ID 27902, File Number 1530.38.024):*
A hazardous building materials survey for a residential six-plex in 2009 found lead in paint samples. In 2019, a limited site investigation to evaluate whether soil surrounding the building had been contaminated by the lead in paint found lead contamination around the building drip line at about six inches below ground surface up to 10,100 milligrams per kilogram (mg/kg). The residential six-plex and adjacent concrete walkways and utilities are planned to be demolished. The lead contamination is likely limited to shallow surface soil adjacent to the building where paint may have weathered off the building.
- *NOAA Yakutat Office (DEC Hazard ID 2972, File Number 1530.38.006):*
The site was used for launching weather balloons and had a single building with a 675-gallon diesel fuel underground storage tank (UST). The diesel was used to heat the building and to power a hydrogen gas generator until the UST was decommissioned in 1998. Soil samples were collected around the UST and were found to exceed DEC cleanup levels for diesel range organics (DRO). Some soil was subsequently excavated from around the UST but later soil borings found that DRO contamination remained in the area. Three monitoring wells were installed at the soil boring locations; DRO, benzene, toluene, ethylbenzene, and xylenes were detected in groundwater less than DEC cleanup levels.
- *Yakutat AFB State Disposal Site No.3 (DEC Hazard ID 26914, File Number 1530.38.011):*
A former World War II-era motor repair shop, oil sheds, and utility building were constructed at this location. The area was used as a disposal site for military debris. The area was later used by the FAA and DOT&PF as a shop area. DEC observed tar and visually contaminated surface soil in the vicinity of this location during a site visit in 2018.

Based on the above information, the contaminants of potential concern (COPCs) for the water line extension project include the following:

- Gasoline range organics (GRO)
- DRO
- Residual range organics (RRO)
- Volatile organic compounds (VOCs)
- Polycyclic aromatic hydrocarbons (PAHs)

- PFAS
- Lead
- PCBs (in NAPL-only)

1.3 Environmental Scope of Services

Shannon & Wilson's environmental scope of services consists of:

- Preparing the project-specific Sampling and Analysis Plan (SAP) and consulting with DEC to finalize the SAP;
- Securing a drilling subcontractor;
- Installing and sampling a temporary well point (TWP);
- Conducting a percolation test;
- Field screening and sampling soil during drilling activities;
- Quality-control field and laboratory testing of soils;
- Submitting a TWP drinking water sample to the laboratory for analytical testing;
- Submitting soil samples to the laboratory for analytical testing;
- Quality control field and analytical laboratory testing of soils and drinking water; and
- Preparing this summary report of the results of chemical analyses.

This project did not include an environmental site assessment, overall site characterization, nor delineation of contamination.

2 FIELD ACTIVITIES

Between December 4th and December 14th, Discovery Drilling (Discovery), a drilling subcontractor of Shannon & Wilson, advanced a total of 29 soil borings, designated Borings B-1 through B-29, related to the Project. One additional shallow boring for a percolation test designated PERC was advanced on December 9, 2024. In addition, one boring was converted to a TWP to collect samples for selected drinking water-quality parameters and PFAS. Refer to Figure 2 for approximate boring, PERC, and TWP locations.

We created field logs of the soil borings and collected representative soil and water samples for environmental laboratory analyses. Environmental screening, sampling methods, and laboratory samples were conducted in accordance with Shannon & Wilson's DEC-approved SAP and emailed correspondence with DEC for this project.

Shannon & Wilson field representatives Forrest Dobson and Lucas Woosley, QEPs per 18 AAC 75.333, field-screened the split-spoon samples and collected soil samples for environmental laboratory analyses. A Vicinity Map is presented in Figure 1, showing the approximate location of the project area. Figure 2 presents the approximate soil-boring locations. The soil-boring logs and the project field forms are presented in Appendix A and Appendix B, respectively.

2.1 Field, Exploration, and Drilling Methods

Drilling services for this project were provided by Discovery of Anchorage, Alaska, using a track-mounted Geoprobe 6712DT drill rig. A representative from our firm was present during drilling to locate the borings, observe drill action, collect geotechnical and environmental soil and water samples, log subsurface conditions, observe groundwater conditions, and perform a percolation test. We coordinated with the Call Locate Center and local authorities to clear the boring locations of buried public utilities prior to drilling.



Exhibit 1: Setting up drill rig on the roadside.

The Geoprobe 6712 DT is a track-mounted drill rig equipped with continuous-flight hollow-stem auger tooling. Sampling was conducted using split-spoon sampling technique. Borings were generally advanced to a depth of approximately 17 feet below ground surface (bgs). However, borings adjacent to Ophir Creek were advanced to approximately 32 feet bgs, and the boring at the proposed water well site was advanced to approximately 60 feet bgs. The shallow boring for the percolation test was advanced to approximately 1.6 feet bgs.

GeoTek collected the samples using a 3¼ -inch inner diameter split-spoon sampler consistent with procedures discussed in ASTM International D1586 Standard Test Method for Standard Penetration Test and Split-Barrel Sampling of Soils. The split-spoon samples were obtained by driving the sampler into the soil at the base of the auger using a 340-pound automatic hammer falling 30 inches onto the drill rods. Samples were recovered at 2.5-foot intervals for the first ten feet, and then at 5-foot intervals thereafter to the bottom of the boring. Refer to the geotechnical report, *Draft Geotechnical Engineering Report, Yakutat Airport Water Line Extension*, dated February 2025, for geotechnical findings.

2.2 Environmental Field Screening



Exhibit 2: Sheen observed in B-23 sample.

Environmental staff conducted field screening of the soil samples collected from above the groundwater table with a handheld Rae Systems, Inc. MiniRae 3000 photoionization detector (PID). Environmental staff calibrated the PID in accordance with our SAP. The PID is capable of detecting some volatile organic compounds but is not able to detect PFAS and other non-volatile compounds. Currently, there are no field-screening methods for PFAS analytes.

PID readings were less than the project action limit of ten parts per million (ppm) in all samples, except for one sample collected from boring B-23 at approximately 4-5 feet bgs, which had the highest PID reading of 26.7 ppm. In addition, that sample interval had an observable sheen, indicating potential petroleum contamination. Consequently, analytical samples for GRO, DRO, RRO, PAH, VOCs, PCBs, and lead were collected for B-23 at the depth interval with the potential petroleum contamination. Analytical samples for fuel COPCs were not collected from the remaining borings, as no PID results exceeded 10 ppm.

In accordance with the project-specific work plan, field staff also collected one analytical sample for PFAS analysis from each boring located within the Yakutat Airport Property boundary (borings B-20 through B-25; Figure 2). Analytical samples were collected and immediately stored in a temperature-controlled cooler that was securely maintained by Shannon & Wilson field staff.

Also, during the advancement of boring B-27 (located at the north side of Ophir Creek; Figure 2), Shannon & Wilson identified wood debris in samples collected between 2.5 – 7.5 feet bgs. These samples had PID readings below the project action level of 10 ppm. However, upon drying these samples at the Shannon & Wilson soils laboratory, a fuel odor was observed and documented. A review of the material from the Shannon & Wilson soils laboratory manager indicated that the wood debris was likely creosote-treated material.

Soil observations and PID field-screening results are included in the boring logs presented in Appendix A. Our observations are specific to the locations, depths, and dates noted on the logs, and may not be applicable to all areas of the site.

2.3 Drinking Water Sampling Collection

The drilling contractor installed a TWP at boring B-1 (Figure 2). The TWP was approximately 60.7 feet bgs, constructed of new 2-inch diameter PVC, and screened between 20-30-feet bgs. The TWP was installed in this manner to set the screened interval within a selected section of the borehole with relatively low sand and fines content. The TWP was sampled on December 10th using a submersible, stainless steel GeoSub Hurricane pump. Three well volumes were purged prior to sample collection and field parameters were not required.



Exhibit 3: Sampling setup at the B-1 TWP.

The analytical sample was collected and immediately stored in a temperature-controlled cooler that was securely maintained by Shannon & Wilson field staff. Upon completion of the sampling, Discovery removed the TWP. Following TWP removal, the borehole was backfilled with cuttings to 30 feet bgs, pea gravel to 15 feet bgs, and bentonite chips to ground surface.

2.4 Environmental Analytical Testing

Environmental field logs including sample locations and field-screening results are included in Appendices A and B. Analytical results are discussed in Section 3. The three Eurofins laboratory reports and associated Laboratory Data Review Checklists (LDRCs) are included in Appendices C, D, and E.

2.4.1 Soil Borings

Based on the available information and field observations, we submitted the soil sample from boring B-23 for analysis of the following methods:

- GRO by AK101
- DRO by AK102
- RRO by AK103
- VOCs by SW8260D
- Low-level VOCs by SW8260D-SIM and SW8011
- PAHs by SW8270E-SIM
- PCBs by SW8082A
- Lead by SW6020B

In addition, borings B-20, B-21, B-22, B-23, B-24, and B-25 which were advanced within the airport property boundary were sampled for PFAS by EPA Method 537 Modified, as detailed in our approved work plan.

Samples were placed in laboratory-supplied jars, labeled, sealed, and placed in a cooler for transportation. PFAS samples were shipped via FedEx to Eurofins Environment Testing (Eurofins) laboratory in West Sacramento, California, and reported under work order (WO) 320-117793-1 (Appendix C). The remaining samples were shipped via Alaska Airlines Goldstreak to the Eurofins laboratory in Tacoma, Washington, and reported under WO 580-146688-1 (Appendix D). The laboratories used are DEC and Department of Defense certified for the requested analyses.

2.4.2 Drinking Water

The drinking water sample collected from the TWP at the B-1 location was submitted for the following analyses:

- VOCs by EPA 524.2
- Total metals by EPA 200.7/ 200.8
- Dissolved iron and manganese by EPA 200.7/ 200.8
- Mercury by EPA 245.1
- Hardness as calcium carbonate (CaCO_3) by Standard Method 2340B
- Total alkalinity as CaCO_3 by Standard Method 2320B
- Nitrate and nitrite by EPA 353.2
- Fluoride by Standard Method 4500 F C
- Cyanide by EPA 335.4
- Chloride and sulfate by EPA 300.0
- pH by EPA 150.1
- Total dissolved solids (TDS) by Standard Method 2540C
- True color by Standard Method 2120B
- Langelier index by Standard Method 2330B
- E. coli and total coliform by Standard Method 9223B
- PFAS by EPA 1633

Samples were placed in laboratory-supplied jars, labeled, sealed, and placed in a cooler for transportation. PFAS samples were shipped via FedEx to Eurofins laboratory in West Sacramento, California, and reported under WO 320-117793-1 (Appendix C). The remaining

samples were shipped via Alaska Airlines Goldstreak to Eurofins Eaton Analytical, LLC in South Bend, Indiana, and reported under WO 810-131289-1 (Appendix E). The laboratories used are DEC and Department of Defense certified for the requested analyses.

2.5 Investigation Derived Waste

Investigation-derived waste consisted of disposable sampling equipment (nitrile gloves, paper towels, sorbent pads, plastic bags, etc.) which we disposed of at the Yakutat landfill as inert solid waste. Soil drill cuttings were used to backfill the borings from which they were generated. Decontamination rinse water was disposed of to the ground surface near the soil boring locations and at least 100 feet from drinking water wells and surface water. Purge water from boring B-1 was discharged to the ground surface near the soil boring location and at least 100 feet from drinking water wells and surface water.

3 DEVIATIONS FROM THE WORK PLAN

In general, we conducted our services in accordance with the work plan and email correspondence with DEC, except for the following deviations.

- The work plan described advancing eight borings at the airport at proposed locations. Due to utility conflicts, several borings were moved and only six borings were advanced at the airport.
- Field duplicate soil samples were inadvertently not collected at the frequency outlined in the work plan. Per the work plan, field duplicate soil samples should have been collected at a frequency of 10% of the samples submitted per analysis. No field duplicate soil sample was collected. The overall data quality was not affected, and data precision can be evaluated using the precision calculated for the laboratory control samples and laboratory control sample duplicate.

4 ANALYTICAL RESULTS

Analytical sample quality assurance and quality control measures are summarized in Appendix F. Several samples were affected by quality control failures, and the affected results may have some degree of uncertainty. Analytical results with quality control failures are flagged in the summary tables and data quality and usability are presented in Appendix F. We cannot offer an opinion on the presence or absence of contaminants at locations we did not sample.

4.1 Soil Samples

To evaluate soil analytical data, we compared the sample results to the most stringent values between the DEC cleanup levels in 18 AAC 75.341 Table B1 and B2 Method Two (Migration to Groundwater or Over 40 Inch Zone Human Health). The most stringent value of the DEC cleanup levels is used as the project action limit for a given analyte.

The analytical results showed detections for GRO, DRO, eight VOCs, two PAHs, two PFAS (including perfluorooctanesulfonic acid [PFOS]), and lead in one or more sample. Analytical results were below the applicable DEC soil regulatory limits, with the exception of DRO, 1,1,2-trichloroethane, 1,2-dibromoethane, 2-hexanone, and naphthalene. The analytical soil results are summarized in Table 1.

4.2 Drinking Water Sample

To evaluate drinking water analytical data, we compared results to the EPA's Title 40 of the Code of Federal Regulations Part (CFR) 141 MCLs and Title 40 CFR 143 Secondary Maximum Contaminant Levels (SMCLs), in order of hierarchy.

The analytical results showed detections for three PFAS, twelve total metals, two dissolved metals, nitrite, chloride, and sulfate. The results reported results for hardness as CaCO_3 , total alkalinity as CaCO_3 , pH, TDS, and Langelier index. The results were below the EPA MCLs. However, the analytes total iron, aluminum, dissolved manganese, and total manganese exceeded the SMCLs. The analytical drinking water results are summarized in Table 2.

5 CONCLUSIONS

Shannon & Wilson's environmental staff field screened and sampled soils collected from borings advanced along the proposed Yakutat Waterline Extension. Results of the field screening identified one location (boring B-23) with potential fuel contamination, which was located within the Yakutat Airport property boundary. Analytical samples collected from this boring location confirmed the presence of several fuel related and chlorinated solvent compounds at concentrations exceeding the most stringent DEC Soil Cleanup Levels. Additionally, creosote-treated wood debris was encountered at B-27, although PID results were below project action levels during field screening. Soils and debris adjacent to borings B-23 and B-27 will require special handling during the construction phase of the project in the vicinity of these boring locations.

Also, Shannon & Wilson identified three boring locations within the Yakutat Airport property boundary that had detections for PFAS analytes. While these detections are less than the DEC Soil Cleanup Levels, Shannon & Wilson's previous experience with related PFAS projects in Yakutat and around the state suggest that the soils from these areas will also require special handling during the construction phase of the project.

Shannon & Wilson staff collected a water sample from the TWP installed in soil boring B-1. These samples were collected for select drinking water parameters and PFAS analytes to assess if this location would be suitable for installation of an alternative water-supply well for the water distribution system. The analytical results identified that aluminum, iron (total), and manganese (dissolved and total) exceeded their respective SMCLs.

6 RECOMMENDATIONS

Due to detectable concentrations of PFAS and volatile analytes in the soil samples collected from within the Yakutat Airport property boundary, special soil-handling considerations will need to be addressed during construction. As part of Shannon & Wilson's scope for this project, we will use this information to develop recommendations for special soil-handling which will be outlined in the Construction Materials Management Plan, which is being drafted concurrently to this report.

In addition, a Well Siting Study is in the process of being developed by Shannon & Wilson in association with a related CBY project. The results from the TWP sample collected during this exploration phase will be evaluated and discussed along with several other options for an alternative water-supply source for this distribution system. The Well Siting Study is also being drafted concurrently to this report.

7 CLOSURE

We have prepared the environmental report for this project based on:

- The limitations of our approved scope, schedule, and budget described in our proposals dated March 19, 2024; July 17, 2024; and September 25, 2024.
- Our understanding of the project and information provided by RESPEC.
- Site and subsurface conditions we observed during our site visits and in the boring locations as they existed during our subsurface explorations.
- The results of analytical testing performed on samples we collected from the borings.

When the designer develops additional information about final design, the recommendations presented herein may need to be revised. Shannon & Wilson should be made aware of the revised or additional information so that we can revise our recommendations as necessary.

8 REFERENCES

- Alaska Department of Environmental Conservation, October 2023, 18 AAC 75: *Oil and Other Hazardous Substances Pollution Control*: Juneau, Alaska, available: <http://dec.alaska.gov/commish/regulations/>.
- Environmental Protection Agency, last updated December 12, 2024, 40 CFR 141: *National Primary Drinking Water Regulations*, available: www.ecfr.gov
- Environmental Protection Agency, last updated January 28, 2025, 40 CFR 143: *Other Safe Drinking Water Act Regulations*, available: www.ecfr.gov
- Shannon & Wilson, Inc., August 2024, *Yakutat Airport Water Line Extension Final Exploration Phase – Sampling and Analysis Plan*.

Table 1 — Soil Boring Results

Analytical Method	Analyte	CAS#	Regulatory Limit	Units	B-20	B-21	B-22	B-23	B-24	B-25
					12/11/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024
AK101	Gasoline Range Organics	8006-61-9	300	mg/kg	—	—	—	270	—	—
AK102 & 103	Diesel Range Organics	STL00258	250	mg/kg	—	—	—	1000	—	—
	Residual Range Organics	STL00383	11000	mg/kg	—	—	—	<29.0	—	—
SW8260D (VOCs)	1,1,1-Trichloroethane	71-55-6	32	mg/kg	—	—	—	<0.00590	—	—
	1,1-Dichloroethane	75-34-3	0.092	mg/kg	—	—	—	<0.0120	—	—
	1,1-Dichloropropene	563-58-6	N/A	mg/kg	—	—	—	<0.00590	—	—
	1,2,3-Trichlorobenzene	87-61-6	0.15	mg/kg	—	—	—	<0.0290	—	—
	1,2,3-Trichloropropane	96-18-4	0.000031	mg/kg	—	—	—	<0.0120	—	—
	1,2,4-Trichlorobenzene	120-82-1	0.082	mg/kg	—	—	—	<0.0290	—	—
	1,2,4-Trimethylbenzene	95-63-6	0.61	mg/kg	—	—	—	<0.0120	—	—
	1,2-Dibromo-3-chloropropane	96-12-8	N/A	mg/kg	—	—	—	<0.0120	—	—
	1,2-Dichlorobenzene	95-50-1	2.4	mg/kg	—	—	—	<0.0120	—	—
	1,2-Dichloropropane	78-87-5	0.03	mg/kg	—	—	—	<0.00590	—	—
	1,3,5-Trimethylbenzene	108-67-8	0.66	mg/kg	—	—	—	<0.0120	—	—
	1,3-Dichlorobenzene	541-73-1	2.3	mg/kg	—	—	—	<0.0120	—	—
	1,3-Dichloropropane	142-28-9	N/A	mg/kg	—	—	—	<0.00590	—	—
	2,2-Dichloropropane	594-20-7	N/A	mg/kg	—	—	—	<0.0120	—	—
	2-Butanone (MEK)	78-93-3	15	mg/kg	—	—	—	<0.0590	—	—
	2-Chlorotoluene	95-49-8	N/A	mg/kg	—	—	—	<0.0120	—	—
	4-Chlorotoluene	106-43-4	N/A	mg/kg	—	—	—	<0.0120	—	—
	Acetone	67-64-1	38	mg/kg	—	—	—	<0.200 J*	—	—
	Bromobenzene	108-86-1	0.36	mg/kg	—	—	—	<0.00590	—	—
	Bromochloromethane	74-97-5	N/A	mg/kg	—	—	—	<0.00590	—	—
	Carbon disulfide	75-15-0	2.9	mg/kg	—	—	—	0.0110 J	—	—
	Carbon tetrachloride	56-23-5	0.021	mg/kg	—	—	—	<0.00590	—	—
	Chlorobenzene	108-90-7	0.46	mg/kg	—	—	—	<0.00590	—	—
	Chloroethane	75-00-3	72	mg/kg	—	—	—	<0.0290	—	—
	Chloromethane	74-87-3	0.61	mg/kg	—	—	—	<0.0120	—	—
	cis-1,2-Dichloroethene	156-59-2	0.12	mg/kg	—	—	—	<0.0120	—	—
	Dichlorodifluoromethane (Freon 12)	75-71-8	3.9	mg/kg	—	—	—	<0.0390	—	—
	Ethylbenzene	100-41-4	0.13	mg/kg	—	—	—	<0.0120	—	—

Table 1 — Soil Boring Results

Analytical Method	Analyte	CAS#	Regulatory Limit	Units	B-20	B-21	B-22	B-23	B-24	B-25
					12/11/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024
SW8260D (VOCs)	Isopropylbenzene	98-82-8	5.6	mg/kg	—	—	—	<0.0120	—	—
	Methyl isobutyl ketone	108-10-1	18	mg/kg	—	—	—	<0.0290	—	—
	Methylene chloride	75-09-2	0.33	mg/kg	—	—	—	<0.0390	—	—
	Methyl-t-butyl ether (MTBE)	1634-04-4	0.4	mg/kg	—	—	—	<0.00590	—	—
	n-Butylbenzene	104-51-8	23	mg/kg	—	—	—	<0.0120	—	—
	n-Propylbenzene	103-65-1	9.1	mg/kg	—	—	—	<0.0120	—	—
	o-Xylene	95-47-6	1.5	mg/kg	—	—	—	<0.00590	—	—
	p-Isopropyltoluene	99-87-6	N/A	mg/kg	—	—	—	<0.0120	—	—
	sec-Butylbenzene	135-98-8	42	mg/kg	—	—	—	<0.0120	—	—
	Styrene	100-42-5	10	mg/kg	—	—	—	<0.0120	—	—
	tert-Butylbenzene	98-06-6	11	mg/kg	—	—	—	<0.0120	—	—
	Toluene	108-88-3	6.7	mg/kg	—	—	—	<0.0120	—	—
	trans-1,2-Dichloroethene	156-60-5	1.3	mg/kg	—	—	—	<0.0120	—	—
	Trichlorofluoromethane (Freon 11)	75-69-4	41	mg/kg	—	—	—	<0.0290	—	—
	m,p-Xylene	179601-23-1	N/A	mg/kg	—	—	—	<0.00590	—	—
SW8260D SIM (LL VOCs)	1,1,1,2-Tetrachloroethane	630-20-6	0.022	mg/kg	—	—	—	<0.000980	—	—
	1,1,2,2-Tetrachloroethane	79-34-5	0.003	mg/kg	—	—	—	<0.000980	—	—
	1,1,2-Trichloroethane	79-00-5	0.0014	mg/kg	—	—	—	0.260	—	—
	1,1-Dichloroethene	75-35-4	1.2	mg/kg	—	—	—	0.000310 J	—	—
	1,2-Dibromoethane	106-93-4	0.00024	mg/kg	—	—	—	0.00420 JH*	—	—
	1,2-Dichloroethane	107-06-2	0.0055	mg/kg	—	—	—	<0.000980	—	—
	1,4-Dichlorobenzene	106-46-7	0.037	mg/kg	—	—	—	<0.000980	—	—
	2-Hexanone	591-78-6	0.11	mg/kg	—	—	—	0.220	—	—
	Benzene	71-43-2	0.022	mg/kg	—	—	—	0.000830 J	—	—
	Bromodichloromethane	75-27-4	0.0043	mg/kg	—	—	—	<0.000490	—	—
	Bromoform	75-25-2	0.1	mg/kg	—	—	—	<0.000980	—	—
	Bromomethane	74-83-9	0.024	mg/kg	—	—	—	<0.000980	—	—
	Chloroform	67-66-3	0.0071	mg/kg	—	—	—	0.000440 J	—	—
	cis-1,3-Dichloropropene	10061-01-5	0.018	mg/kg	—	—	—	<0.000980	—	—
	Dibromochloromethane	124-48-1	0.0027	mg/kg	—	—	—	<0.000490	—	—
	Dibromomethane	74-95-3	0.025	mg/kg	—	—	—	<0.00200 B*	—	—

Table 1 — Soil Boring Results

Analytical Method	Analyte	CAS#	Regulatory Limit	Units	B-20	B-21	B-22	B-23	B-24	B-25
					12/11/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024
SW8260D SIM (LL VOCs)	Hexachlorobutadiene	87-68-3	0.02	mg/kg	—	—	—	<0.00200	—	—
	Naphthalene	91-20-3	0.038	mg/kg	—	—	—	<0.00200 J*	—	—
	Tetrachloroethene	127-18-4	0.19	mg/kg	—	—	—	<0.00200 B*	—	—
	trans-1,3-Dichloropropene	10061-02-6	0.018	mg/kg	—	—	—	0.000400 J	—	—
	Trichloroethene	79-01-6	0.011	mg/kg	—	—	—	<0.00200 B*	—	—
	Vinyl chloride	75-01-4	0.0008	mg/kg	—	—	—	<0.00200 J*	—	—
SW8011 (LL VOCs)	1,2,3-Trichloropropane	96-18-4	0.000031	mg/kg	—	—	—	<0.000160	—	—
	1,2-Dibromoethane	106-93-4	0.00024	mg/kg	—	—	—	<0.0000390	—	—
SW8270E SIM (PAHs)	1-Methylnaphthalene	90-12-0	0.41	mg/kg	—	—	—	<0.00480	—	—
	2-Methylnaphthalene	91-57-6	1.3	mg/kg	—	—	—	<0.00480	—	—
	Acenaphthene	83-32-9	37	mg/kg	—	—	—	<0.00480	—	—
	Acenaphthylene	208-96-8	18	mg/kg	—	—	—	<0.00480	—	—
	Anthracene	120-12-7	390	mg/kg	—	—	—	<0.00480	—	—
	Benzo(a)anthracene	56-55-3	0.7	mg/kg	—	—	—	<0.00480	—	—
	Benzo(a)pyrene	50-32-8	1.5†	mg/kg	—	—	—	<0.00480	—	—
	Benzo(b)fluoranthene	205-99-2	15†	mg/kg	—	—	—	<0.00290	—	—
	Benzo(g,h,i)perylene	191-24-2	2300†	mg/kg	—	—	—	<0.00480	—	—
	Benzo(k)fluoranthene	207-08-9	150†	mg/kg	—	—	—	<0.00480	—	—
	Chrysene	218-01-9	600	mg/kg	—	—	—	<0.00290	—	—
	Dibenzo(a,h)anthracene	53-70-3	1.2†	mg/kg	—	—	—	<0.00480	—	—
	Fluoranthene	206-44-0	590	mg/kg	—	—	—	<0.00290	—	—
	Fluorene	86-73-7	36	mg/kg	—	—	—	<0.00480	—	—
	Indeno(1,2,3-cd)pyrene	193-39-5	12†	mg/kg	—	—	—	<0.00480	—	—
	Naphthalene	91-20-3	0.038	mg/kg	—	—	—	0.0680	—	—
	Phenanthrene	85-01-8	39	mg/kg	—	—	—	<0.00380	—	—
	Pyrene	129-00-0	87	mg/kg	—	—	—	0.00340 J	—	—
SW8082A (PCBs)	Aroclor-1016	12674-11-2	1.0 total †	mg/Kg	—	—	—	<0.0170	—	—
	Aroclor-1221	11104-28-2		mg/Kg	—	—	—	<0.0190	—	—
	Aroclor-1232	11141-16-5		mg/Kg	—	—	—	<0.0170	—	—
	Aroclor-1242	53469-21-9		mg/Kg	—	—	—	<0.0170	—	—
	Aroclor-1248	12672-29-6		mg/Kg	—	—	—	<0.0170	—	—

Table 1 — Soil Boring Results

Analytical Method	Analyte	CAS#	Regulatory Limit	Units	B-20	B-21	B-22	B-23	B-24	B-25
					12/11/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024	12/12/2024
SW8082A (PCBs)	Aroclor-1254	11097-69-1	1.0 total †	mg/Kg	—	—	—	<0.0190	—	—
	Aroclor-1260	11096-82-5		mg/Kg	—	—	—	<0.0170	—	—
EPA 537 Mod (PFAS)	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	3.0	µg/kg	<0.230	0.290	0.420	<0.220	0.290	<0.240
	Perfluorooctanoic acid (PFOA)	335-67-1	1.7	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluorobutanesulfonic acid (PFBS)	375-73-5	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluorodecanoic acid (PFDA)	335-76-2	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluorododecanoic acid (PFDoA)	307-55-1	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluoroheptanoic acid (PFHpA)	375-85-9	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	N/A	µg/kg	<0.230	<0.230	0.0930 J*	<0.220	<0.220	<0.240
	Perfluorohexanoic acid (PFHxA)	307-24-4	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluorononanoic acid (PFNA)	375-95-1	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluorotetradecanoic acid (PFTeA)	376-06-7	N/A	µg/kg	<0.230 J*	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluorotridecanoic acid (PFTrDA)	72629-94-8	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	Perfluoroundecanoic acid (PFUnA)	2058-94-8	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	919005-14-4	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	2991-50-6	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	2355-31-9	N/A	µg/kg	<0.230	<0.230	<0.230	<0.220	<0.220	<0.240
SW6020B	Lead	7439-92-1	400†	mg/Kg	—	—	—	2.80	—	—

Notes: Results reported from Eurofins Seattle work order 580-146688-1.
Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Soil Cleanup Levels Table (Migration to Groundwater), unless otherwise specified.
† Regulatory limits from 18 AAC 75.341 Table B1 Method Two - Over 40 Inch Zone – Human Health Value.
N/A No applicable regulatory limit exists for the associated analyte.
— The associated analyte was not reported for this sample.
< Analyte not detected; listed as less than the limit of detection unless otherwise flagged due to quality-control failures.
<Bold The laboratory's reporting limit LOD exceeds the regulatory limit.
Bold The detected concentration exceeds the regulatory limit for the associated analyte.
J Estimated concentration, detected greater than the detection limit (DL) and less than the LOQ. 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. (*)

CAS # = Chemical Abstract Service Number; EPA = Environmental Protection Agency; LL = low level; µg/kg = microgram per kilogram; mg/kg = milligram per kilogram; PAHs = polynuclear aromatic hydrocarbons; PCB = polychlorinated biphenyls; PFAS = per- and polyfluoroalkyl substance; VOC = volatile organic compounds

Table 2 — Drinking Water Results

Analytical Method	Analyte	CAS	Drinking Water Standards		Units	B-1
			MCL	SMCL		12/10/2024
EPA 524.2 (VOCs)	1,1,1,2-Tetrachloroethane	630-20-6	-	-	µg/L	<0.50
	1,1,1-Trichloroethane	71-55-6	200	-	µg/L	<0.50
	1,1,2,2-Tetrachloroethane	79-34-5	-	-	µg/L	<0.50
	1,1,2-Trichloroethane	79-00-5	5	-	µg/L	<0.50
	1,1-Dichloroethane	75-34-3	-	-	µg/L	<0.50
	1,1-Dichloroethene	75-35-4	7	-	µg/L	<0.50
	1,1-Dichloropropene	563-58-6	-	-	µg/L	<0.50
	1,2,3-Trichlorobenzene	87-61-6	-	-	µg/L	<0.50
	1,2,3-Trichloropropane	96-18-4	-	-	µg/L	<0.50
	1,2,4-Trichlorobenzene	120-82-1	70	-	µg/L	<0.50
	1,2,4-Trimethylbenzene	95-63-6	-	-	µg/L	<0.50
	1,2-Dibromo-3-chloropropane	96-12-8	0.2	-	µg/L	<0.20
	1,2-Dibromoethane	106-93-4	0.05	-	µg/L	<0.20
	1,2-Dichlorobenzene	95-50-1	600	-	µg/L	<0.50
	1,2-Dichloroethane	107-06-2	5	-	µg/L	<0.50
	1,2-Dichloropropane	78-87-5	5	-	µg/L	<0.25
	1,3,5-Trimethylbenzene	108-67-8	-	-	µg/L	<0.50
	1,3-Dichlorobenzene	541-73-1	-	-	µg/L	<0.50
	1,3-Dichloropropane	142-28-9	-	-	µg/L	<0.50
	1,4-Dichlorobenzene	106-46-7	75	-	µg/L	<0.50
	2,2-Dichloropropane	594-20-7	-	-	µg/L	<0.50
	2-Chlorotoluene	95-49-8	-	-	µg/L	<0.50
	4-Chlorotoluene	106-43-4	-	-	µg/L	<0.50
	Benzene	71-43-2	5	-	µg/L	<0.50
	Bromobenzene	108-86-1	-	-	µg/L	<0.50
	Bromochloromethane	74-97-5	-	-	µg/L	<0.50
	Bromodichloromethane	75-27-4	80	-	µg/L	<0.50
	Bromoform	75-25-2	80	-	µg/L	<0.50
	Bromomethane	74-83-9	-	-	µg/L	<0.50
	Carbon tetrachloride	56-23-5	5	-	µg/L	<0.50
	Chlorobenzene	108-90-7	100	-	µg/L	<0.50

Table 2 — Drinking Water Results

Analytical Method	Analyte	CAS	Drinking Water Standards		Units	B-1
			MCL	SMCL		12/10/2024
EPA 524.2 (VOCs)	Chloroethane	75-00-3	-	-	µg/L	<0.50
	Chloroform	67-66-3	80	-	µg/L	<0.50
	Chloromethane	74-87-3	-	-	µg/L	<0.50
	cis-1,2-Dichloroethene	156-59-2	70	-	µg/L	<0.50
	cis-1,3-Dichloropropene	10061-01-5	-	-	µg/L	<0.50
	Dibromochloromethane	124-48-1	80	-	µg/L	<0.50
	Dibromomethane	74-95-3	-	-	µg/L	<0.50
	Dichlorodifluoromethane (Freon 12)	75-71-8	-	-	µg/L	<0.50
	Ethylbenzene	100-41-4	700	-	µg/L	<0.50
	Hexachlorobutadiene	87-68-3	-	-	µg/L	<0.25
	Isopropylbenzene	98-82-8	-	-	µg/L	<0.25
	m,p-Xylene	179601-23-1	-	-	µg/L	<0.50
	Methylene chloride	75-09-2	5	-	µg/L	<0.50
	Methyl-t-butyl ether (MTBE)	1634-04-4	-	-	µg/L	<0.50
	Naphthalene	91-20-3	-	-	µg/L	<0.50
	n-Butylbenzene	104-51-8	-	-	µg/L	<0.50
	n-Propylbenzene	103-65-1	-	-	µg/L	<0.50
	o-Xylene	95-47-6	-	-	µg/L	<0.50
	p-Isopropyltoluene	99-87-6	-	-	µg/L	<0.50
	sec-Butylbenzene	135-98-8	-	-	µg/L	<0.50
	Styrene	100-42-5	100	-	µg/L	<0.50
	tert-Butylbenzene	98-06-6	-	-	µg/L	<0.50
	Tetrachloroethene	127-18-4	5	-	µg/L	<0.50
	Toluene	108-88-3	1,000	-	µg/L	<0.50
	Total Xylenes	1330-20-7	10,000	-	µg/L	<0.50
	trans-1,2-Dichloroethene	156-60-5	100	-	µg/L	<0.50
	trans-1,3-Dichloropropene	10061-02-6	-	-	µg/L	<0.50
	Trichloroethene	79-01-6	5	-	µg/L	<0.50
	Trichlorofluoromethane (Freon 11)	75-69-4	-	-	µg/L	<0.50
	Vinyl chloride	75-01-4	2	-	µg/L	<0.20

Table 2 — Drinking Water Results

Analytical Method	Analyte	CAS	Drinking Water Standards		Units	B-1
			MCL	SMCL		12/10/2024
EPA 1633 (PFAS)	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	-	-	ng/L	<1.6
	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	1691-99-2	-	-	ng/L	<8.0
	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	24448-09-7	-	-	ng/L	<8.0
	3-Perfluoroheptylpropanoic acid (7:3 FTCA)	812-70-4	-	-	ng/L	<8.0
	3-Perfluoropentylpropanoic acid (5:3 FTCA)	914637-49-3	-	-	ng/L	<8.0
	3-Perfluoropropylpropanoic acid (3:3 FTCA)	356-02-5	-	-	ng/L	<3.2
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	919005-14-4	-	-	ng/L	<1.6
	4:2 FTS	757124-72-4	-	-	ng/L	<3.2
	6:2 FTS	27619-97-2	-	-	ng/L	<3.2
	8:2 FTS	39108-34-4	-	-	ng/L	<3.2
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	-	-	ng/L	<1.6
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	10	-	ng/L	<1.2
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	2991-50-6	-	-	ng/L	<1.6
	N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	4151-50-2	-	-	ng/L	<1.6
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	2355-31-9	-	-	ng/L	<1.6
	N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	31506-32-8	-	-	ng/L	<1.6
	Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	151772-58-6	-	-	ng/L	<1.6 J*
	Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	113507-82-7	-	-	ng/L	<1.6
	Perfluoro-3-Methoxypropanoic acid (PFMPA)	377-73-1	-	-	ng/L	<1.6
	Perfluoro-4-Methoxybutanoic Acid (PFMBA)	863090-89-5	-	-	ng/L	<1.6
	Perfluorobutanesulfonic acid (PFBS)	375-73-5	-	-	ng/L	<1.6
	Perfluorobutonic acid (PFBA)	375-22-4	-	-	ng/L	1.4 J
	Perfluorodecanesulfonic acid (PFDS)	335-77-3	-	-	ng/L	<1.6
	Perfluorodecanoic acid (PFDA)	335-76-2	-	-	ng/L	<1.6
	Perfluorododecane sulfonic acid (PFDoS)	79780-39-5	-	-	ng/L	<1.6
	Perfluorododecanoic acid (PFDoA)	307-55-1	-	-	ng/L	<1.6
	Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	-	-	ng/L	<1.6
	Perfluoroheptanoic acid (PFHpA)	375-85-9	-	-	ng/L	<1.6
	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	10	-	ng/L	1.0 J
	Perfluorohexanoic acid (PFHxA)	307-24-4	-	-	ng/L	<1.6
	Perfluorononanesulfonic acid (PFNS)	68259-12-1	-	-	ng/L	<1.6

Table 2 — Drinking Water Results

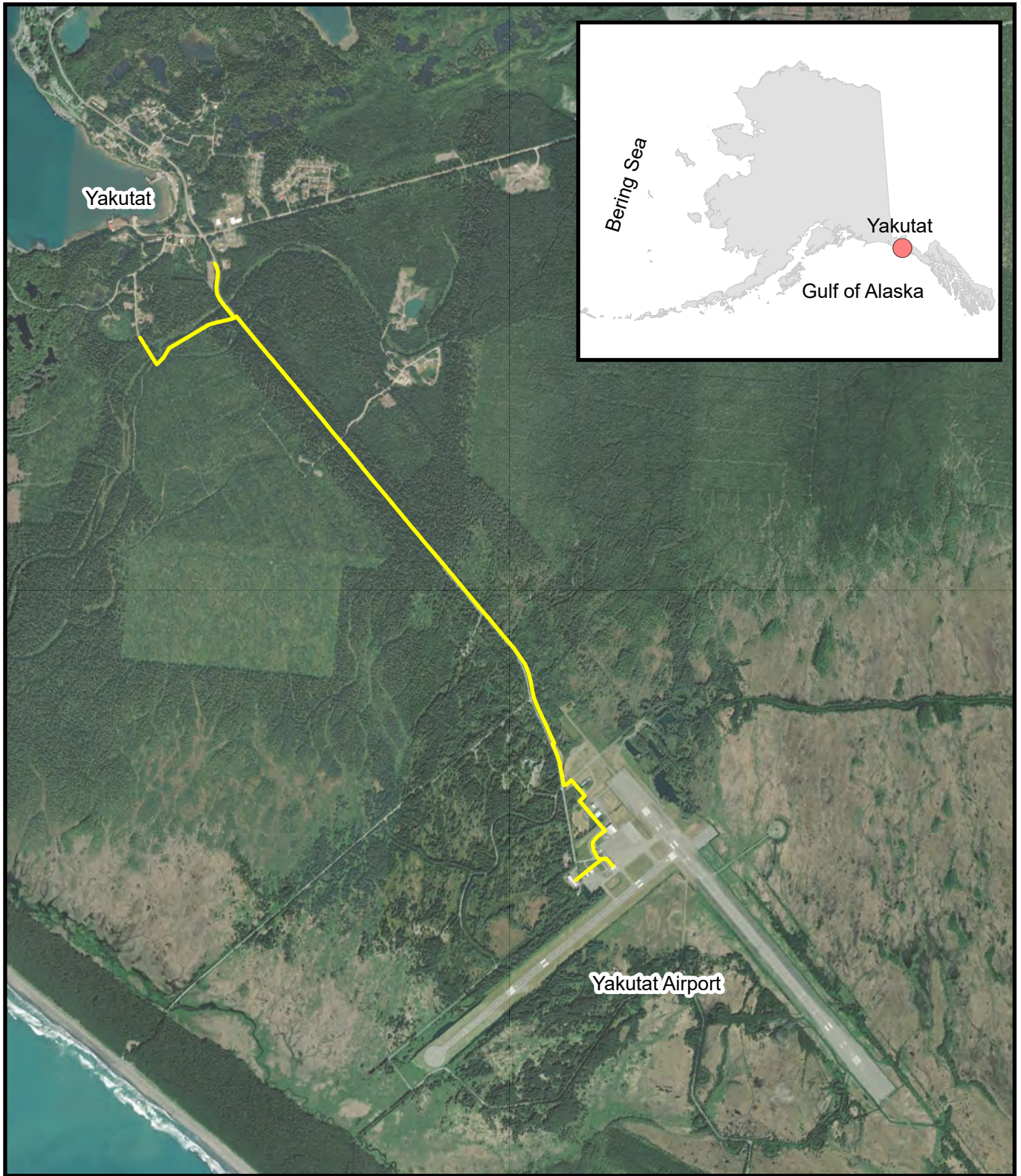
Analytical Method	Analyte	CAS	Drinking Water Standards		Units	B-1
			MCL	SMCL		12/10/2024
EPA 1633 (PFAS)	Perfluorononanoic acid (PFNA)	375-95-1	10	-	ng/L	<1.6
	Perfluorooctane sulfonamide (FOSA)	754-91-6	-	-	ng/L	<1.6
	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	4.0	-	ng/L	<1.6
	Perfluorooctanoic acid (PFOA)	335-67-1	4.0	-	ng/L	0.47 J
	Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	-	-	ng/L	<1.6
	Perfluoropentanoic acid (PFPeA)	2706-90-3	-	-	ng/L	<1.6
	Perfluorotetradecanoic acid (PFTeA)	376-06-7	-	-	ng/L	<1.6
	Perfluorotridecanoic acid (PFTrDA)	72629-94-8	-	-	ng/L	<1.6
	Perfluoroundecanoic acid (PFUnA)	2058-94-8	-	-	ng/L	<1.6
EPA 200.7	Calcium	7440-70-2	-	-	mg/L	57
	Iron - Dissolved	7439-89-6	-	0.3	mg/L	0.012
	Iron - Total	7439-89-6-T	-	0.3	mg/L	1.1
	Magnesium	7439-95-4	-	-	mg/L	4.3
	Potassium	7440-09-7	-	-	mg/L	2.6
	Sodium	7440-23-5	-	-	mg/L	3.4
EPA 200.8	Aluminum	7429-90-5	-	0.2	mg/L	0.96
	Antimony	7440-36-0	0.006	-	mg/L	<0.0010
	Arsenic	7440-38-2	0.010	-	mg/L	0.0017
	Barium	7440-39-3	2	-	mg/L	0.032
	Beryllium	7440-41-7	0.004	-	mg/L	<0.00030
	Cadmium	7440-43-9	0.005	-	mg/L	<0.00050
	Chromium	7440-47-3	0.1	-	mg/L	0.0032
	Copper	7440-50-8	1.3	1.0	mg/L	0.0055
	Manganese - Dissolved	7439-96-5	-	0.05	mg/L	0.12
	Manganese - Total	7439-96-5-T	-	0.05	mg/L	0.13
	Nickel	7440-02-0	-	-	mg/L	<0.0050
	Selenium	7782-49-2	0.05	-	mg/L	<0.0020
	Silver	7440-22-4	-	0.1	mg/L	<0.00050
	Thallium	7440-28-0	0.002	-	mg/L	<0.00030
	Zinc	7440-66-6	-	5	mg/L	0.006
EPA 245.1	Mercury	7439-97-6	0.002	-	mg/L	<0.00020

Table 2 — Drinking Water Results

Analytical Method	Analyte	CAS	Drinking Water Standards		Units	B-1
			MCL	SMCL		12/10/2024
SM 2340B	Calcium Hardness as CaCO3	STL00317	-	-	mg/L	140
SM 2320B	Total Alkalinity as CaCO3	STL00171	-	-	mg/L	140
EPA 353.2	Nitrate + Nitrite as N	STL00217	1	-	mg/L	<0.10 J*
	Nitrite as N	14797-65-0	1	-	mg/L	0.011 J*
Nitrate by calc	Nitrate as N	14797-55-8	10	-	mg/L	<0.10 J*
SM 4500 F C	Fluoride	16984-48-8	4.0	2.0	mg/L	<0.050
EPA 335.4	Cyanide	57-12-5	0.2	-	mg/L	<0.0050
EPA 300.0	Chloride	16887-00-6	-	250	mg/L	3.5
	Sulfate	14808-79-8	-	250	mg/L	7.1
EPA 150.1	pH	pH	-	6.5 - 8.5	su	7.6 J*
SM 2540C	Total Dissolved Solids	TDS	-	500	mg/L	19
SM 2120B	Color, True	Color	-	15	Color Units	<3.0
SM 2330B	Langelier Index	STL00247	-	-	LangSU	0.12
SM 9223B	Escherichia coli	68583-22-2	5.0%	-	None	Absent J*
	Total Coliform	STL00014	5.0%	-	None	Absent J*

- Notes:
- Results reported from Euforins Environmental Testing work order 810-131289-1
- Aside from PFAS, Drinking Water Standards were obtained from the EPAs 40 CFR 141 for MCLs and 40 CFR 143 for SMCLs.
- PFAS Drinking Water Standards were obtained from the EPA PFAS National Primary Drinking Water Regulation dated April 2024.
- No applicable regulatory limit exists for the associated analyte.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- <Bold The laboratory's RL exceeds the regulatory limit.
- Bold The detected concentration exceeds the regulatory limit for the associated analyte.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (*)

CAS # = Chemical Abstract Service Number; EPA = Environmental Protection Agency; LangSU = Langelier standard units; MCL = Maximum Contaminant Level; µg/L = microgram per liter; mg/L = milligram per liter; ng/L = nanogram per liter; PFAS = per- and polyfluoroalkyl substance; SMCL = Secondary Maximum Contaminant Level; SU = standard unit; VOC = volatile organic compounds



LEGEND

— Proposed Waterline Alignment

0 0.5 1 1.5
Miles



Yakutat Airport Water Extension
Yakutat, Alaska

VICINITY MAP

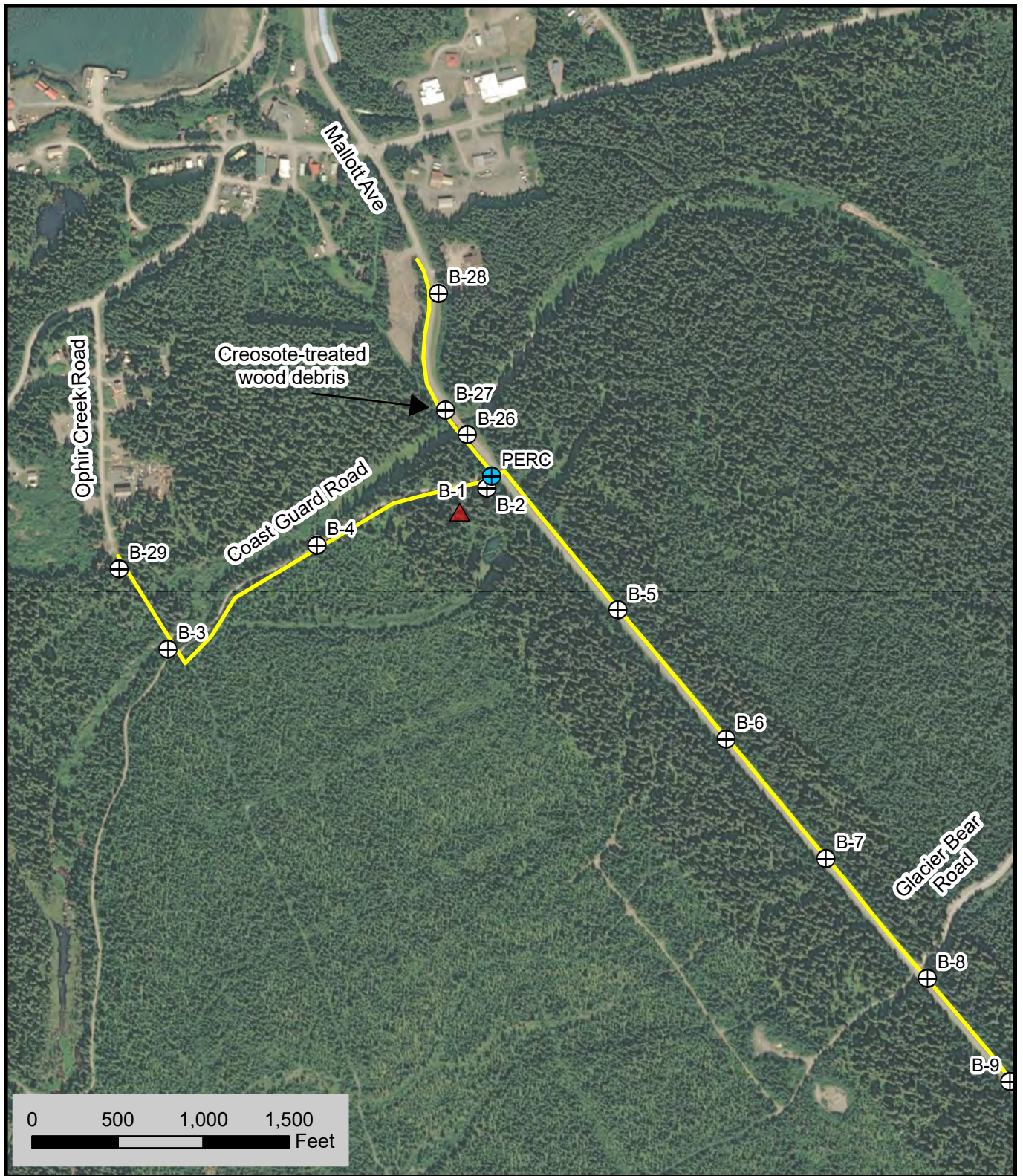
May 2025

112494-003

Imagery provided by Imagery provided by Maxar Products. Alaska High Resolution Imagery, Spot5 RGB © 2024 Maxar Technologies Inc., Alaska Geospatial Office, USGS.

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1



LEGEND

- | | |
|--|---|
| — Proposed Waterline Alignment | ● VOCs Detected Above DEC CULs |
| Soil Boring Location | ▲ Temporary Well Point |
| ⊕ Soil Boring | ⊕ Percolation Test Performed |
| ⊕ PFOS Detected Below DEC Soil CUL | |

Imagery provided by Imagery provided by Maxar Products. Alaska High Resolution Imagery, Spot5 RGB © 2024 Maxar Technologies Inc., Alaska Geospatial Office, USGS.

Yakutat Airport Water Extension
Yakutat, Alaska

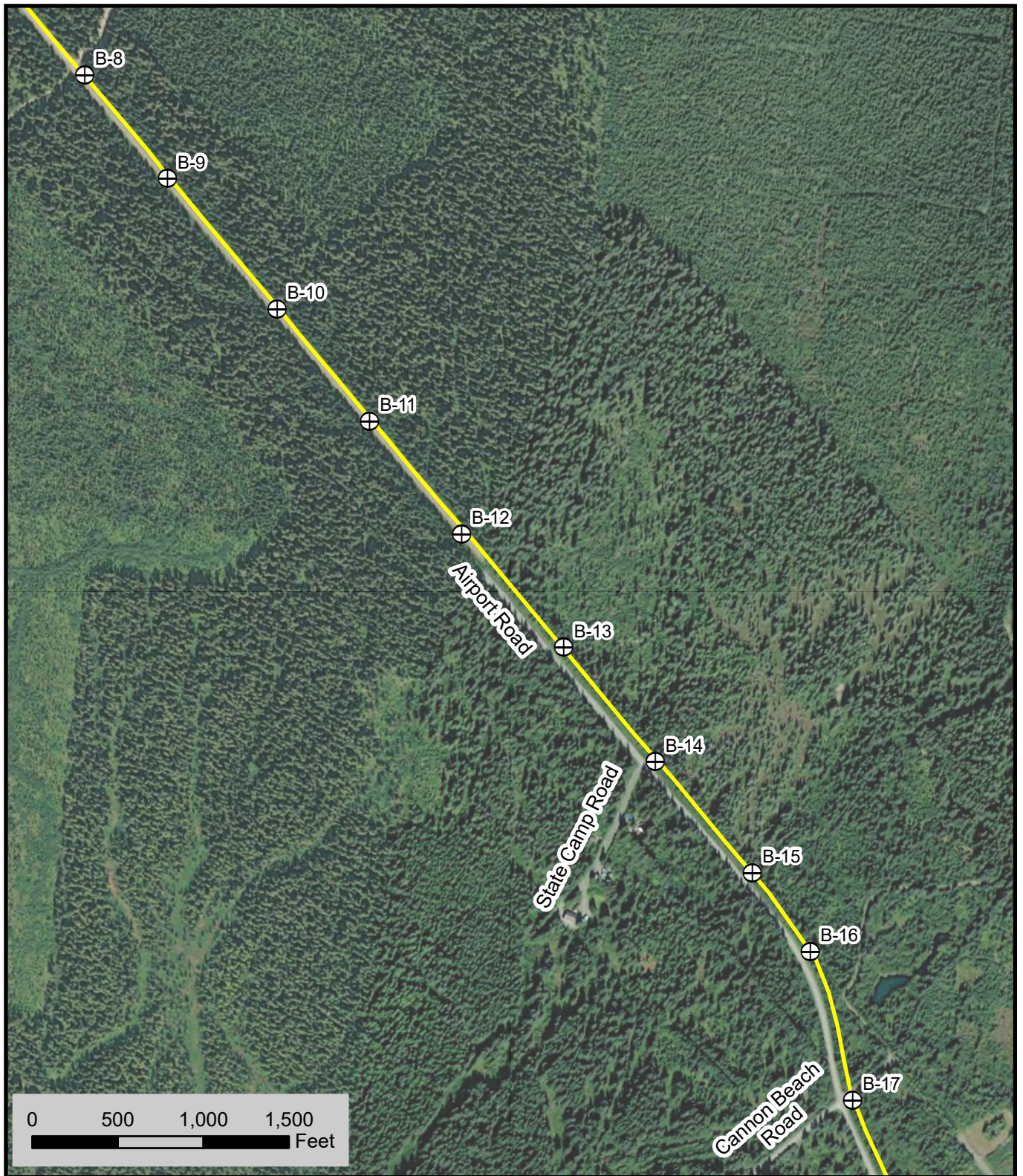
SITE PLAN

May 2025

112494-003

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2
Sheet 1 of 3



LEGEND

- | | |
|--|---|
| — Proposed Waterline Alignment | ● VOCs Detected Above DEC CULs |
| Soil Boring Location | ▲ Temporary Well Point |
| ⊕ Soil Boring | ⊕ Percolation Test Performed |
| ⊕ PFOS Detected Below DEC Soil CUL | |

Imagery provided by Imagery provided by Maxar Products. Alaska High Resolution Imagery, Spot5 RGB © 2024 Maxar Technologies Inc., Alaska Geospatial Office, USGS.

Yakutat Airport Water Extension
Yakutat, Alaska

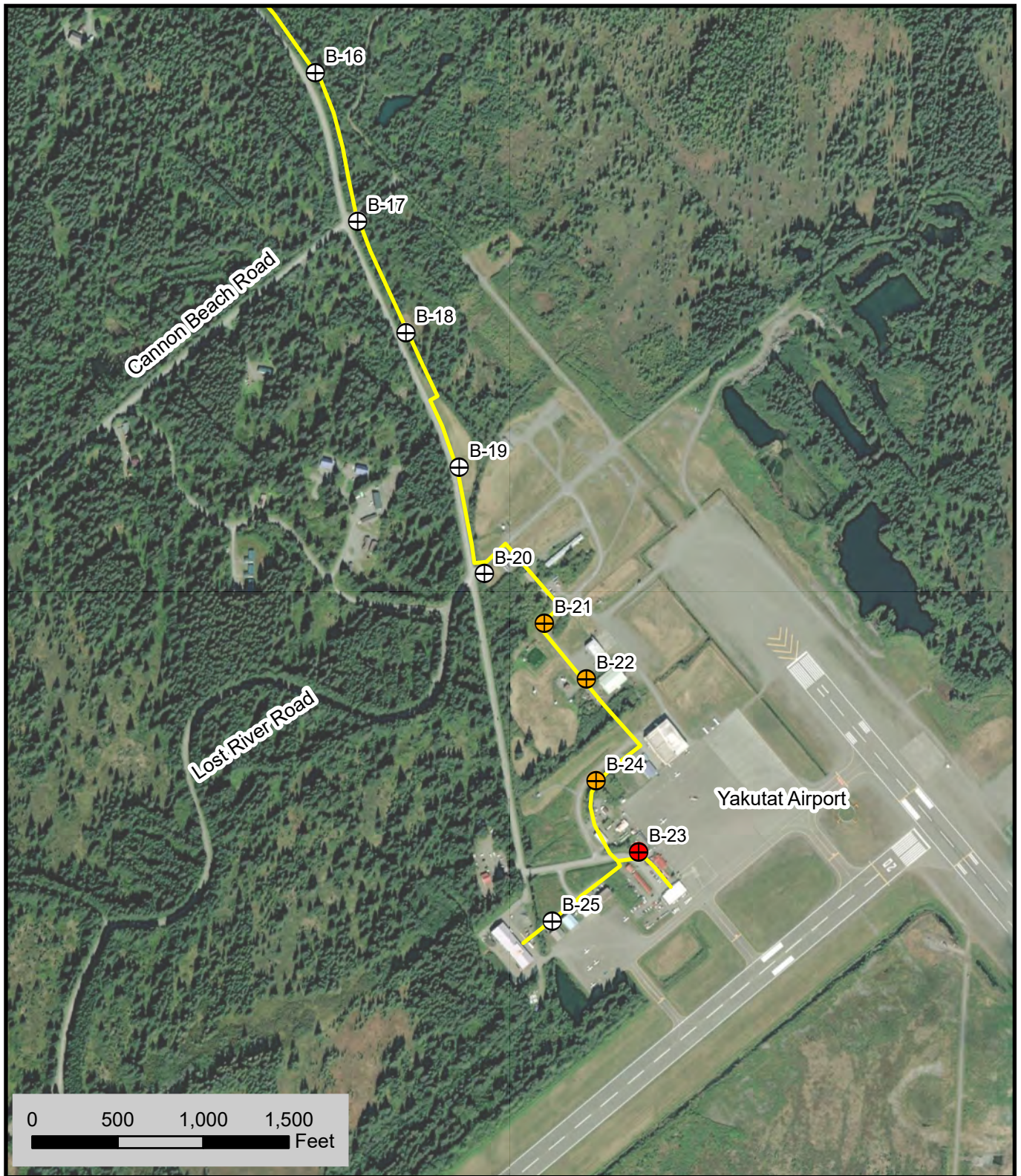
SITE PLAN

May 2025

112494-003

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2
Sheet 2 of 3



LEGEND

- | | |
|--|---|
| — Proposed Waterline Alignment | ⊕ VOCs Detected Above DEC CULs |
| Soil Boring Location | ▲ Temporary Well Point |
| ⊕ Soil Boring | ⊕ Percolation Test Performed |
| ⊕ PFOS Detected Below DEC Soil CUL | |

Imagery provided by Imagery provided by Maxar Products. Alaska High Resolution Imagery, Spot5 RGB © 2024 Maxar Technologies Inc., Alaska Geospatial Office, USGS.

Yakutat Airport Water Extension
Yakutat, Alaska

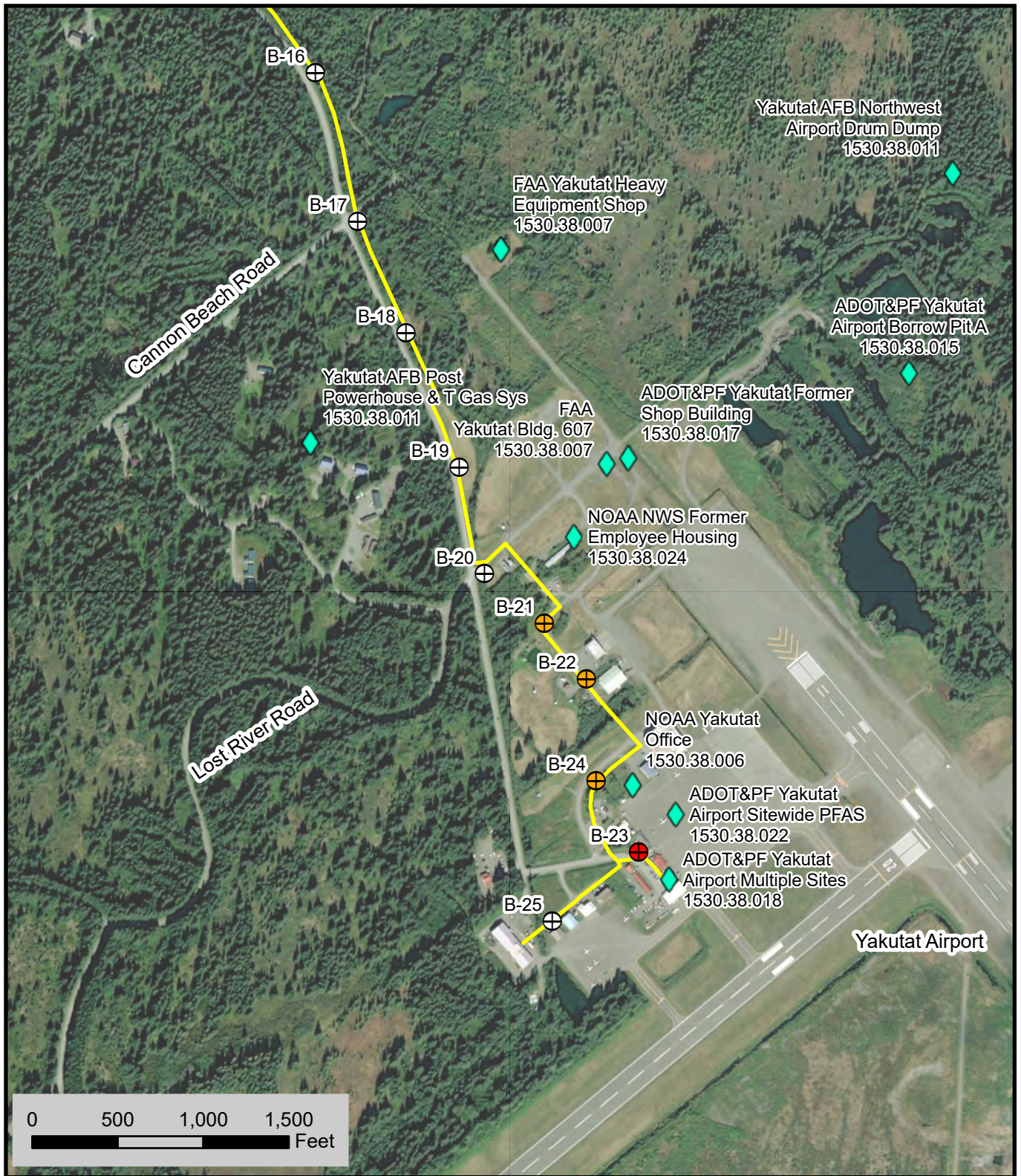
SITE PLAN

May 2025

112494-003

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2
Sheet 3 of 3



LEGEND

- | | |
|--|--|
|  Proposed Waterline Alignment |  Soil Boring Location |
|  DEC Active Contaminated Site |  PFOS Detected Below DEC Soil CUL |
| |  VOCs Detected Above DEC CULs |

Yakutat Airport Water Extension
Yakutat, Alaska

CONTAMINATED SITES

May 2025

112494-003

Imagery provided by Imagery provided by Maxar Products. Alaska High Resolution Imagery, Spot5 RGB © 2024 Maxar Technologies Inc., Alaska Geospatial Office, USGS.

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 3

Appendix A

Boring Logs

CONTENTS

- Figure A-1 Soil Description and Log Key
- Figure A-2 Frost Classification Legend
- Figure A-3 through A-31: Boring Logs of Borings B-01 through B-29

APPENDIX A: BORING LOGS

Shannon & Wilson, Inc. (S&W), uses a soil identification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following pages. Soil descriptions are based on visual-manual procedures (ASTM D2488) and laboratory testing procedures (ASTM D2487), if performed.

S&W INORGANIC SOIL CONSTITUENT DEFINITIONS

CONSTITUENT ²	FINE-GRAINED SOILS (50% or more fines) ¹	COARSE-GRAINED SOILS (less than 50% fines) ¹
Major	Silt, Lean Clay, Elastic Silt, or Fat Clay³	Sand or Gravel⁴
Modifying (Secondary) Precedes major constituent	30% or more coarse-grained: Sandy or Gravelly⁴	More than 12% fine-grained: Silty or Clayey³
Minor Follows major constituent	15% to 30% coarse-grained: with Sand or with Gravel⁴ 30% or more total coarse-grained and lesser coarse-grained constituent is 15% or more: with Sand or with Gravel⁵	5% to 12% fine-grained: with Silt or with Clay³ 15% or more of a second coarse-grained constituent: with Sand or with Gravel⁵

¹All percentages are by weight of total specimen passing a 3-inch sieve.

²The order of terms is: *Modifying Major with Minor*.

³Determined based on behavior.

⁴Determined based on which constituent comprises a larger percentage.

⁵Whichever is the lesser constituent.

MOISTURE CONTENT TERMS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

STANDARD PENETRATION TEST (SPT) SPECIFICATIONS

Hammer:	140 pounds with a 30-inch free fall. Rope on 6- to 10-inch-diam. cathead 2-1/4 rope turns, > 100 rpm
	NOTE: If automatic hammers are used, blow counts shown on boring logs should be adjusted to account for efficiency of hammer.
Sampler:	10 to 30 inches long Shoe I.D. = 1.375 inches Barrel I.D. = 1.5 inches Barrel O.D. = 2 inches
N-Value:	Sum blow counts for second and third 6-inch increments. Refusal: 50 blows for 6 inches or less; 10 blows for 0 inches.
	NOTE: Penetration resistances (N-values) shown on boring logs are as recorded in the field and have not been corrected for hammer efficiency, overburden, or other factors.

PARTICLE SIZE DEFINITIONS

DESCRIPTION	SIEVE NUMBER AND/OR APPROXIMATE SIZE
FINES	< #200 (0.075 mm = 0.003 in.)
SAND Fine Medium Coarse	#200 to #40 (0.075 to 0.4 mm; 0.003 to 0.02 in.) #40 to #10 (0.4 to 2 mm; 0.02 to 0.08 in.) #10 to #4 (2 to 4.75 mm; 0.08 to 0.187 in.)
GRAVEL Fine Coarse	#4 to 3/4 in. (4.75 to 19 mm; 0.187 to 0.75 in.) 3/4 to 3 in. (19 to 76 mm)
COBBLES	3 to 12 in. (76 to 305 mm)
BOULDERS	> 12 in. (305 mm)

RELATIVE DENSITY / CONSISTENCY

COHESIONLESS SOILS		COHESIVE SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
< 4	Very loose	< 2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
> 50	Very dense	15 - 30	Very stiff
		> 30	Hard

WELL AND BACKFILL SYMBOLS

	Bentonite Cement Grout		Surface Cement Seal
	Bentonite Grout		Asphalt or Cap
	Bentonite Chips		Slough
	Silica Sand		Inclinometer or Non-perforated Casing
	Perforated or Screened Casing		Vibrating Wire Piezometer

PERCENTAGES TERMS^{1,2}

Trace	< 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

¹Gravel, sand, and fines estimated by mass. Other constituents, such as organics, cobbles, and boulders, estimated by volume.

²Reprinted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

Yakutat Airport Water Line Extension
Yakutat, Alaska

SOIL DESCRIPTION AND LOG KEY

May 2025

112494-003

 SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 1 of 3

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)
(Modified From USACE Tech Memo 3-357, ASTM D2487, and ASTM D2488)

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL	TYPICAL IDENTIFICATIONS
COARSE-GRAINED SOILS (more than 50% retained on No. 200 sieve)	Gravels (more than 50% of coarse fraction retained on No. 4 sieve)	Gravel (less than 5% fines)	GW	Well-Graded Gravel; Well-Graded Gravel with Sand
			GP	Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Silty or Clayey Gravel (more than 12% fines)	GM	Silty Gravel; Silty Gravel with Sand
			GC	Clayey Gravel; Clayey Gravel with Sand
	Sands (50% or more of coarse fraction passes the No. 4 sieve)	Sand (less than 5% fines)	SW	Well-Graded Sand; Well-Graded Sand with Gravel
			SP	Poorly Graded Sand; Poorly Graded Sand with Gravel
		Silty or Clayey Sand (more than 12% fines)	SM	Silty Sand; Silty Sand with Gravel
			SC	Clayey Sand; Clayey Sand with Gravel
FINE-GRAINED SOILS (50% or more passes the No. 200 sieve)	Silts and Clays (liquid limit less than 50)	Inorganic	ML	Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
			CL	Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
		Organic	OL	Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
	Silts and Clays (liquid limit 50 or more)	Inorganic	MH	Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
			CH	Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
		Organic	OH	Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
HIGHLY-ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT	Peat or other highly organic soils (see ASTM D4427)

NOTE: No. 4 size = 4.75 mm = 0.187 in.; No. 200 size = 0.075 mm = 0.003 in.

NOTES

1. Dual symbols (symbols separated by a hyphen, i.e., SP-SM, Sand with Silt) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart. Graphics shown on the logs for these soil types are a combination of the two graphic symbols (e.g., SP and SM).
2. Borderline symbols (symbols separated by a slash, i.e., CL/ML, Lean Clay to Silt; SP-SM/SM, Sand with Silt to Silty Sand) indicate that the soil properties are close to the defining boundary between two groups.

Yakutat Airport Water Line Extension
Yakutat, Alaska

**SOIL DESCRIPTION
AND LOG KEY**

May 2025

112494-003

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 2 of 3

GRADATION TERMS

Poorly Graded	Narrow range of grain sizes present or, within the range of grain sizes present, one or more sizes are missing (Gap Graded). Meets criteria in ASTM D2487, if tested.
Well-Graded	Full range and even distribution of grain sizes present. Meets criteria in ASTM D2487, if tested.

CEMENTATION TERMS¹

Weak	Crumbles or breaks with handling or slight finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

PLASTICITY²

DESCRIPTION	VISUAL-MANUAL CRITERIA	APPROX. PLASTICITY INDEX RANGE
Nonplastic	A 1/8-in. thread cannot be rolled at any water content.	< 4
Low	A thread can barely be rolled and a lump cannot be formed when drier than the plastic limit.	4 to 10
Medium	A thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. A lump crumbles when drier than the plastic limit.	10 to 20
High	It take considerable time rolling and kneading to reach the plastic limit. A thread can be rerolled several times after reaching the plastic limit. A lump can be formed without crumbling when drier than the plastic limit.	> 20

ADDITIONAL TERMS

Mottled	Irregular patches of different colors.
Bioturbated	Soil disturbance or mixing by plants or animals.
Diamict	Nonsorted sediment; sand and gravel in silt and/or clay matrix.
Cuttings	Material brought to surface by drilling.
Slough	Material that caved from sides of borehole.
Sheared	Disturbed texture, mix of strengths.

PARTICLE ANGULARITY AND SHAPE TERMS¹

Angular	Sharp edges and unpolished planar surfaces.
Subangular	Similar to angular, but with rounded edges.
Subrounded	Nearly planar sides with well-rounded edges.
Rounded	Smoothly curved sides with no edges.
Flat	Width/thickness ratio > 3.
Elongated	Length/width ratio > 3.

¹Reprinted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

²Adapted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

ACRONYMS AND ABBREVIATIONS

ATD	At Time of Drilling
Diam.	Diameter
Elev.	Elevation
ft.	Feet
FeO	Iron Oxide
gal.	Gallons
Horiz.	Horizontal
HSA	Hollow Stem Auger
I.D.	Inside Diameter
in.	Inches
lbs.	Pounds
MgO	Magnesium Oxide
mm	Millimeter
MnO	Manganese Oxide
NA	Not Applicable or Not Available
NP	Nonplastic
O.D.	Outside Diameter
OW	Observation Well
pcf	Pounds per Cubic Foot
PID	Photo-Ionization Detector
PMT	Pressuremeter Test
ppm	Parts per Million
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
rpm	Rotations per Minute
SPT	Standard Penetration Test
USCS	Unified Soil Classification System
q _u	Unconfined Compressive Strength
VWP	Vibrating Wire Piezometer
Vert.	Vertical
WOH	Weight of Hammer
WOR	Weight of Rods
Wt.	Weight

STRUCTURE TERMS¹

Interbedded	Alternating layers of varying material or color with layers at least 1/4-inch thick; singular: bed.
Laminated	Alternating layers of varying material or color with layers less than 1/4-inch thick; singular: lamination.
Fissured	Breaks along definite planes or fractures with little resistance.
Slickensided	Fracture planes appear polished or glossy; sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps that resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
Homogeneous	Same color and appearance throughout.

Yakutat Airport Water Line Extension
Yakutat, Alaska

**SOIL DESCRIPTION
AND LOG KEY**

May 2025

112494-003



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 3 of 3

FROST CLASSIFICATION
(after Municipality of Anchorage, 2007)

GROUP		0.02 Mil.	P-200*	USC SYSTEM (based on P-200 results)
NFS	Sandy Soils	0 to 3	0 to 6	SW, SP, SW-SM, SP-SM
	Gravelly Soils	0 to 3	0 to 6	GW, GP, GW-GM, GP-GM
F1	Gravelly Soils	3 to 10	6 to 13	GM, GW-GM, GP-GM
F2	Sandy Soils	3 to 15	6 to 19	SP-SM, SW-SM, SM
	Gravelly Soils	10 to 20	13 to 25	GM
F3	Sands, except very fine silty sands**	Over 15	Over 19	SM, SC
	Gravelly Soils	Over 20	Over 25	GM, GC
	Clays, PI>12			CL, CH
F4	All Silts			ML, MH
	Very fine silty sands**	Over 15	Over 19	SM, SC
	Clays, PI<12			CL, CL-ML
	Varved clays and other finned grained, banded sediments			CL and ML CL, ML, and SM; SL, SH, and ML; CL, CH, ML, and SM

PI = Plasticity Index

P-200 = Percent passing the number 200 sieve

0.02 Mil. = Percent material below 0.02 millimeter grain size

*Approximate P-200 value equivalent for frost classification.
Value range based on typical, well-graded soil curves.

** Very fine sand : greater than 50% of sand
fraction passing the number 100 sieve

Yakutat Airport Water Line Extension
Yakutat, Alaska

FROST CLASSIFICATION LEGEND

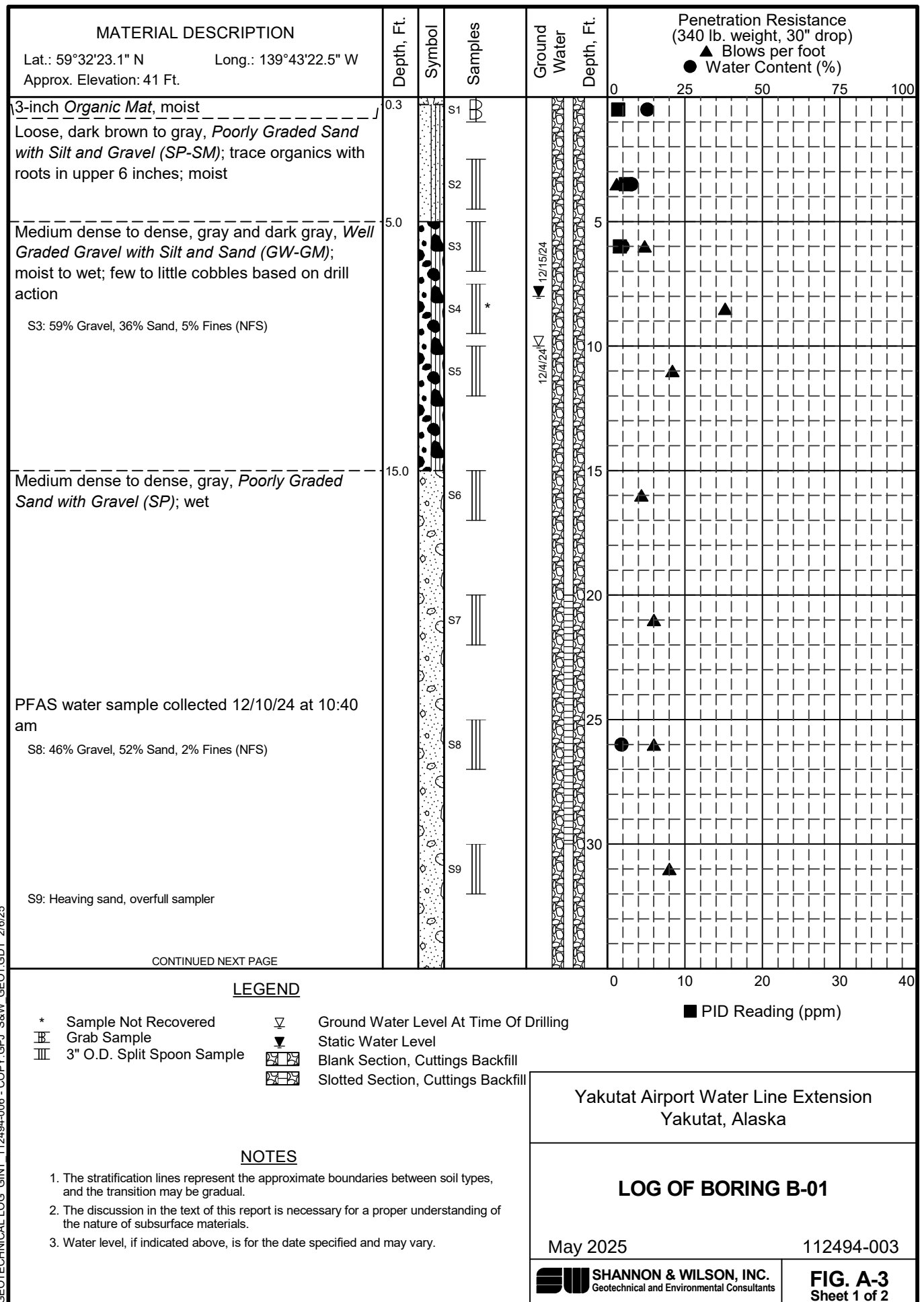
May 2025

112494-003



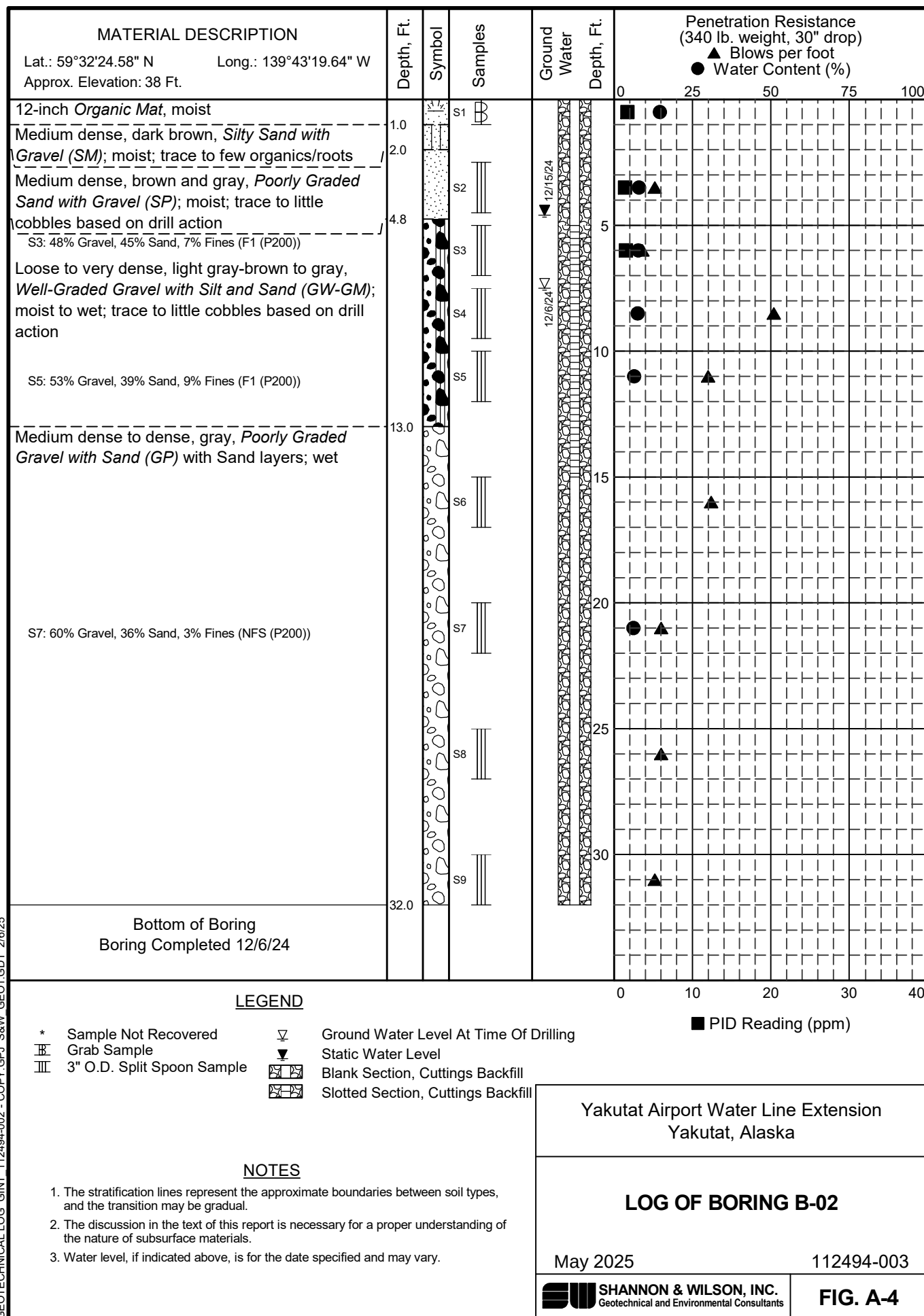
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

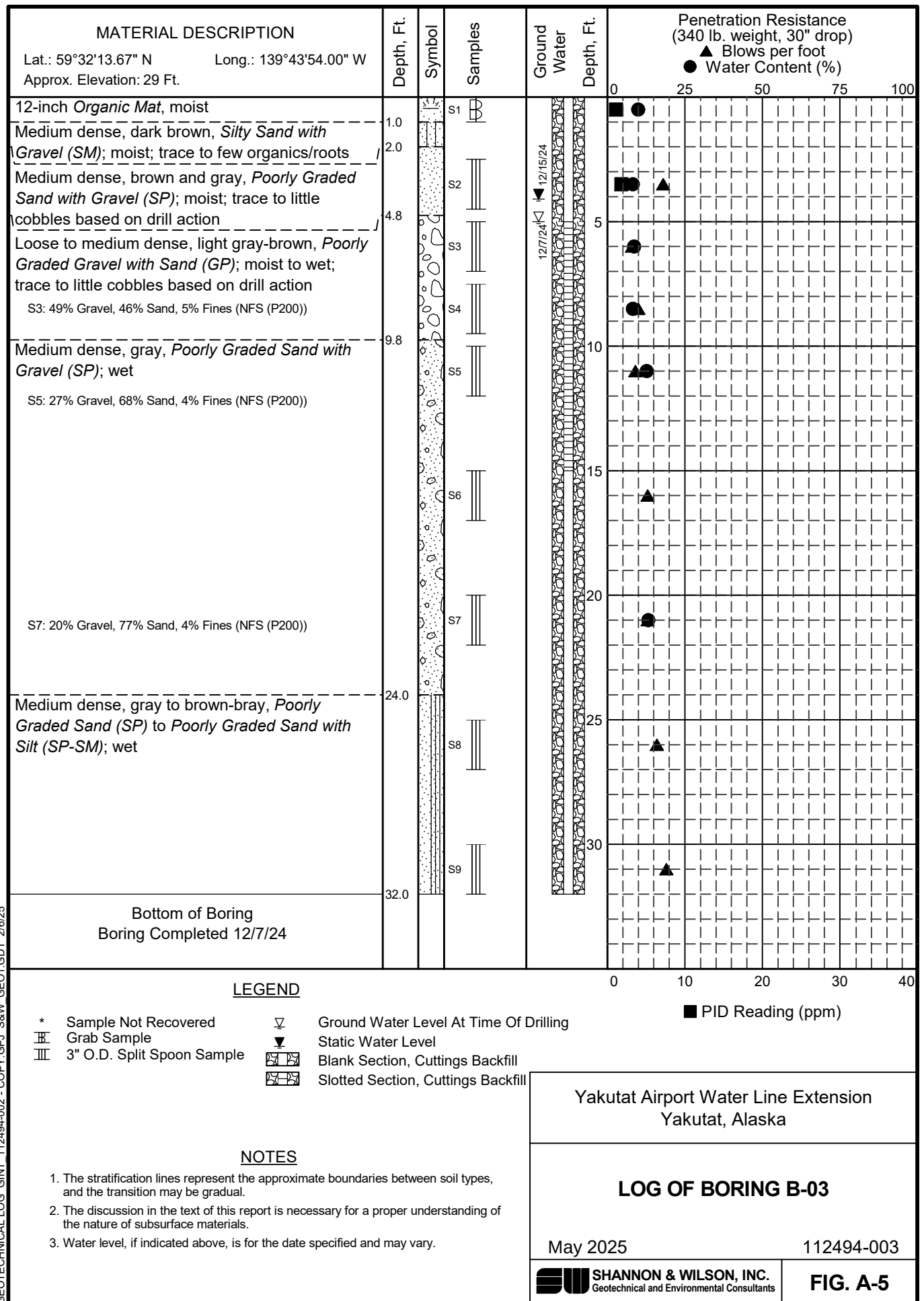
FIG. A-2



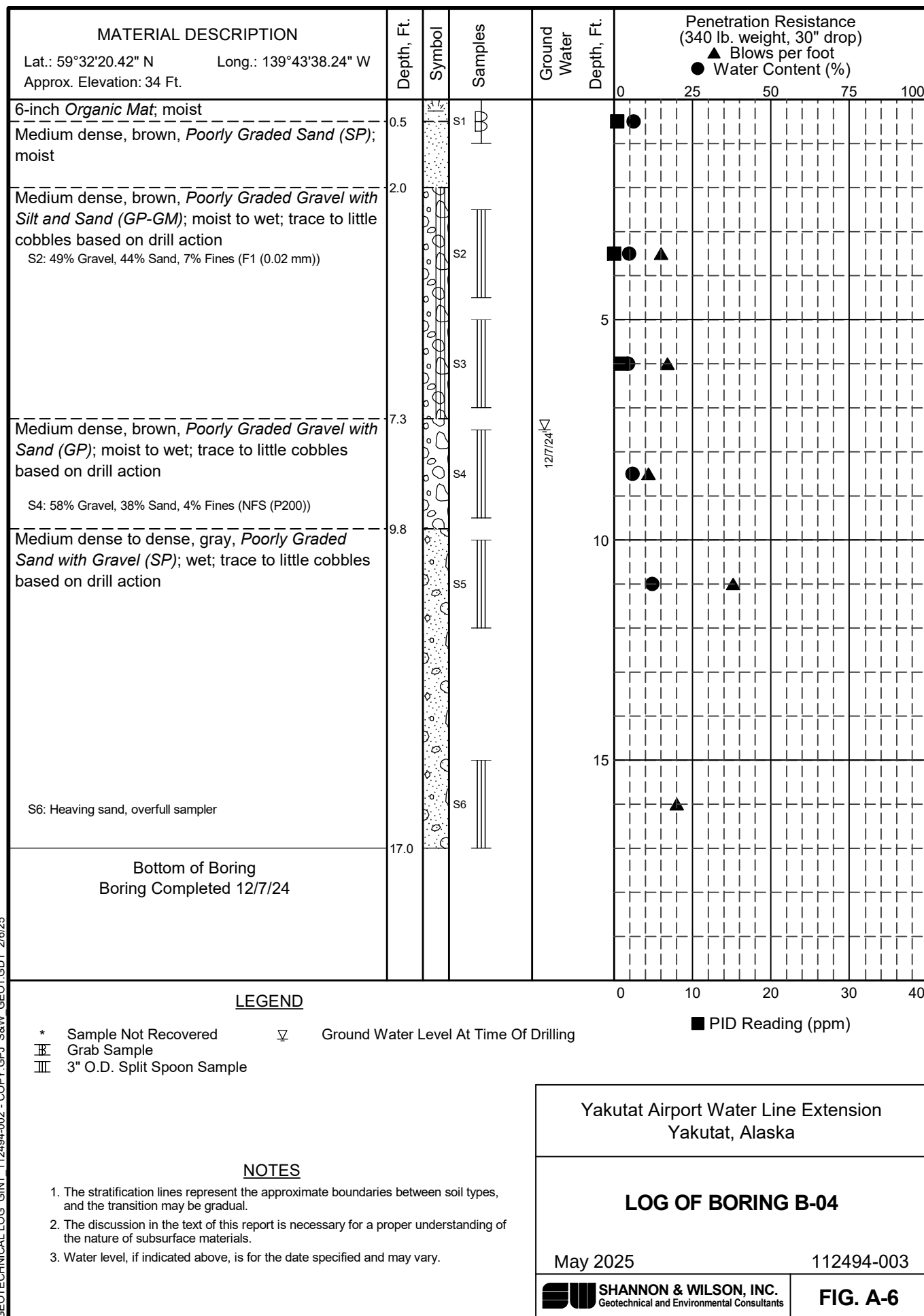
GEOTECHNICAL LOG GINT 112494-006 - COPY.GPJ S&W GEO1.GDT 2/6/25

GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25

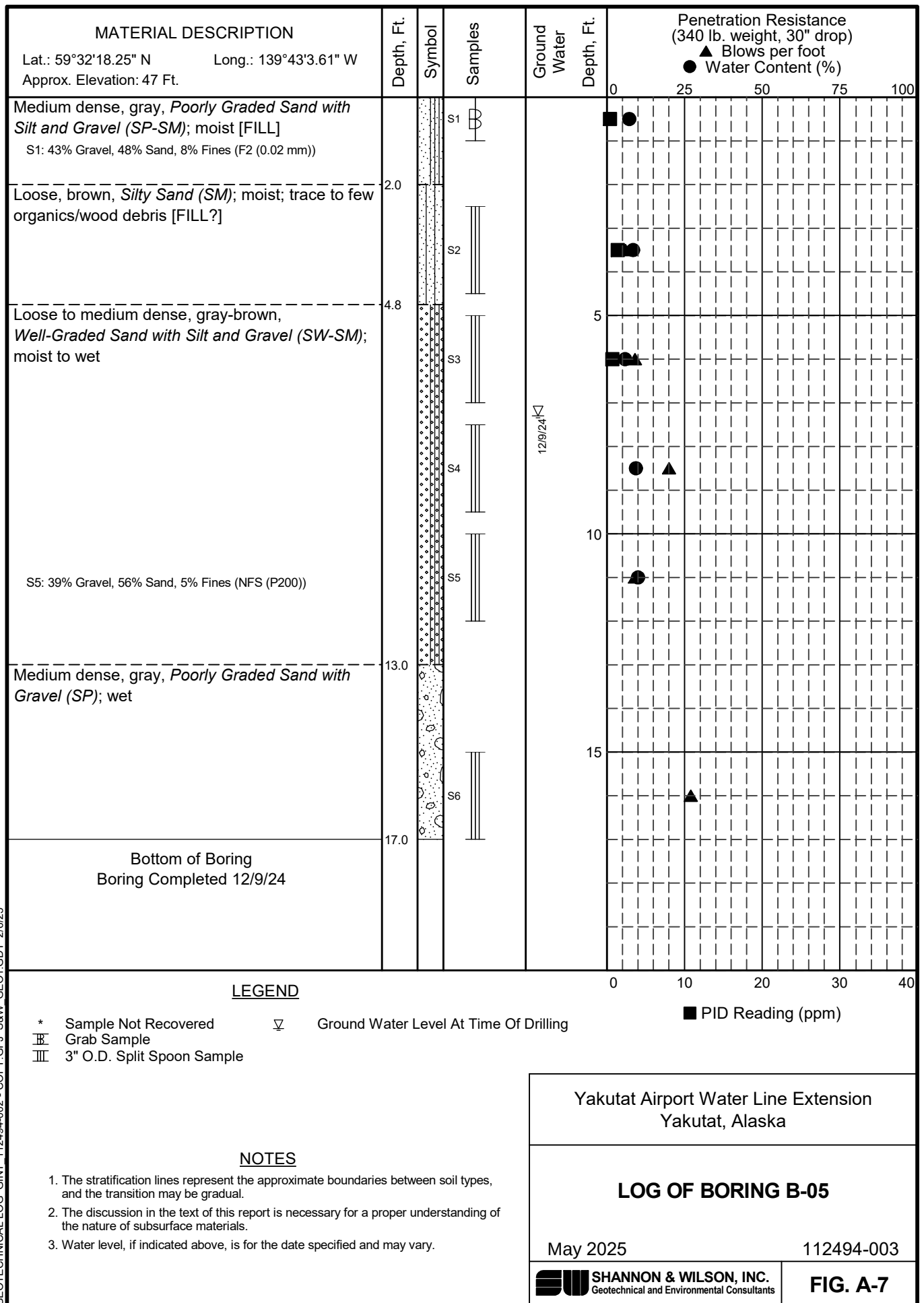


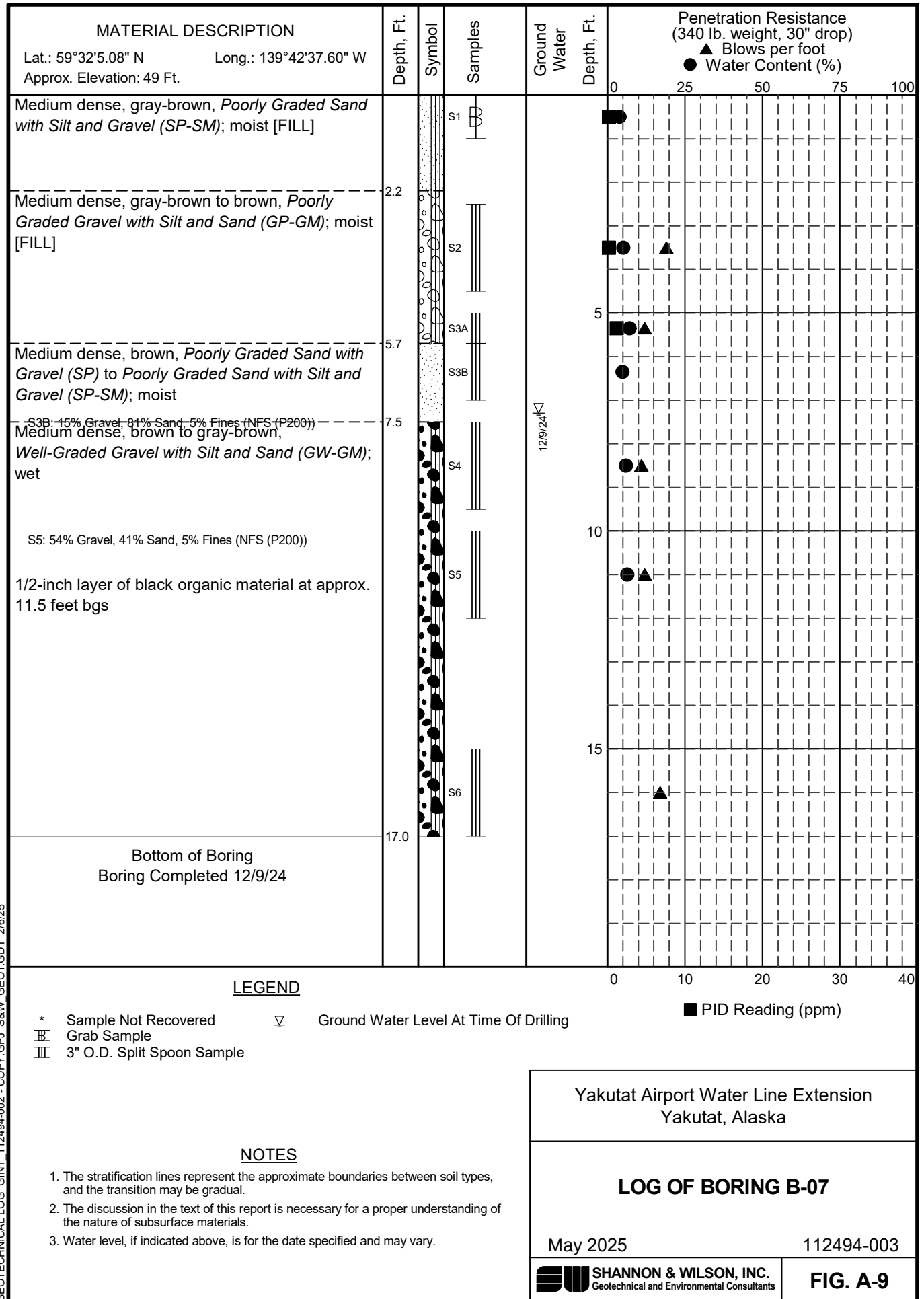


GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



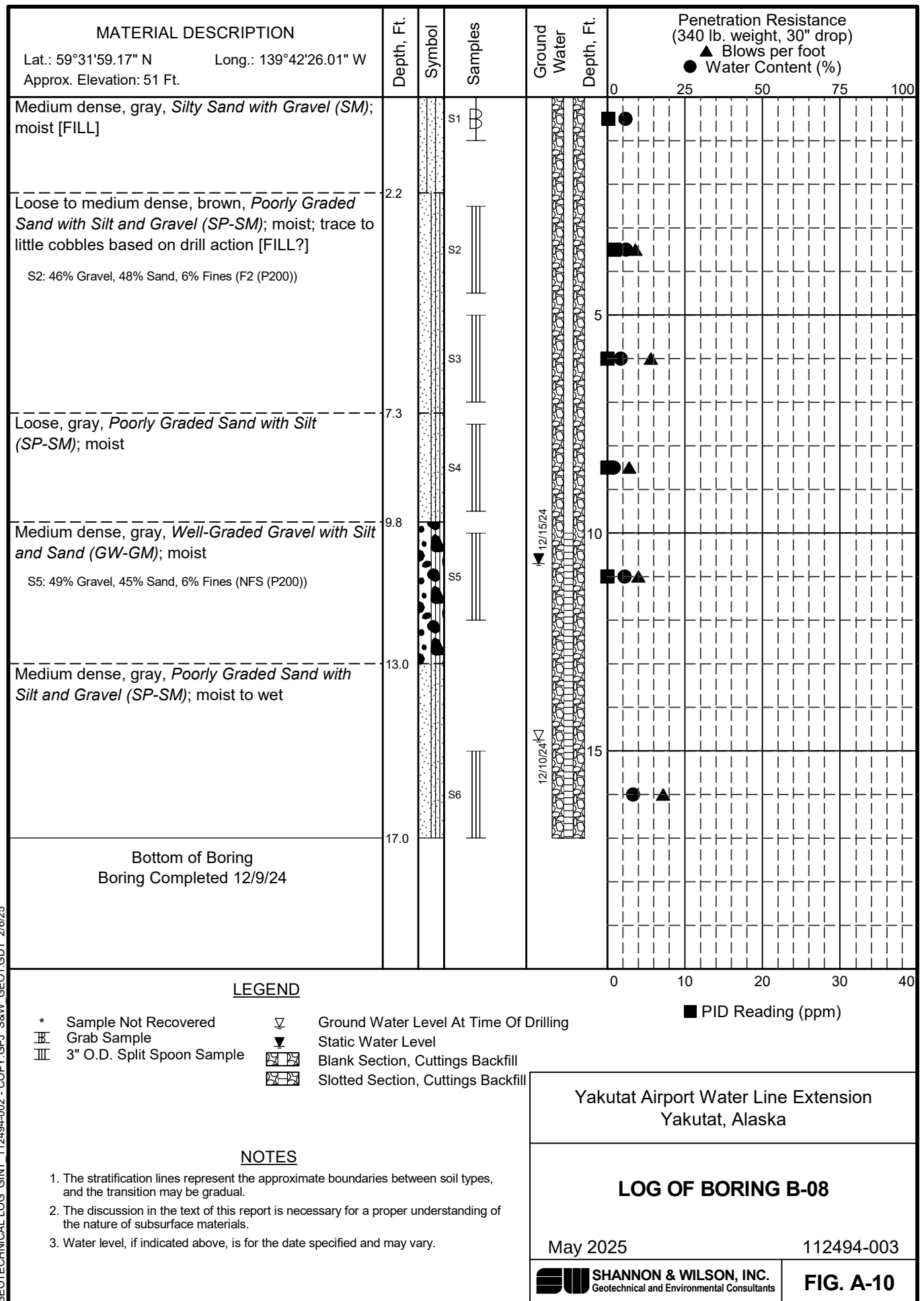
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



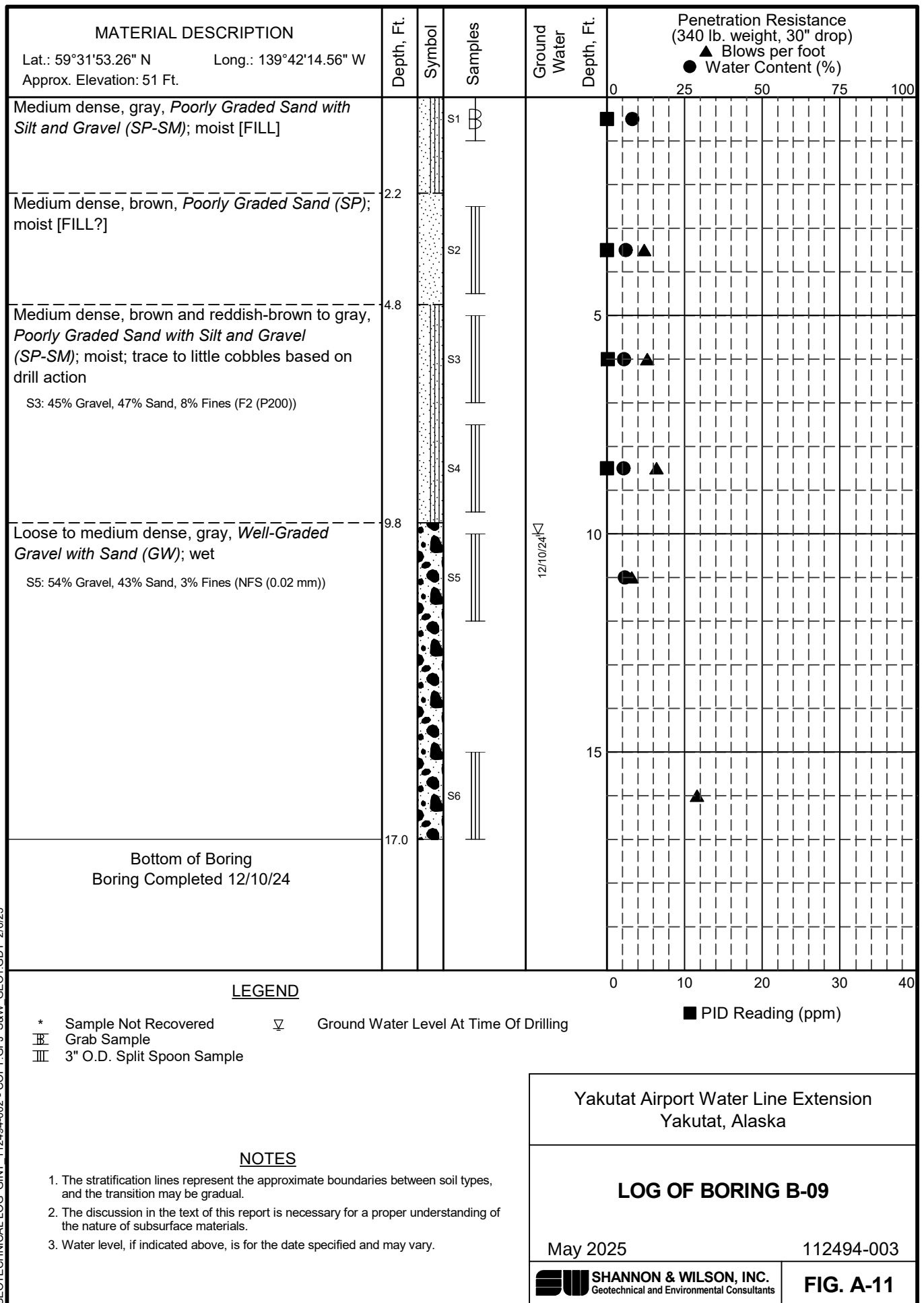


GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25

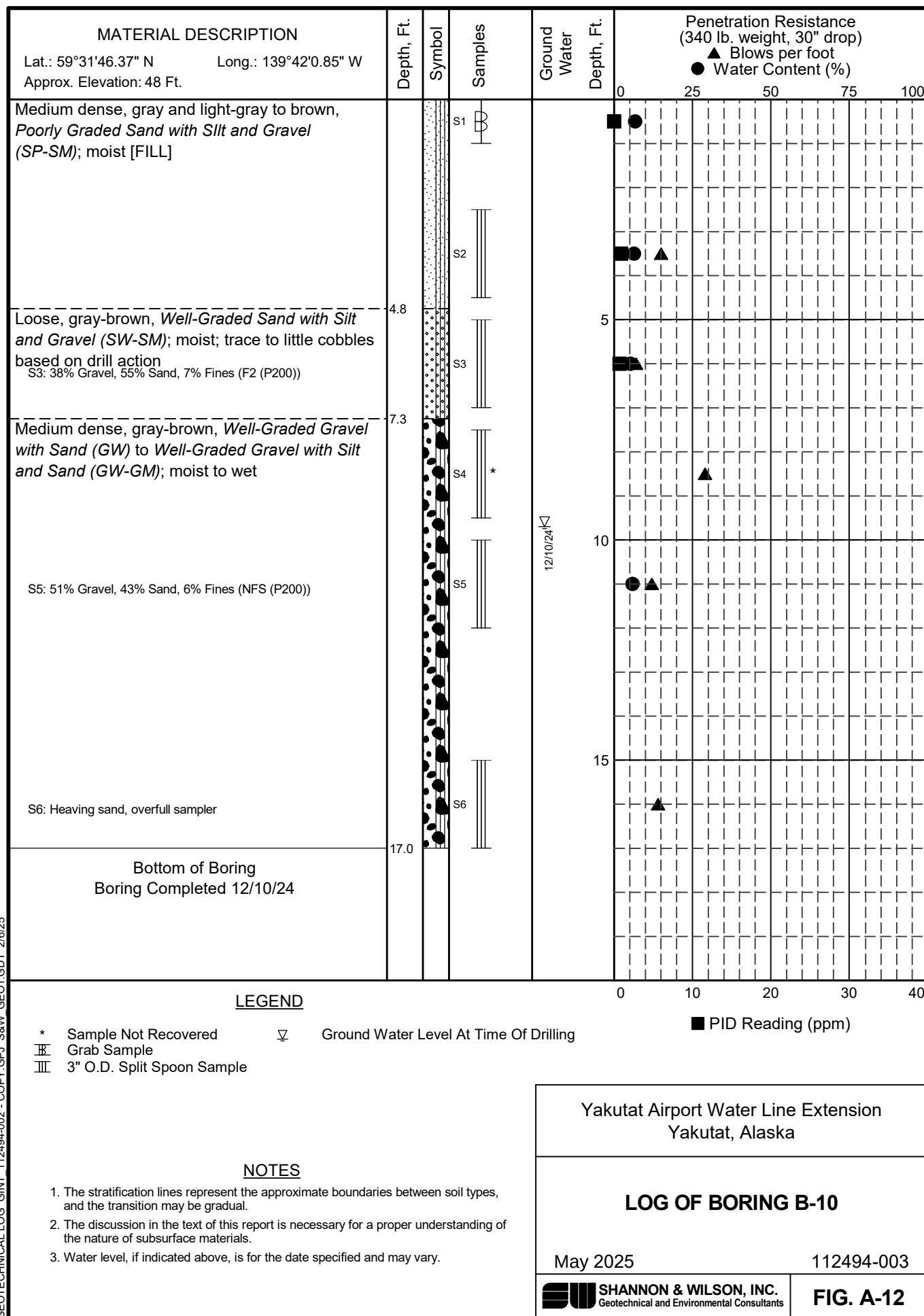
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



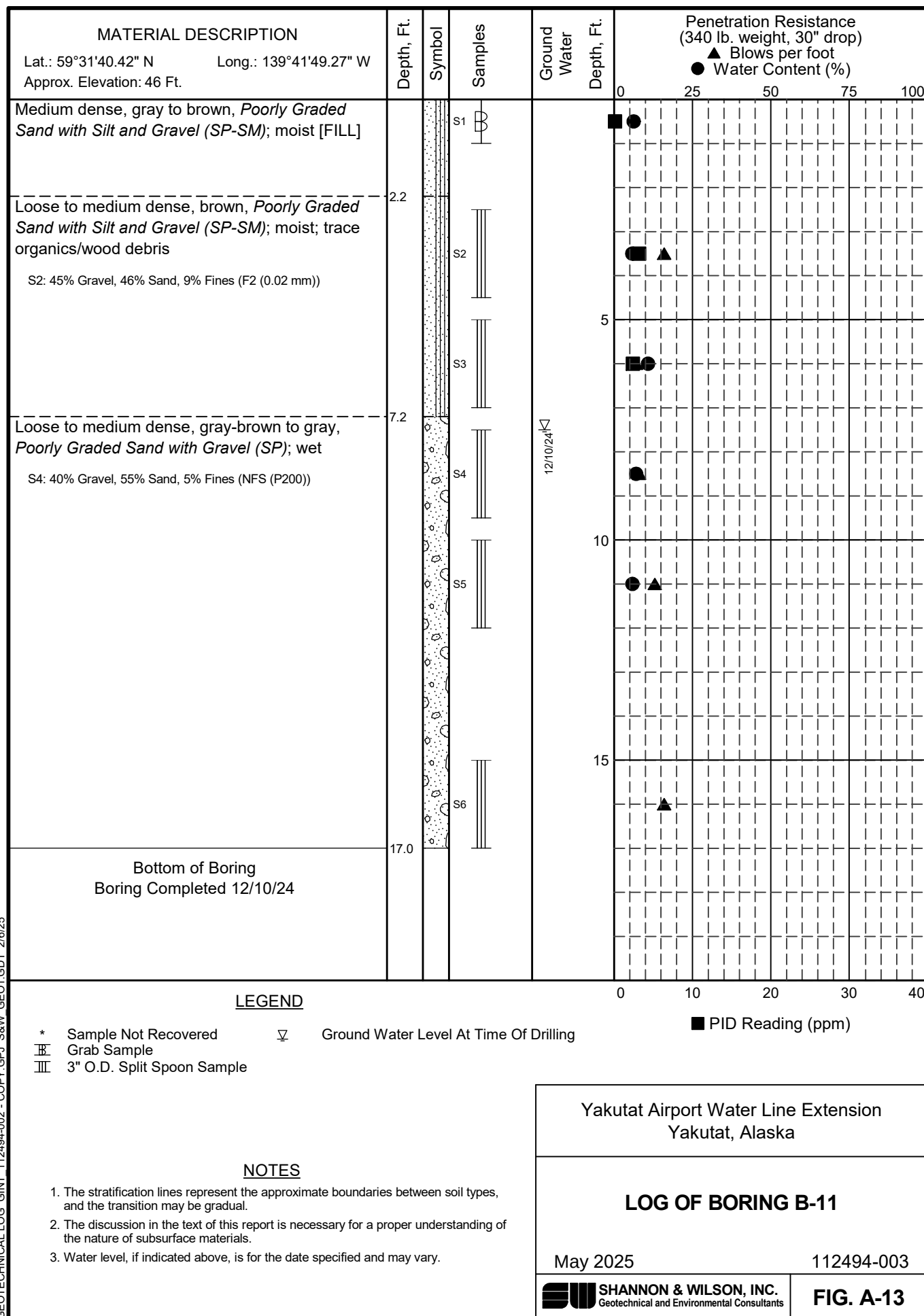
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



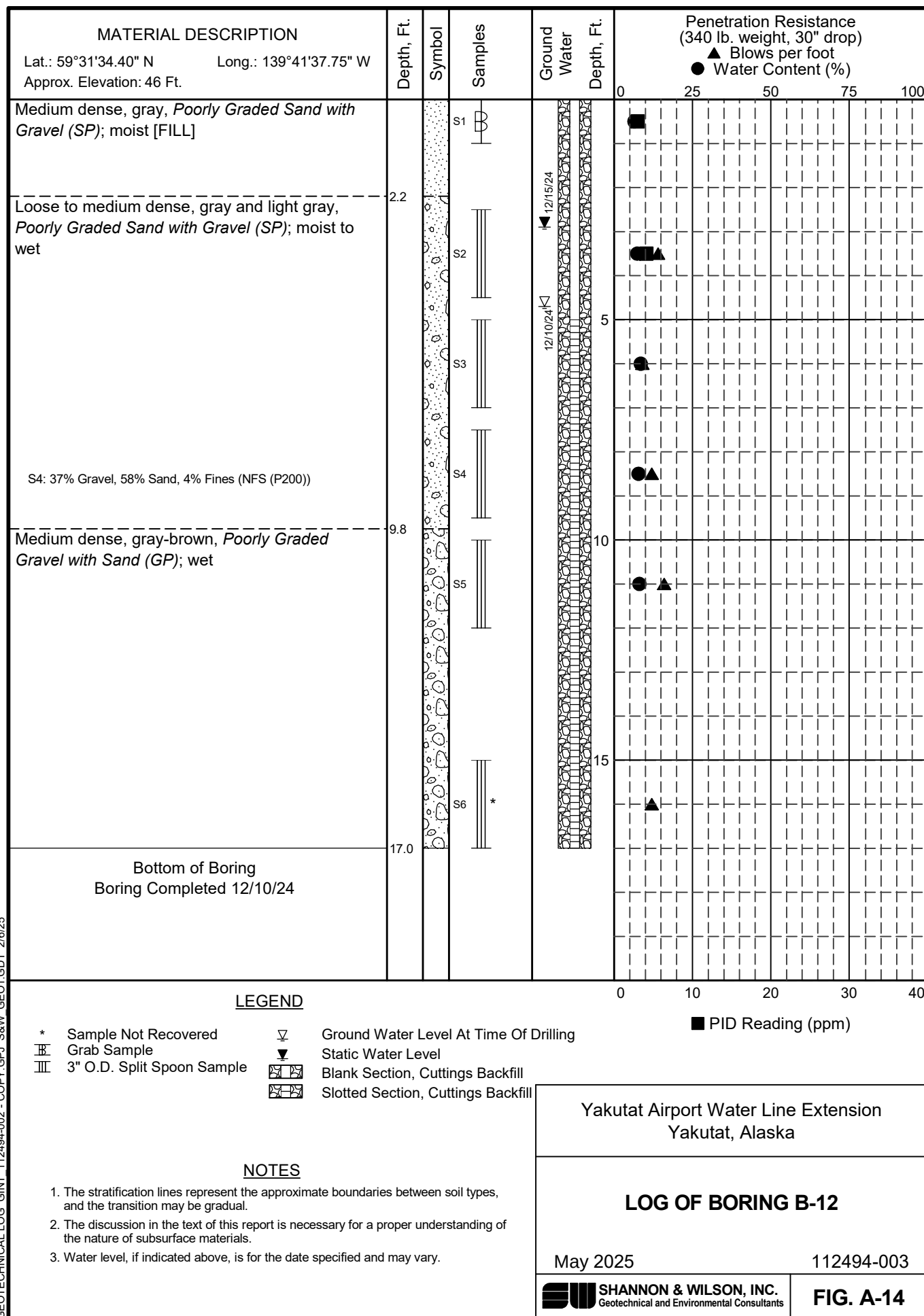
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



MATERIAL DESCRIPTION		Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.	Penetration Resistance (340 lb. weight, 30" drop)	
Lat.: 59°31'28.45" N Long.: 139°41'25.06" W Approx. Elevation: 45 Ft.							Blows per foot	Water Content (%)
Medium dense, gray to gray-brown, <i>Well-Graded Sand with Silt and Gravel (SW-SM)</i> ; moist to wet [FILL]				S1		0		
S1: 45% Gravel, 46% Sand, 9% Fines (F2 (P200))						25		
				S2		50		
						75		
						100		
Loose to dense, gray, <i>Well-Graded Sand with Gravel (SW)</i> to <i>Well-Graded Sand with Silt and Gravel (SW-SM)</i> ; wet; trace to few cobbles based on drill action		4.8		S3				
				S4				
				S5				
S5: 17% Gravel, 78% Sand, 5% Fines (NFS (0.02 mm))								
				S6				
Bottom of Boring Boring Completed 12/10/24		17.0						

LEGEND

* Sample Not Recovered ▽ Ground Water Level At Time Of Drilling

▢ Grab Sample

▣ 3" O.D. Split Spoon Sample

■ PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.

2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.

3. Water level, if indicated above, is for the date specified and may vary.

Yakutat Airport Water Line Extension
Yakutat, Alaska

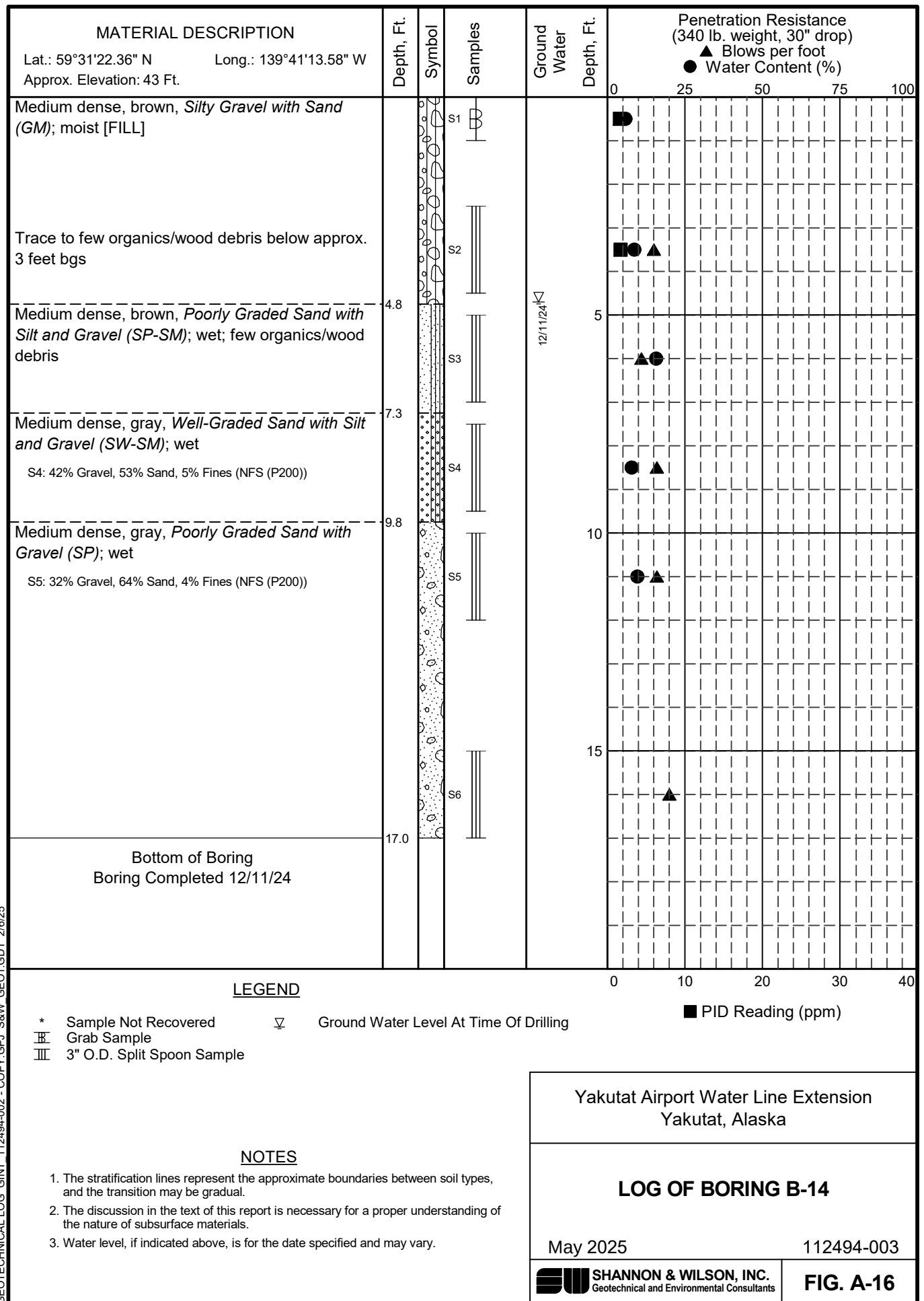
LOG OF BORING B-13

May 2025 112494-003

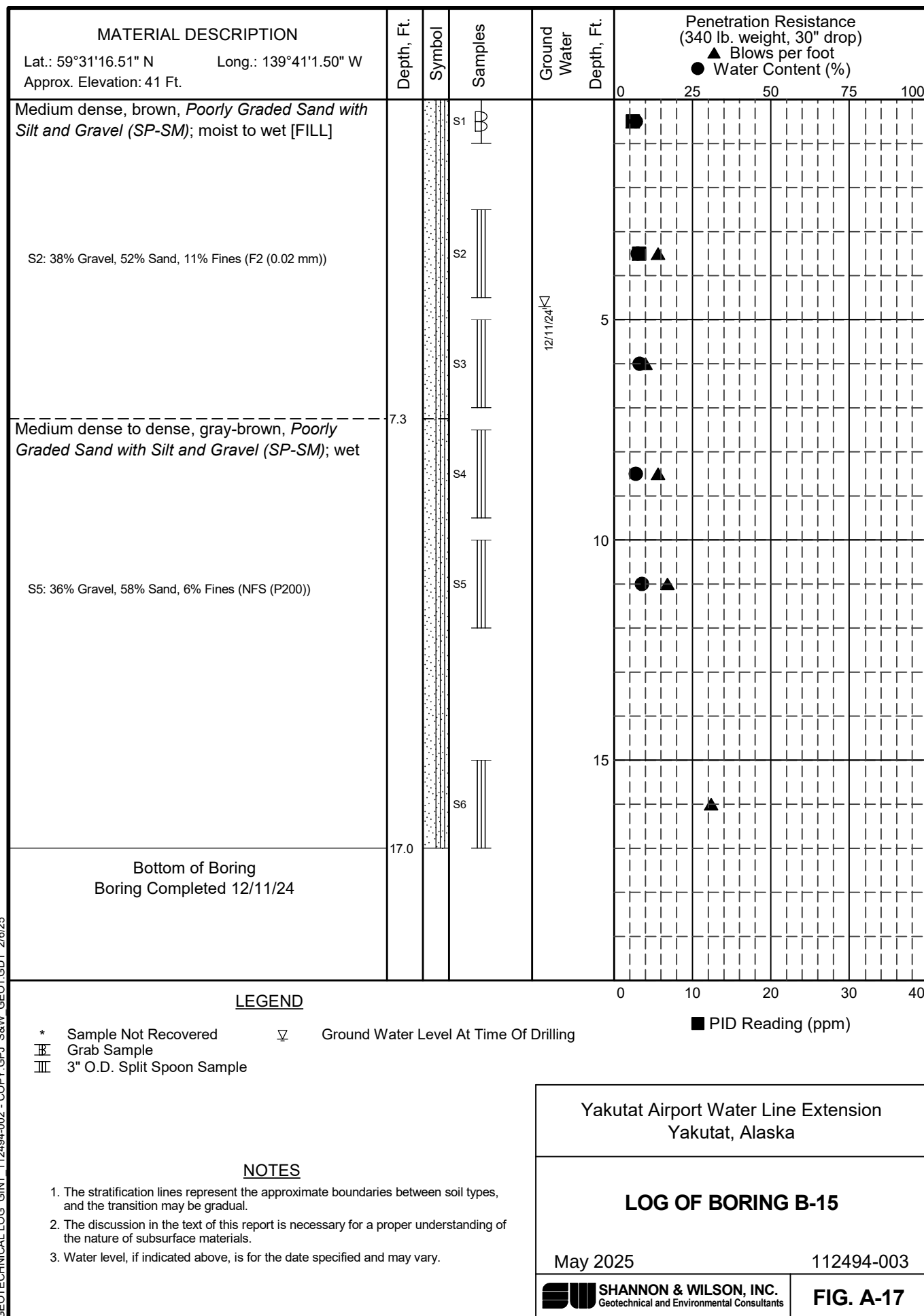
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-15

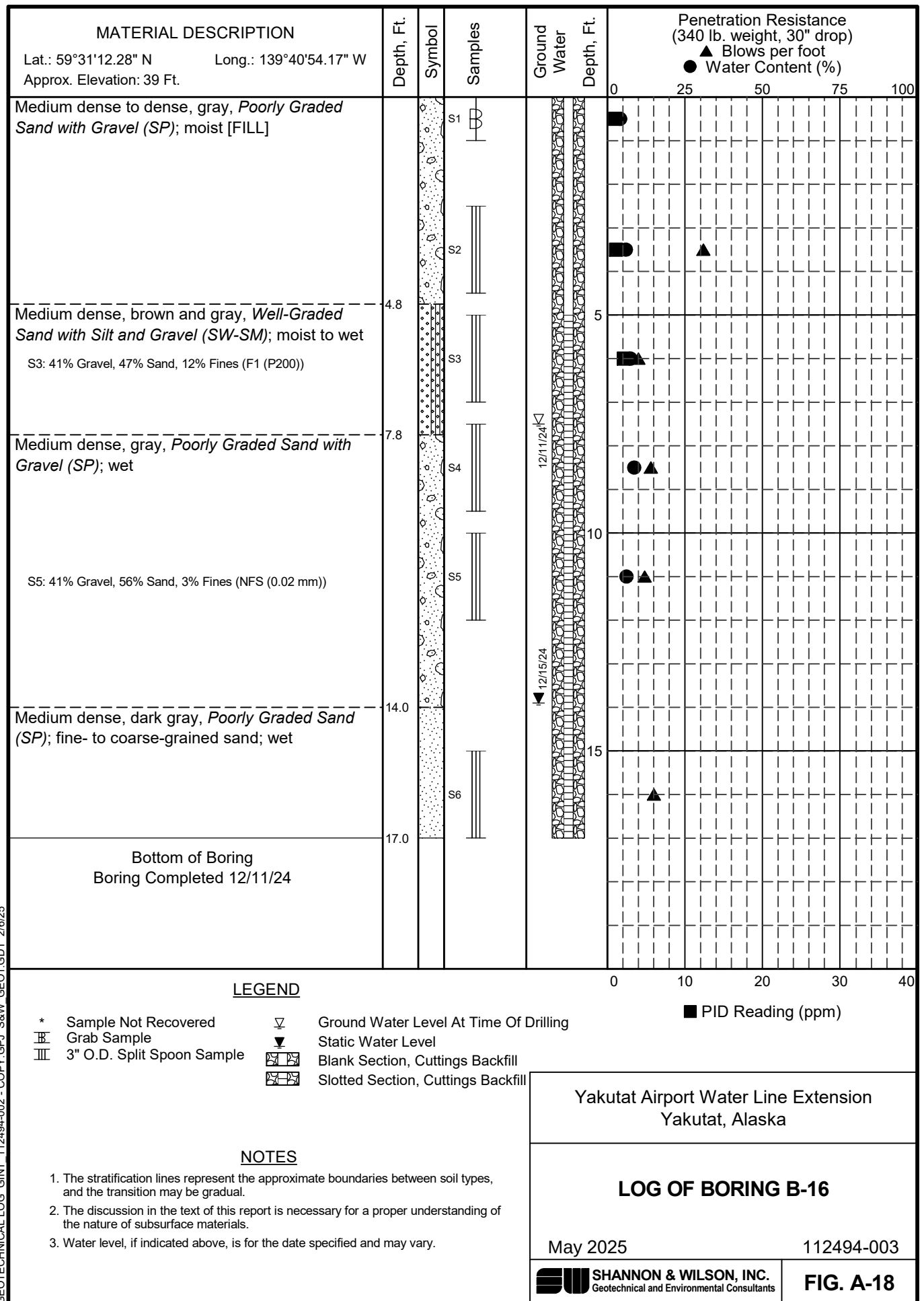
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



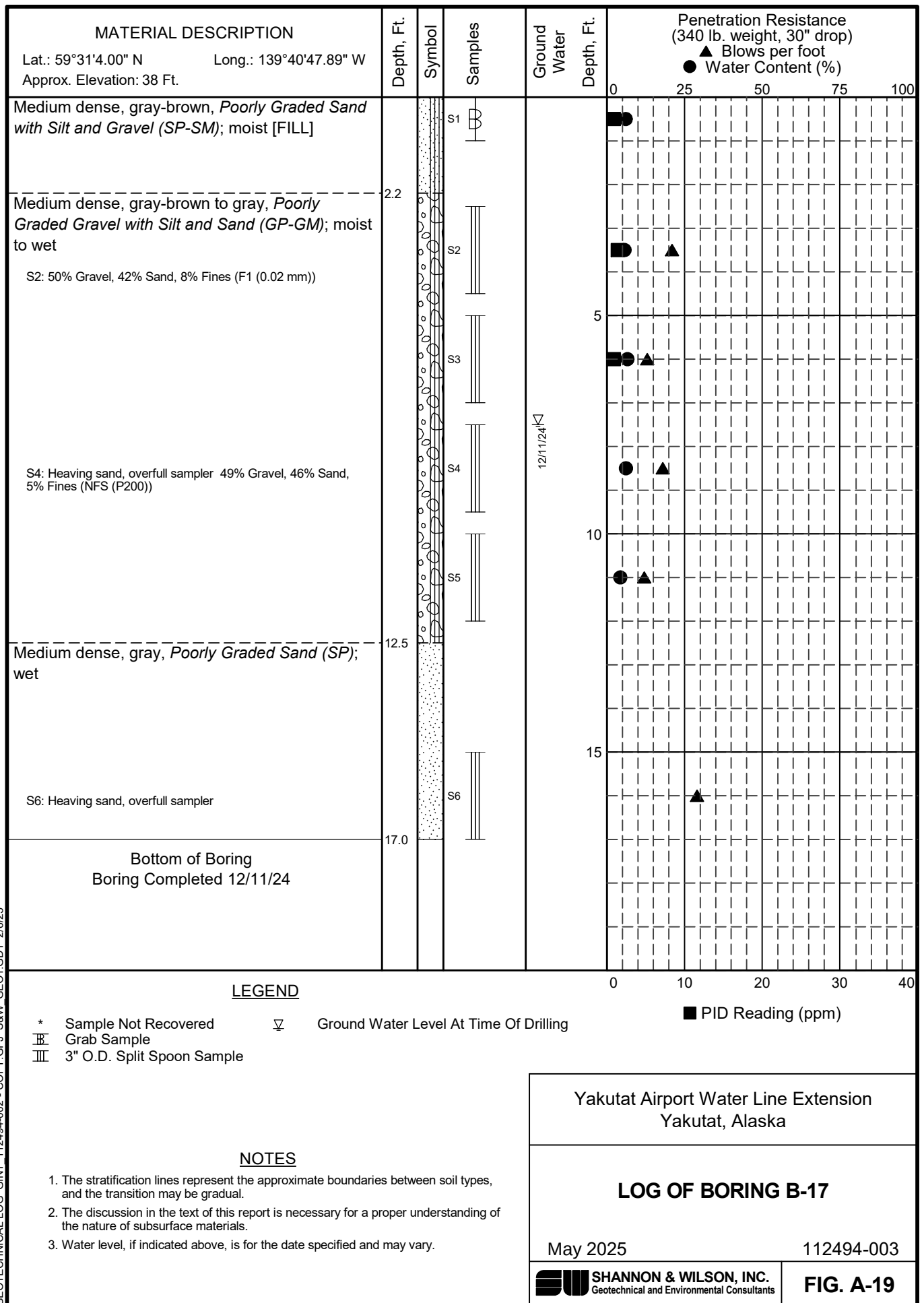
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



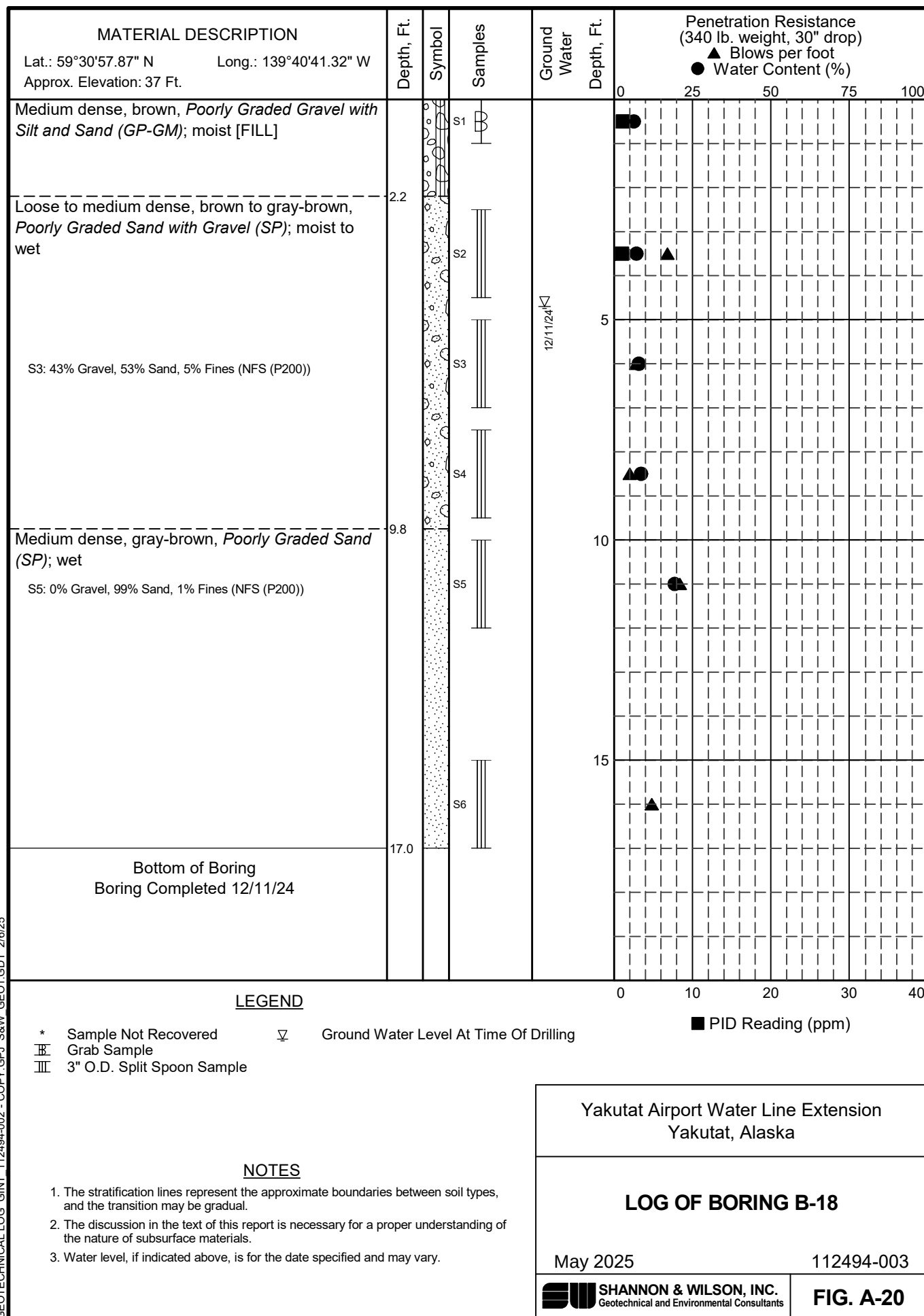
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



MATERIAL DESCRIPTION	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.	Penetration Resistance (340 lb. weight, 30" drop) ▲ Blows per foot ● Water Content (%)
Lat.: 59°30'50.47" N Long.: 139°40'33.46" W Approx. Elevation: 36 Ft.						0 25 50 75 100
Medium dense, brown, <i>Poorly Graded Sand with Silt and Gravel (SP-SM)</i> ; moist [FILL] S1: 40% Gravel, 52% Sand, 8% Fines (F2 (P200))		S1			0	
		S2			5	
Medium dense, brown, <i>Poorly Graded Sand with Gravel (SP)</i> ; wet; trace to few organics/wood debris	4.8	S3		12/11/24	5	
		S4			10	
Medium dense, gray-brown, <i>Poorly Graded Sand with Silt and Gravel (SP-SM)</i> ; wet	7.4	S5			10	
		S6			15	
S4: 28% Gravel, 66% Sand, 6% Fines (F2 (0.02 mm))						
Bottom of Boring Boring Completed 12/11/24	17.0					

LEGEND

- * Sample Not Recovered ▽ Ground Water Level At Time Of Drilling
- Grab Sample
- 3" O.D. Split Spoon Sample
- PID Reading (ppm)

NOTES

- The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
- The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
- Water level, if indicated above, is for the date specified and may vary.

Yakutat Airport Water Line Extension
Yakutat, Alaska

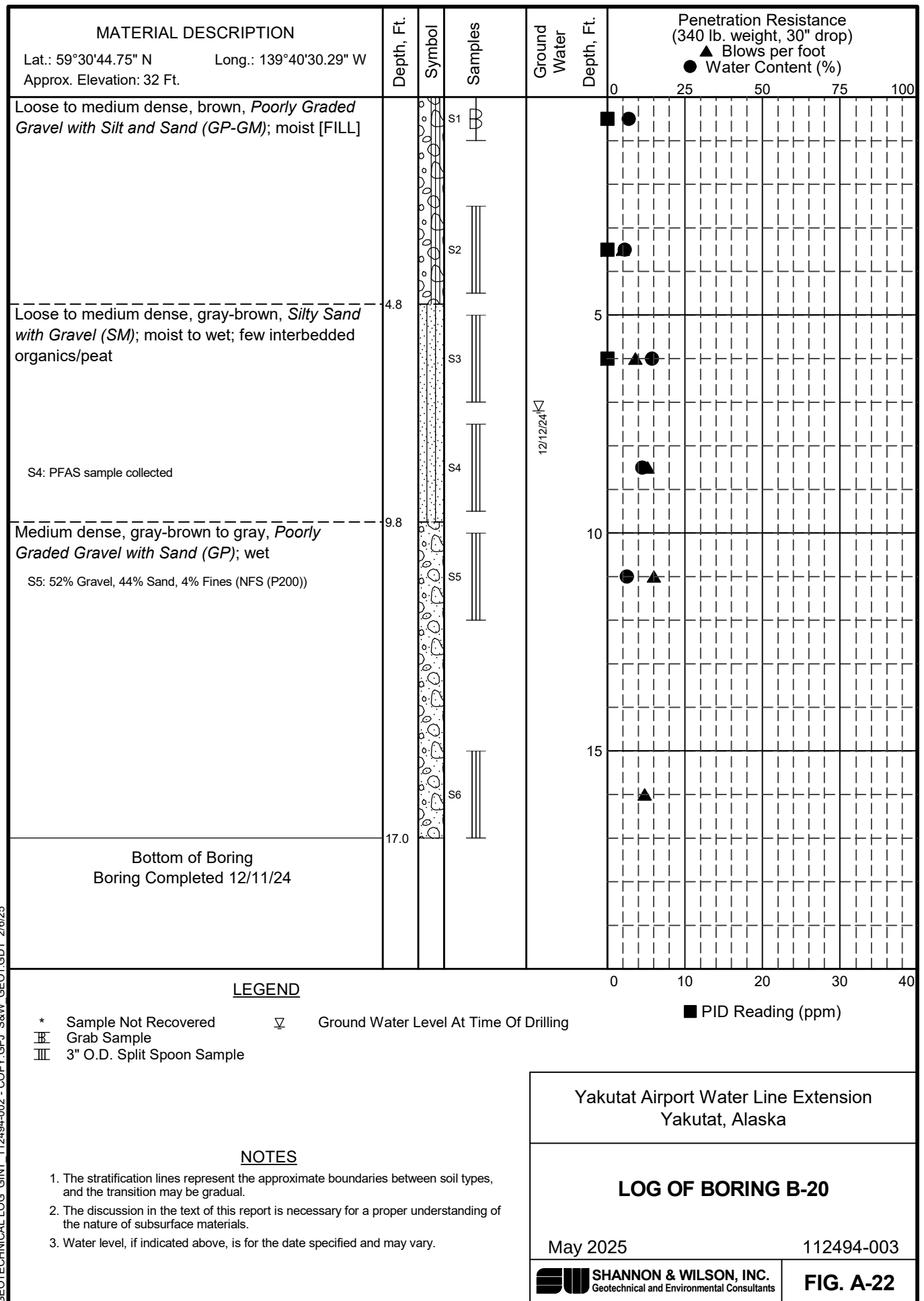
LOG OF BORING B-19

May 2025 112494-003

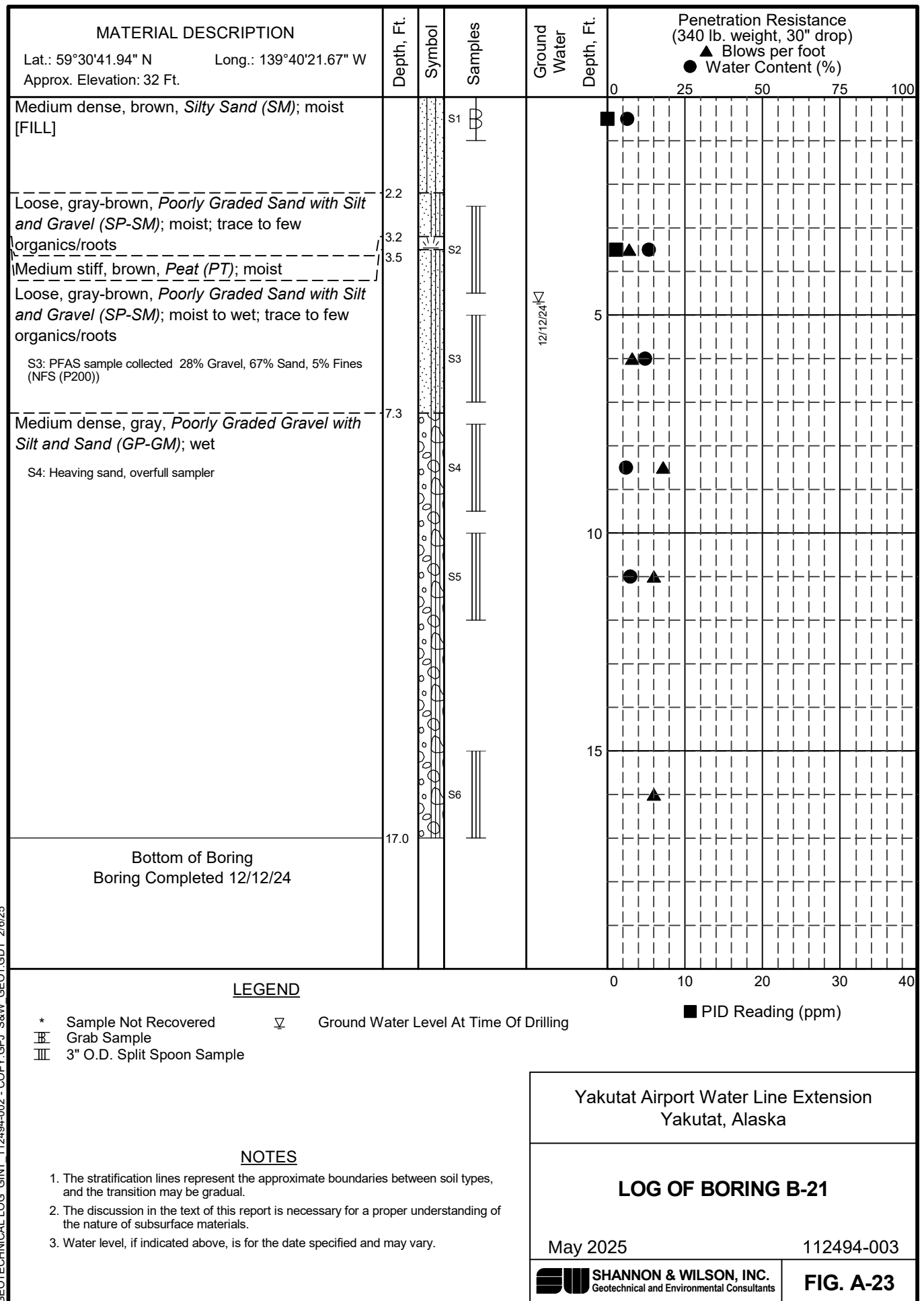
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-21

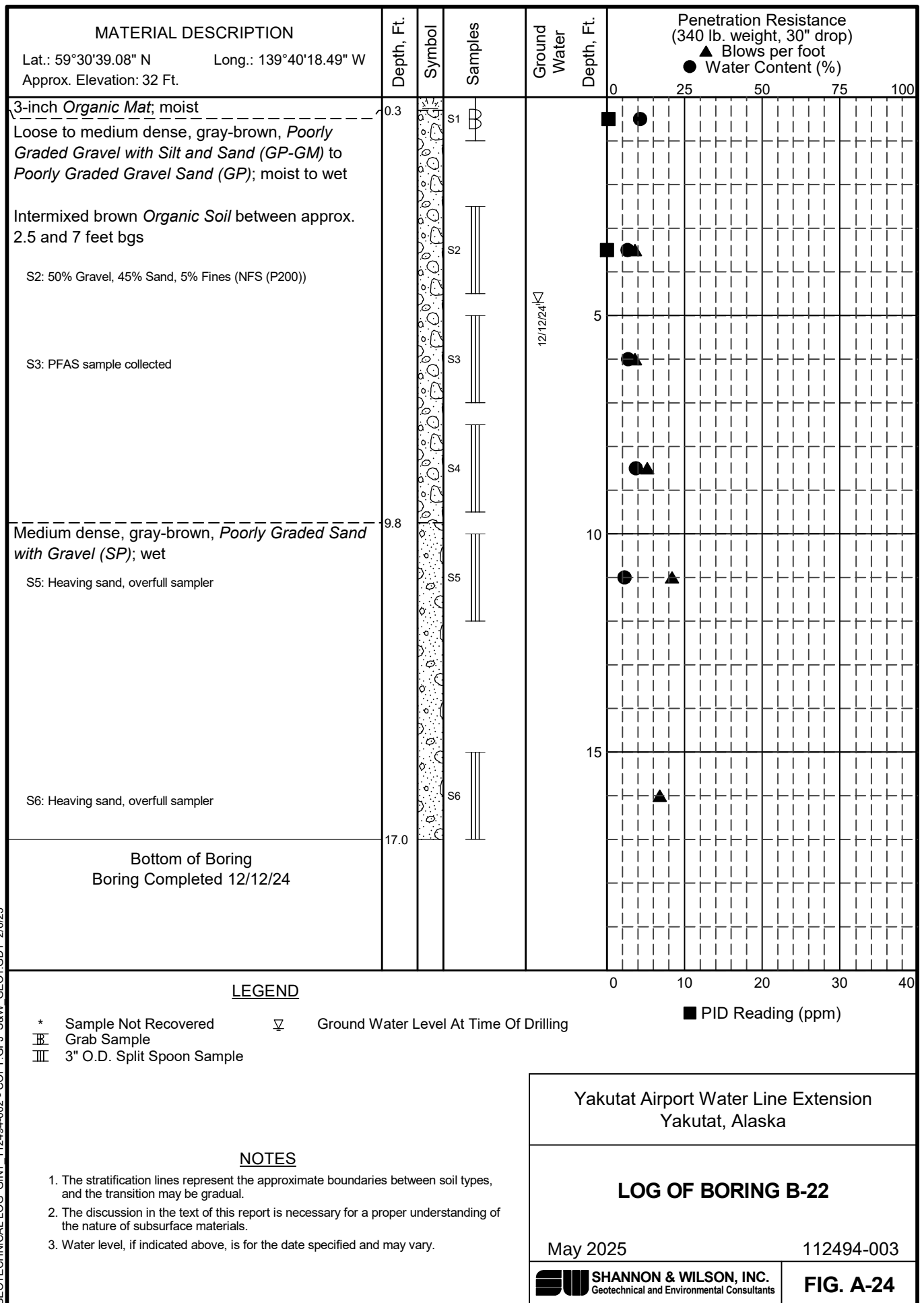
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



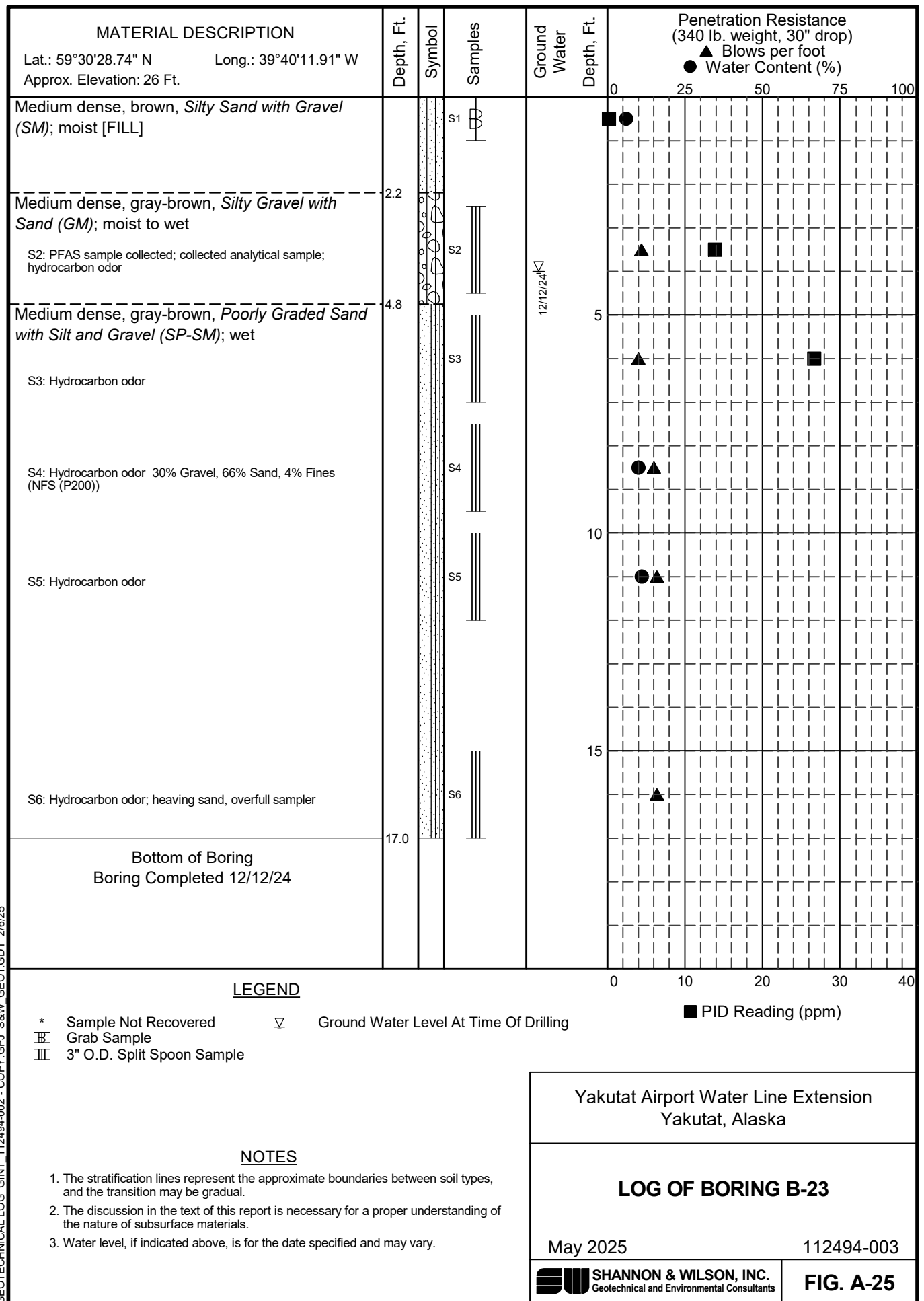
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



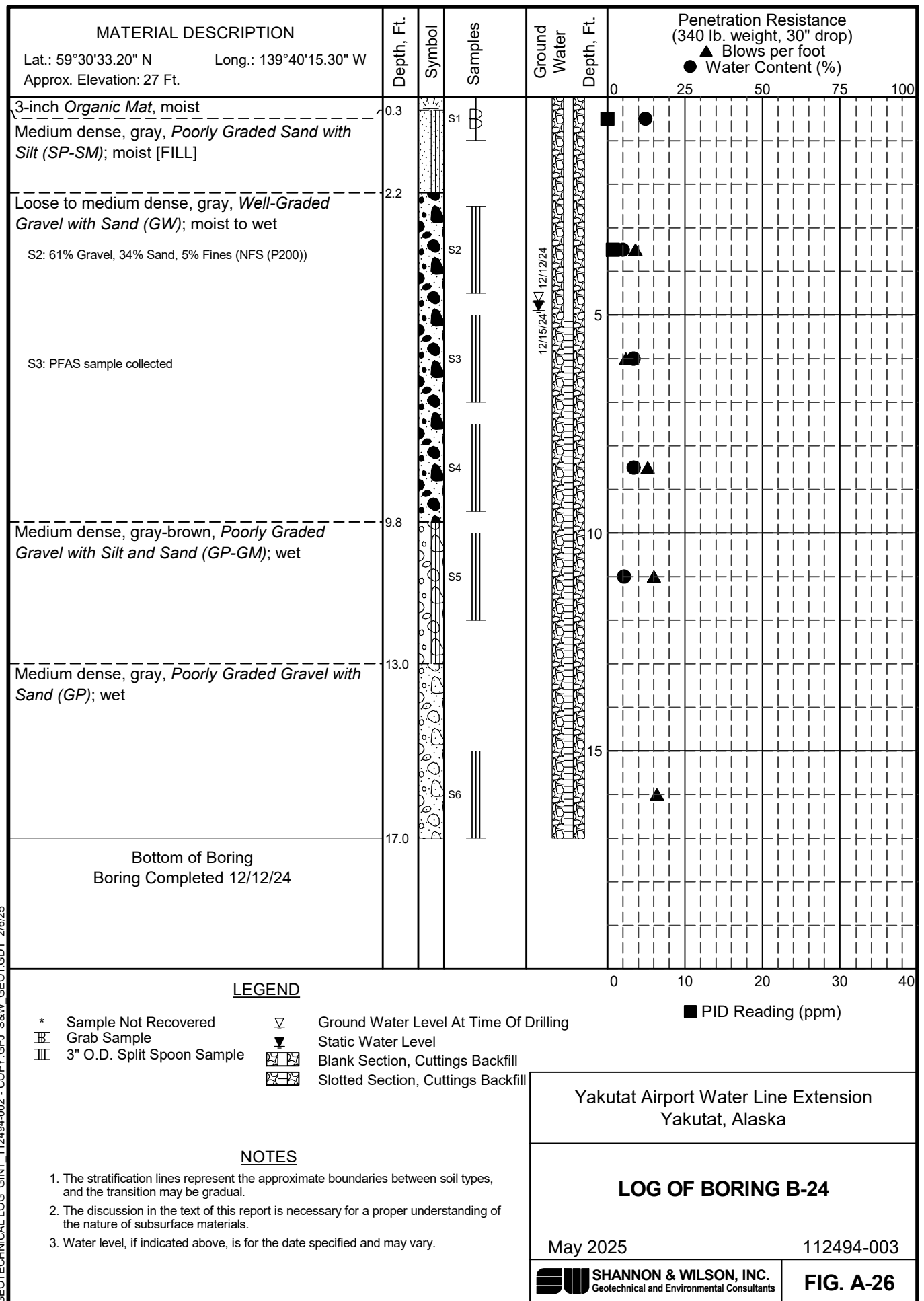
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



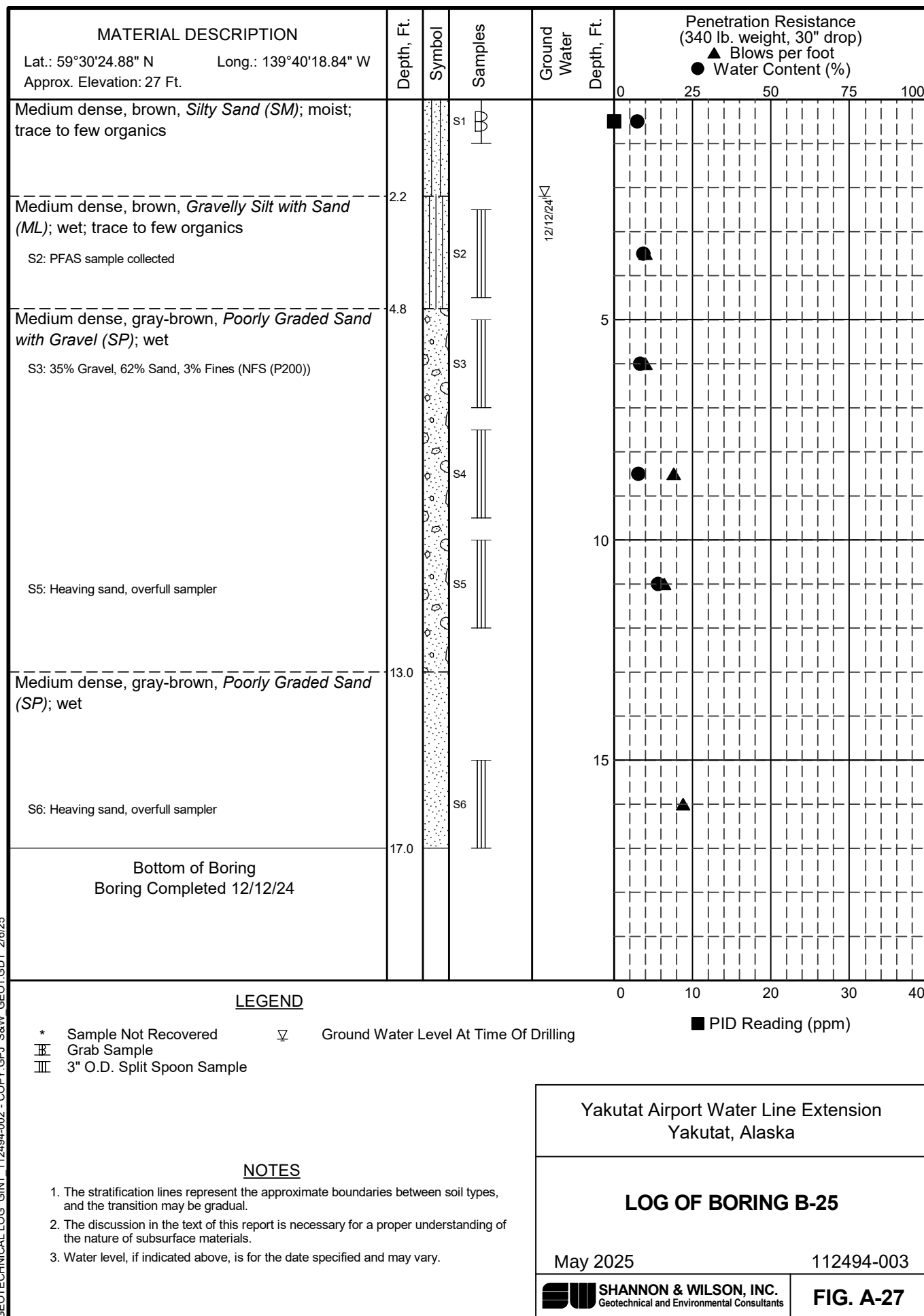
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



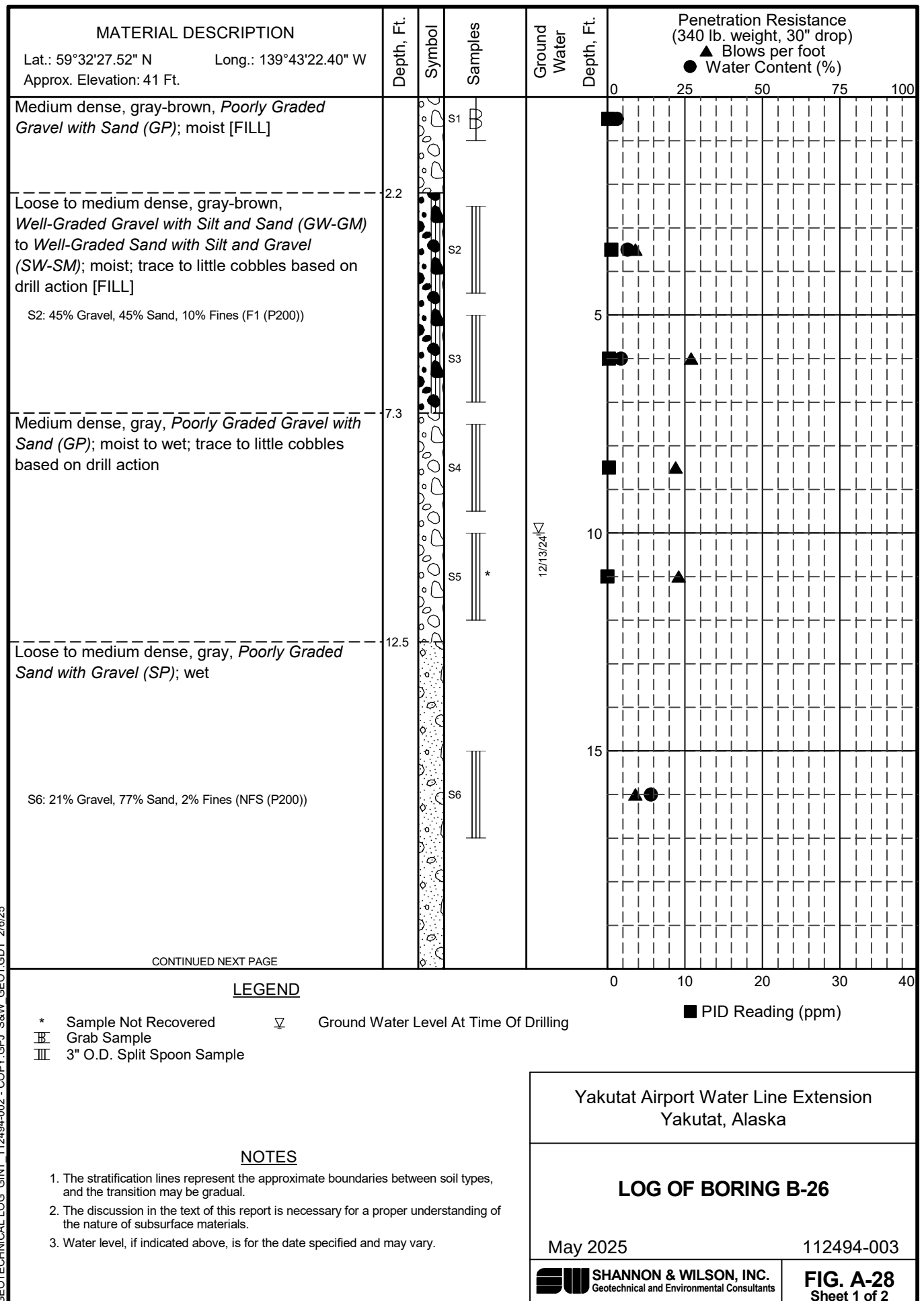
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



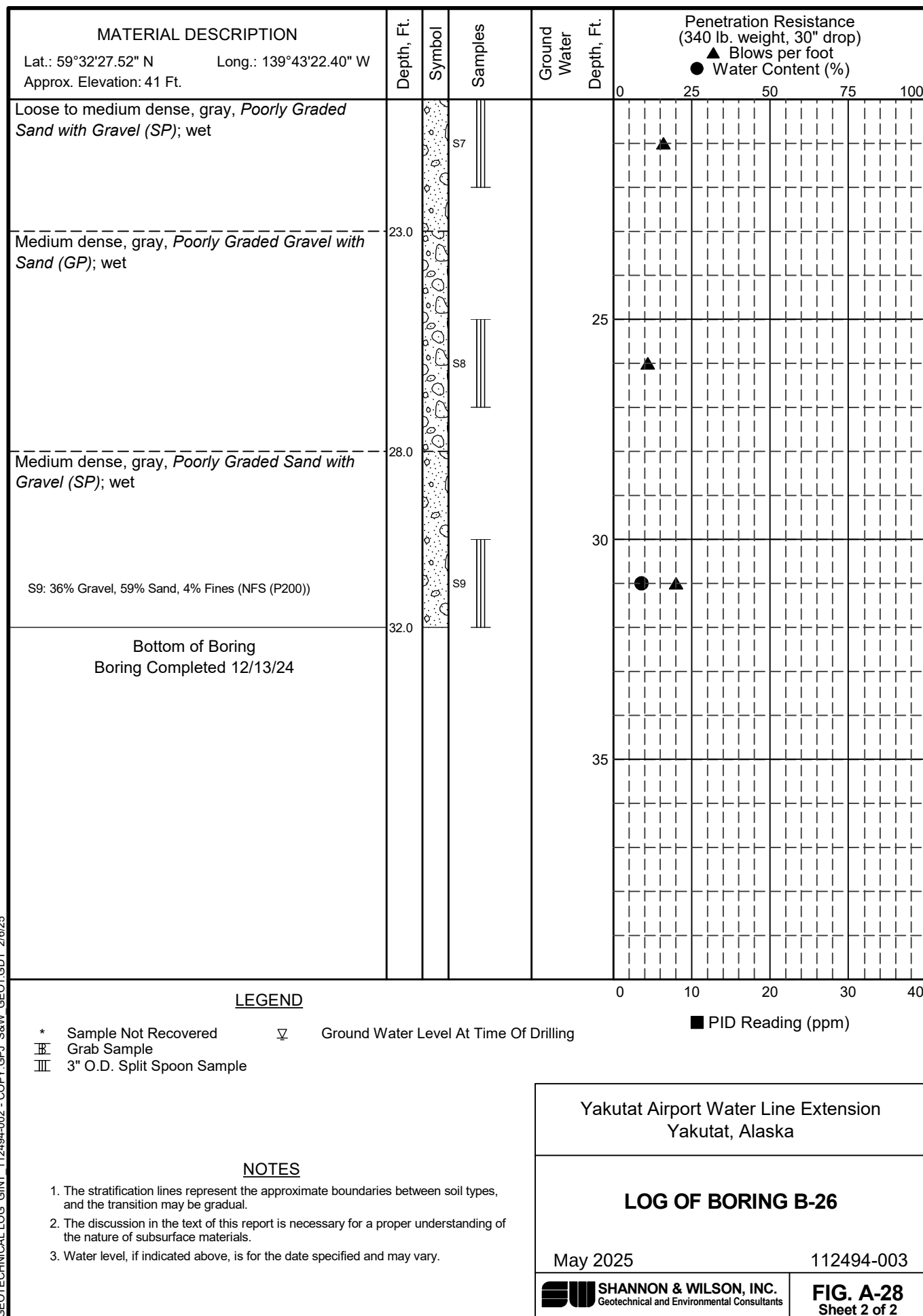
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



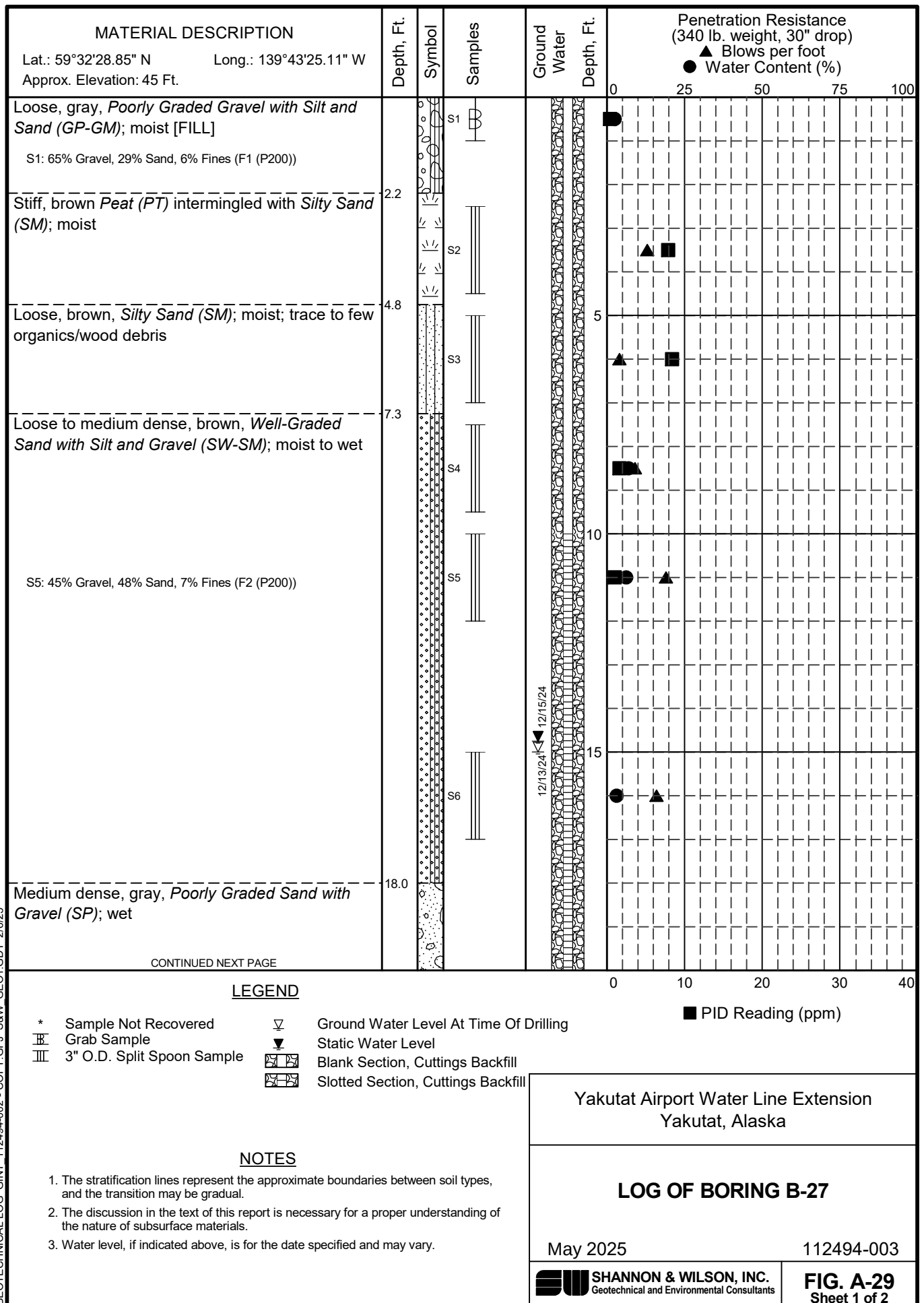
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25

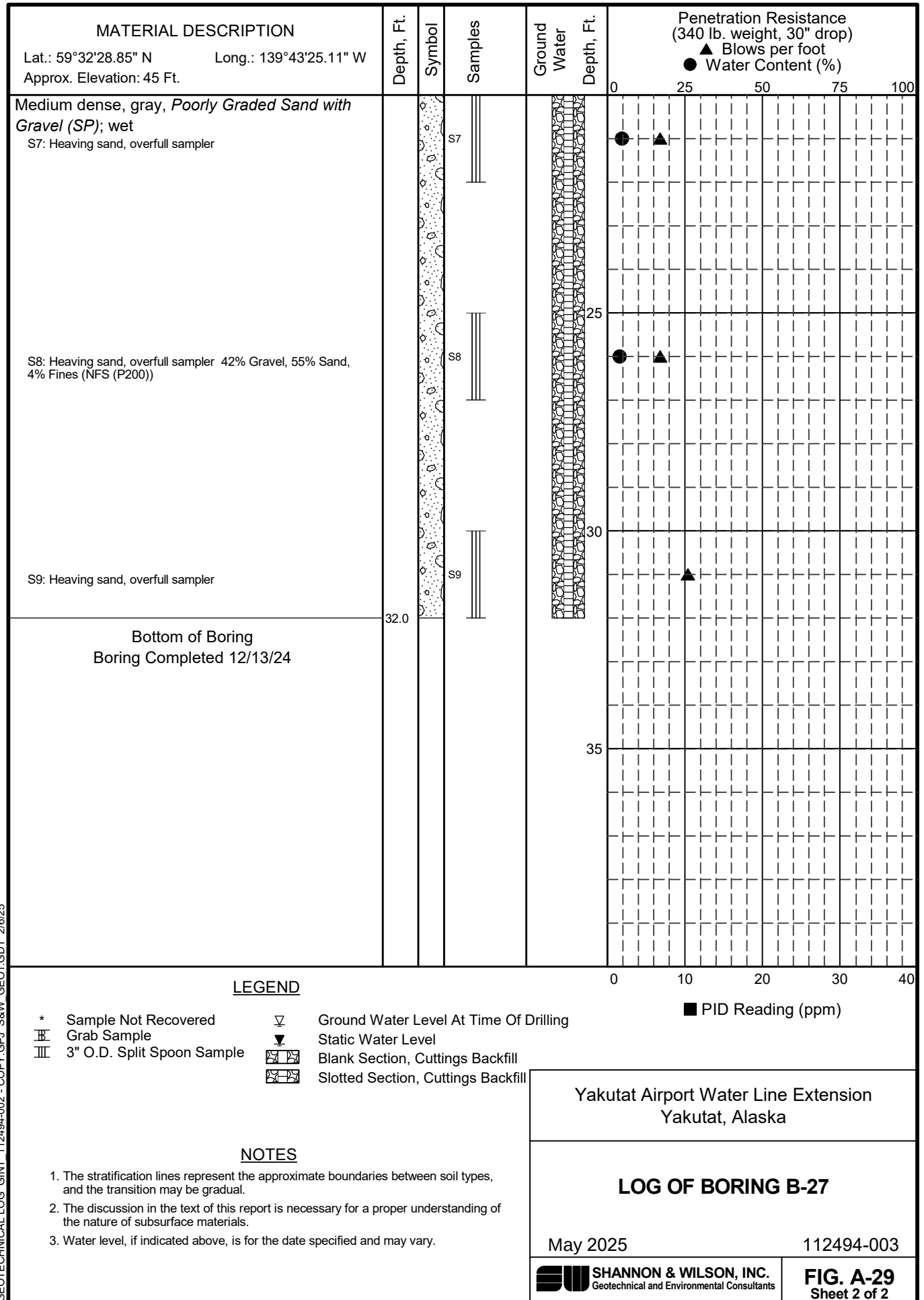


GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25



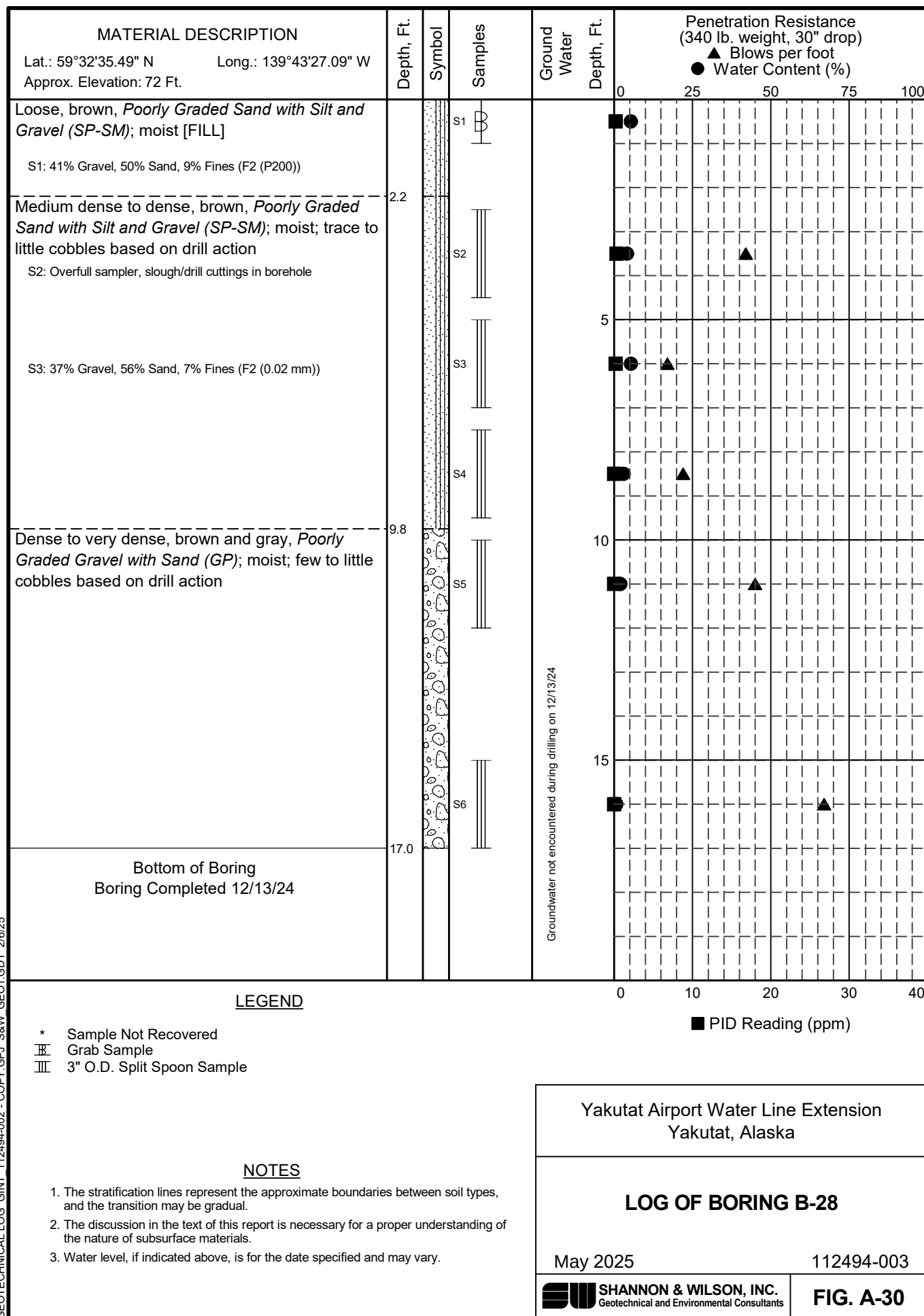
GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25

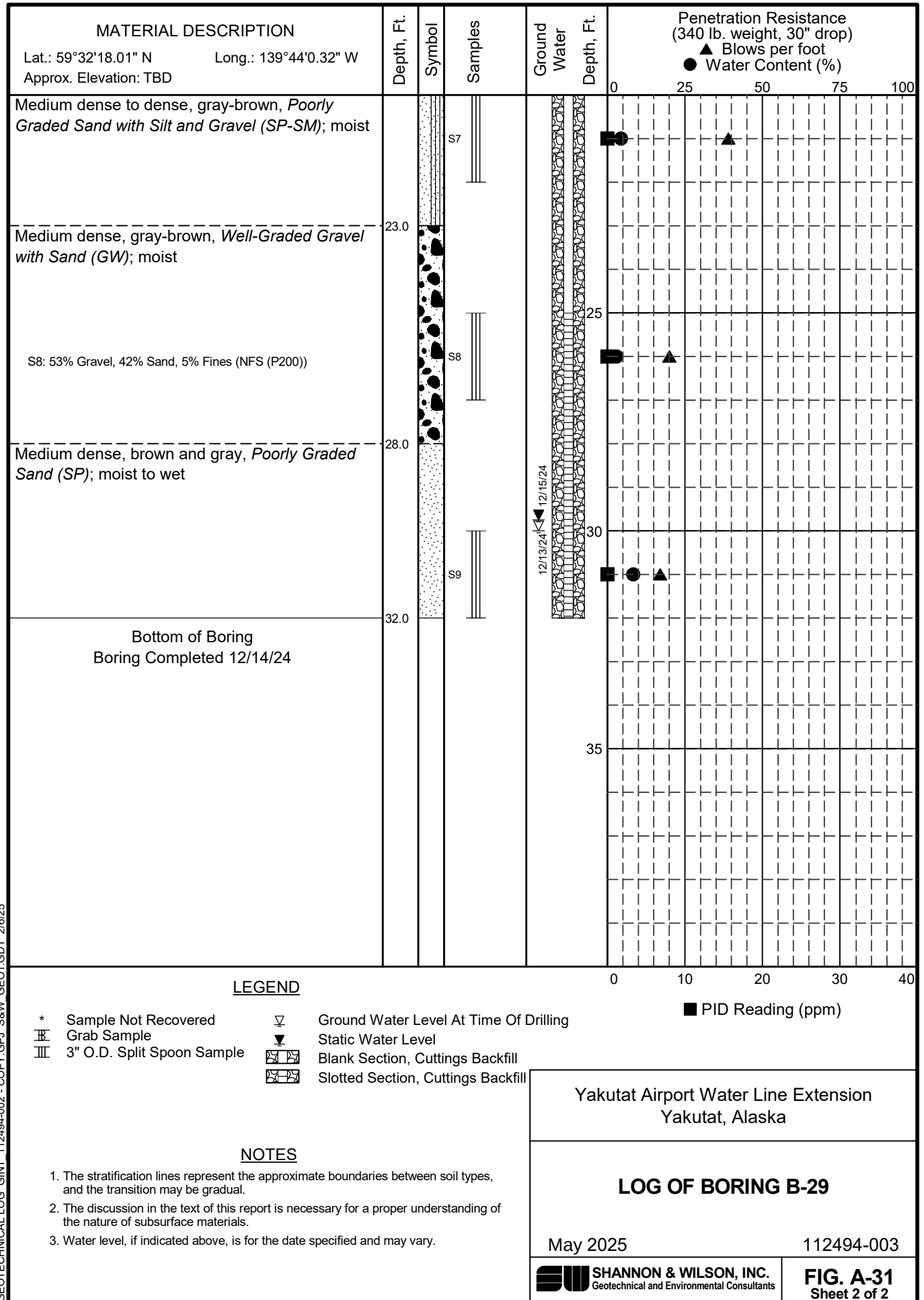




GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25

GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25





GEOTECHNICAL LOG GINT 112494-002 - COPY.GPJ S&W GEO1.GDT 2/6/25

Appendix B

Field Forms

CONTENTS

- Sample Collection Log
- Temporary Well Point Development and Sampling Log

QC: _____

TEMPORARY WELL POINT DEVELOPMENT AND SAMPLING LOG

Owner/Client Yakutat Water Line
 Location B-1
 Sampling Personnel LDH
 Weather Conditions Rain Air Temp. (°F) 35°F

Project No. 112494-006
 Date 12/6/24
 TWP ID B-1
 Time started 0840
 Time completed 1105

Sample No. B-1 Time 1040
 Duplicate _____ Time _____
 Equipment Blank _____ Time _____

Purging Method Submersible Pump
 Pumping Start 0905
 Purge Rate (gal./min.) 0.3
 Pumping End 1047

Diameter and Type of Casing 2" PVC
 TOC to GS (ft.) 2.44
 Depth of Well Below TOC (ft.) 63.15
 Depth to Water Below TOC (ft.) 11.30
 Feet of Water in Well 51.85
 Gallons per foot 0.17
 Gallons in Well 8.87
 Purge Water Volume (gal.) 26.43

Pump Set Depth Below TOC (ft.) 60.0
 KuriTec Tubing (ft.) 65
 TruPoly Tubing (ft.) 0
 Silicone Tubing (ft.) 0

Purge Water Disposal Purge to ground surface

Field Parameter Instrument _____ Circle one: Parameters stabilized or 3 well volumes purged

Sample Observations Clear

Locate Survey (GPS) / Field Maps / Swingties (circle one)
 (If locate is not known, take one.)

☐ Well Development Log Complete (see back page)

FIELD PARAMETERS

Time	Temp. °C [± 3%/0.2]	Dissolved Oxygen (mg/L) [±10%/0.1 mg/L]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
<u>Parameters not required for this project</u>						

Laboratory Enviroline Environmental Testing

Analysis	Sample Containers	Preservatives	Dup	E.B.
☐ VOC EPA 8260			☐	☐
☐ GRO AK101	<u>Refer to COC</u>		☐	☐
☐ DRO/RRO AK102/103			☐	☐
☐ PAH 8270 SIM			☐	☐
☐ Metals EPA 200.8			☐	☐

WELL CASING VOLUMES

Casing Diameter	SP16 (0.65")	0.75"	1"	1.25"	<u>2</u>	3	4
Gallons per lineal foot	0.02	0.02	0.04	0.08	<u>0.17</u>	0.38	0.65

TOC= top of casing, GS = ground surface, TWP = temporary well point

QC: _____

TWP ID: B-1

Appendix C

Eurofins – Sacramento Laboratory Report and LDRC

CONTENTS

- Eurofins – Sacramento Laboratory Report 320-117793-1
- DEC Laboratory Data Review Checklist for WO 320-117793-1

ANALYTICAL REPORT

PREPARED FOR

Attn: Ashley Jaramillo
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 12/26/2024 2:43:36 PM

JOB DESCRIPTION

YAK Waterline

JOB NUMBER

320-117793-1

Eurofins Sacramento

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization



Generated
12/26/2024 2:43:36 PM

Authorized for release by
David Alltucker, Project Manager I
David.Alltucker@et.eurofinsus.com
(916)374-4383

Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Isotope Dilution Summary	15
QC Sample Results	17
QC Association Summary	30
Lab Chronicle	31
Certification Summary	33
Method Summary	34
Sample Summary	35
Chain of Custody	36



Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
*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.
☼	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: YAK Waterline

Job ID: 320-117793-1

Job ID: 320-117793-1

Eurofins Sacramento

Job Narrative 320-117793-1

Receipt

The samples were received on 12/18/2024 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.6° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): B-21 (320-117793-2). The container label lists the following time: 10:45. The samples were logged in and labeled according to the COC.

LCMS

Method 1633: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-823489 and analytical batch 320-823858 recovered outside control limits for the following analytes: Nonafluoro-3,6-dioxaheptanoic acid (NFDHA).

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. The associated analyte(s) have been flagged: B-22 (320-117793-3) and (320-117793-A-1-C MSD).

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: B-20 (320-117793-1) and (320-117793-A-1-B MS). 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

Method 1633: The following sample in preparation batch 320-823489 was observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction: B-1 (320-117793-7).

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

Eurofins Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-20

Lab Sample ID: 320-117793-1

No Detections.

Client Sample ID: B-21

Lab Sample ID: 320-117793-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.29		0.23	0.058	ug/Kg	1	☆	EPA 537(Mod)	Total/NA

Client Sample ID: B-22

Lab Sample ID: 320-117793-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.093	J I	0.23	0.057	ug/Kg	1	☆	EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.42		0.23	0.057	ug/Kg	1	☆	EPA 537(Mod)	Total/NA

Client Sample ID: B-23

Lab Sample ID: 320-117793-4

No Detections.

Client Sample ID: B-24

Lab Sample ID: 320-117793-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.29		0.22	0.055	ug/Kg	1	☆	EPA 537(Mod)	Total/NA

Client Sample ID: B-25

Lab Sample ID: 320-117793-6

No Detections.

Client Sample ID: B-1

Lab Sample ID: 320-117793-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.4	J	3.2	0.80	ng/L	1		1633	Total/NA
Perfluorooctanoic acid (PFOA)	0.47	J	1.6	0.40	ng/L	1		1633	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.6	0.40	ng/L	1		1633	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-20

Lab Sample ID: 320-117793-1

Date Collected: 12/12/24 09:42

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 81.7

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		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 22:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C4 PFHpA	74		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C4 PFOA	74		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C5 PFNA	81		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C2 PFDA	80		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C2 PFUnA	81		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C2 PFDoA	74		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C2 PFTeDA	40	*5-	50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C3 PFBS	70		50 - 150	12/20/24 04:07	12/23/24 22:30	1
18O2 PFHxS	75		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C4 PFOS	74		50 - 150	12/20/24 04:07	12/23/24 22:30	1
d3-NMeFOSAA	69		50 - 150	12/20/24 04:07	12/23/24 22:30	1
d5-NEtFOSAA	67		50 - 150	12/20/24 04:07	12/23/24 22:30	1
13C3 HFPO-DA	64		50 - 150	12/20/24 04:07	12/23/24 22:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture (ASTM D 2216)	18.3		0.1	0.1	%			12/19/24 14:00	1
Percent Solids (ASTM D 2216)	81.7		0.1	0.1	%			12/19/24 14:00	1

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-21

Lab Sample ID: 320-117793-2

Date Collected: 12/12/24 10:46

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 84.4

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		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Perfluorooctanesulfonic acid (PFOS)	0.29		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.058	ug/Kg	✱	12/20/24 04:07	12/23/24 23:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C4 PFHpA	88		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C4 PFOA	88		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C5 PFNA	92		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C2 PFDA	87		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C2 PFUnA	84		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C2 PFDoA	79		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C2 PFTeDA	73		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C3 PFBS	82		50 - 150	12/20/24 04:07	12/23/24 23:12	1
18O2 PFHxS	89		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C4 PFOS	86		50 - 150	12/20/24 04:07	12/23/24 23:12	1
d3-NMeFOSAA	66		50 - 150	12/20/24 04:07	12/23/24 23:12	1
d5-NEtFOSAA	63		50 - 150	12/20/24 04:07	12/23/24 23:12	1
13C3 HFPO-DA	82		50 - 150	12/20/24 04:07	12/23/24 23:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture (ASTM D 2216)	15.6		0.1	0.1	%			12/19/24 14:00	1
Percent Solids (ASTM D 2216)	84.4		0.1	0.1	%			12/19/24 14:00	1

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-22

Lab Sample ID: 320-117793-3

Date Collected: 12/12/24 11:42

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 86.9

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	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorooctanoic acid (PFOA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorononanoic acid (PFNA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorodecanoic acid (PFDA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorododecanoic acid (PFDoA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorotridecanoic acid (PFTriA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorohexanesulfonic acid (PFHxS)	0.093	J I	0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Perfluorooctanesulfonic acid (PFOS)	0.42		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.23	0.057	ug/Kg	☼	12/20/24 04:07	12/23/24 23:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C4 PFHpA	95		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C4 PFOA	94		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C5 PFNA	95		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C2 PFDA	85		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C2 PFUnA	83		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C2 PFDoA	78		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C2 PFTeDA	80		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C3 PFBS	88		50 - 150	12/20/24 04:07	12/23/24 23:26	1
18O2 PFHxS	97		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C4 PFOS	85		50 - 150	12/20/24 04:07	12/23/24 23:26	1
d3-NMeFOSAA	63		50 - 150	12/20/24 04:07	12/23/24 23:26	1
d5-NEtFOSAA	65		50 - 150	12/20/24 04:07	12/23/24 23:26	1
13C3 HFPO-DA	89		50 - 150	12/20/24 04:07	12/23/24 23:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture (ASTM D 2216)	13.1		0.1	0.1	%			12/19/24 14:00	1
Percent Solids (ASTM D 2216)	86.9		0.1	0.1	%			12/19/24 14:00	1

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-23

Lab Sample ID: 320-117793-4

Date Collected: 12/12/24 12:55

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 85.1

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		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.054	ug/Kg	☼	12/20/24 04:07	12/23/24 23:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C4 PFHpA	81		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C4 PFOA	83		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C5 PFNA	87		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C2 PFDA	85		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C2 PFUnA	84		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C2 PFDoA	75		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C2 PFTeDA	71		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C3 PFBS	80		50 - 150	12/20/24 04:07	12/23/24 23:40	1
18O2 PFHxS	88		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C4 PFOS	86		50 - 150	12/20/24 04:07	12/23/24 23:40	1
d3-NMeFOSAA	65		50 - 150	12/20/24 04:07	12/23/24 23:40	1
d5-NEtFOSAA	64		50 - 150	12/20/24 04:07	12/23/24 23:40	1
13C3 HFPO-DA	74		50 - 150	12/20/24 04:07	12/23/24 23:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture (ASTM D 2216)	14.9		0.1	0.1	%			12/19/24 14:00	1
Percent Solids (ASTM D 2216)	85.1		0.1	0.1	%			12/19/24 14:00	1

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-24

Lab Sample ID: 320-117793-5

Date Collected: 12/12/24 15:05

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 86.2

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		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluoroheptanoic acid (PFHpA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorooctanoic acid (PFOA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorononanoic acid (PFNA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorodecanoic acid (PFDA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluoroundecanoic acid (PFUnA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorododecanoic acid (PFDoA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorotridecanoic acid (PFTriA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Perfluorooctanesulfonic acid (PFOS)	0.29		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.22	0.055	ug/Kg	✱	12/20/24 04:07	12/23/24 23:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C4 PFHpA	89		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C4 PFOA	87		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C5 PFNA	88		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C2 PFDA	83		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C2 PFUnA	84		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C2 PFDoA	82		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C2 PFTeDA	79		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C3 PFBS	88		50 - 150	12/20/24 04:07	12/23/24 23:54	1
18O2 PFHxS	95		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C4 PFOS	85		50 - 150	12/20/24 04:07	12/23/24 23:54	1
d3-NMeFOSAA	63		50 - 150	12/20/24 04:07	12/23/24 23:54	1
d5-NEtFOSAA	66		50 - 150	12/20/24 04:07	12/23/24 23:54	1
13C3 HFPO-DA	82		50 - 150	12/20/24 04:07	12/23/24 23:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture (ASTM D 2216)	13.8		0.1	0.1	%			12/19/24 14:00	1
Percent Solids (ASTM D 2216)	86.2		0.1	0.1	%			12/19/24 14:00	1

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-25

Lab Sample ID: 320-117793-6

Date Collected: 12/12/24 16:05

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 80.4

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		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluoroheptanoic acid (PFHpA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorooctanoic acid (PFOA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorononanoic acid (PFNA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorodecanoic acid (PFDA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluoroundecanoic acid (PFUnA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorododecanoic acid (PFDoA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorotridecanoic acid (PFTriA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.24	0.061	ug/Kg	☼	12/20/24 04:07	12/24/24 00:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C4 PFHpA	86		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C4 PFOA	85		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C5 PFNA	86		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C2 PFDA	82		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C2 PFUnA	80		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C2 PFDoA	72		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C2 PFTeDA	69		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C3 PFBS	81		50 - 150	12/20/24 04:07	12/24/24 00:08	1
18O2 PFHxS	89		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C4 PFOS	86		50 - 150	12/20/24 04:07	12/24/24 00:08	1
d3-NMeFOSAA	59		50 - 150	12/20/24 04:07	12/24/24 00:08	1
d5-NEtFOSAA	61		50 - 150	12/20/24 04:07	12/24/24 00:08	1
13C3 HFPO-DA	81		50 - 150	12/20/24 04:07	12/24/24 00:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture (ASTM D 2216)	19.6		0.1	0.1	%			12/19/24 14:00	1
Percent Solids (ASTM D 2216)	80.4		0.1	0.1	%			12/19/24 14:00	1

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-1

Lab Sample ID: 320-117793-7

Date Collected: 12/10/24 10:40

Matrix: Water

Date Received: 12/18/24 10:00

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.4	J	3.2	0.80	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoropentanoic acid (PFPeA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorohexanoic acid (PFHxA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoroheptanoic acid (PFHpA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorooctanoic acid (PFOA)	0.47	J	1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.44	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorotridecanoic acid (PFTTrDA)	ND		1.6	0.47	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.6	0.65	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorononanesulfonic acid (PFNS)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.6	0.43	ng/L		12/20/24 07:16	12/22/24 02:16	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		3.2	0.80	ng/L		12/20/24 07:16	12/22/24 02:16	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		3.2	0.80	ng/L		12/20/24 07:16	12/22/24 02:16	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		3.2	0.80	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		8.0	2.0	ng/L		12/20/24 07:16	12/22/24 02:16	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		8.0	2.0	ng/L		12/20/24 07:16	12/22/24 02:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.2	0.31	ng/L		12/20/24 07:16	12/22/24 02:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*1	1.6	0.58	ng/L		12/20/24 07:16	12/22/24 02:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		1.6	0.47	ng/L		12/20/24 07:16	12/22/24 02:16	1

Eurofins Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-1

Lab Sample ID: 320-117793-7

Date Collected: 12/10/24 10:40

Matrix: Water

Date Received: 12/18/24 10:00

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.6	0.40	ng/L		12/20/24 07:16	12/22/24 02:16	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		3.2	0.80	ng/L		12/20/24 07:16	12/22/24 02:16	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		8.0	2.0	ng/L		12/20/24 07:16	12/22/24 02:16	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		8.0	2.0	ng/L		12/20/24 07:16	12/22/24 02:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	111		5 - 130				12/20/24 07:16	12/22/24 02:16	1
13C5 PFPeA	92.5		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C5 PFHxA	88.3		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C4 PFHpA	96.4		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C8 PFOA	97.4		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C9 PFNA	97.2		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C6 PFDA	97.1		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C7 PFUnA	104		30 - 130				12/20/24 07:16	12/22/24 02:16	1
13C2 PFDoA	84.2		10 - 130				12/20/24 07:16	12/22/24 02:16	1
13C2 PFTeDA	78.6		10 - 130				12/20/24 07:16	12/22/24 02:16	1
13C3 PFBS	92.4		40 - 135				12/20/24 07:16	12/22/24 02:16	1
13C3 PFHxS	94.9		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C8 PFOS	91.3		40 - 130				12/20/24 07:16	12/22/24 02:16	1
13C8 FOSA	88.3		40 - 130				12/20/24 07:16	12/22/24 02:16	1
d3-NMeFOSAA	87.8		40 - 170				12/20/24 07:16	12/22/24 02:16	1
d5-NEtFOSAA	89.6		25 - 135				12/20/24 07:16	12/22/24 02:16	1
13C2 4:2 FTS	91.1		40 - 200				12/20/24 07:16	12/22/24 02:16	1
13C2 6:2 FTS	111		40 - 200				12/20/24 07:16	12/22/24 02:16	1
13C2 8:2 FTS	90.0		40 - 300				12/20/24 07:16	12/22/24 02:16	1
13C3 HFPO-DA	85.4		40 - 130				12/20/24 07:16	12/22/24 02:16	1
d7-N-MeFOSE-M	65.6		10 - 130				12/20/24 07:16	12/22/24 02:16	1
d9-N-EtFOSE-M	61.7		10 - 130				12/20/24 07:16	12/22/24 02:16	1
d5-NEtPFOSA	68.0		10 - 130				12/20/24 07:16	12/22/24 02:16	1
d3-NMePFOSA	78.4		10 - 130				12/20/24 07:16	12/22/24 02:16	1

Eurofins Sacramento

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (5-130)	PFPeA (40-130)	13C5PHA (40-130)	C4PFHA (40-130)	C8PFOA (40-130)	C9PFNA (40-130)	C6PFDA (40-130)	13C7PUA (30-130)
320-117793-7	B-1	111	92.5	88.3	96.4	97.4	97.2	97.1	104
LCS 320-823489/3-A	Lab Control Sample	100	96.0	94.2	85.4	99.5	84.0	92.9	92.9
LCSD 320-823489/4-A	Lab Control Sample Dup	110	101	103	108	95.4	95.3	97.3	100
LLCS 320-823489/2-A	Lab Control Sample	110	103	101	107	96.7	88.3	97.1	90.6
MB 320-823489/1-A	Method Blank	95.6	97.8	101	94.4	98.3	86.6	99.3	87.1

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (10-130)	PFTDA (10-130)	C3PFBS (40-135)	C3PFHS (40-130)	C8PFOS (40-130)	PFOSA (40-130)	d3NMFOS (40-170)	d5NEFOS (25-135)
320-117793-7	B-1	84.2	78.6	92.4	94.9	91.3	88.3	87.8	89.6
LCS 320-823489/3-A	Lab Control Sample	83.6	81.6	87.2	88.2	92.8	85.0	86.9	88.5
LCSD 320-823489/4-A	Lab Control Sample Dup	87.2	85.8	107	97.6	106	90.9	101	89.5
LLCS 320-823489/2-A	Lab Control Sample	85.6	81.5	93.1	91.1	97.0	91.6	95.5	84.4
MB 320-823489/1-A	Method Blank	80.3	73.6	90.9	89.4	96.5	85.6	87.2	85.2

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M242FTS (40-200)	M262FTS (40-200)	M282FTS (40-300)	HFPODA (40-130)	NMFM (10-130)	NEFM (10-130)	d5NPFSA (10-130)	d3NMFSA (10-130)
320-117793-7	B-1	91.1	111	90.0	85.4	65.6	61.7	68.0	78.4
LCS 320-823489/3-A	Lab Control Sample	100	87.5	78.0	89.5	77.4	70.8	77.6	79.6
LCSD 320-823489/4-A	Lab Control Sample Dup	105	97.9	85.5	95.5	73.5	67.5	77.9	84.2
LLCS 320-823489/2-A	Lab Control Sample	109	112	80.3	99.7	73.7	66.5	75.1	76.8
MB 320-823489/1-A	Method Blank	112	101	79.3	90.9	71.6	67.2	63.7	70.4

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDaA = 13C2 PFDaA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M242FTS = 13C2 4:2 FTS
M262FTS = 13C2 6:2 FTS
M282FTS = 13C2 8:2 FTS
HFPODA = 13C3 HFPO-DA
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
d5NPFSA = d5-NEtPFOSA
d3NMFSA = d3-NMePFOSA

Eurofins Sacramento

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

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)
320-117793-1	B-20	77	74	74	81	80	81	74	40 *5-
320-117793-1 MS	B-20	92	84	84	90	86	85	75	43 *5-
320-117793-1 MSD	B-20	89	83	84	91	90	90	87	59
320-117793-2	B-21	93	88	88	92	87	84	79	73
320-117793-3	B-22	102	95	94	95	85	83	78	80
320-117793-4	B-23	84	81	83	87	85	84	75	71
320-117793-5	B-24	97	89	87	88	83	84	82	79
320-117793-6	B-25	90	86	85	86	82	80	72	69
LCS 320-823451/2-A	Lab Control Sample	94	88	88	92	88	86	82	83
MB 320-823451/1-A	Method Blank	99	94	94	95	90	85	77	83

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)
320-117793-1	B-20	70	75	74	69	67	64
320-117793-1 MS	B-20	77	84	79	65	59	76
320-117793-1 MSD	B-20	83	87	87	76	73	75
320-117793-2	B-21	82	89	86	66	63	82
320-117793-3	B-22	88	97	85	63	65	89
320-117793-4	B-23	80	88	86	65	64	74
320-117793-5	B-24	88	95	85	63	66	82
320-117793-6	B-25	81	89	86	59	61	81
LCS 320-823451/2-A	Lab Control Sample	84	91	89	66	64	85
MB 320-823451/1-A	Method Blank	88	96	90	66	69	89

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

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Lab Sample ID: MB 320-823489/1-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 823489

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		4.0	1.0	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorotridecanoic acid (PFTTrDA)	ND		2.0	0.58	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.81	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.53	ng/L		12/20/24 07:16	12/21/24 19:41	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		4.0	1.0	ng/L		12/20/24 07:16	12/21/24 19:41	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		4.0	1.0	ng/L		12/20/24 07:16	12/21/24 19:41	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		4.0	1.0	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10	2.5	ng/L		12/20/24 07:16	12/21/24 19:41	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		10	2.5	ng/L		12/20/24 07:16	12/21/24 19:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		1.5	0.39	ng/L		12/20/24 07:16	12/21/24 19:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0	0.72	ng/L		12/20/24 07:16	12/21/24 19:41	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND		2.0	0.58	ng/L		12/20/24 07:16	12/21/24 19:41	1

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-823489/1-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 823489

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		2.0	0.50	ng/L		12/20/24 07:16	12/21/24 19:41	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		4.0	1.0	ng/L		12/20/24 07:16	12/21/24 19:41	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		10	2.5	ng/L		12/20/24 07:16	12/21/24 19:41	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		10	2.5	ng/L		12/20/24 07:16	12/21/24 19:41	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	95.6		5 - 130	12/20/24 07:16	12/21/24 19:41	1
13C5 PFPeA	97.8		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C5 PFHxA	101		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C4 PFHpA	94.4		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C8 PFOA	98.3		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C9 PFNA	86.6		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C6 PFDA	99.3		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C7 PFUnA	87.1		30 - 130	12/20/24 07:16	12/21/24 19:41	1
13C2 PFDoA	80.3		10 - 130	12/20/24 07:16	12/21/24 19:41	1
13C2 PFTeDA	73.6		10 - 130	12/20/24 07:16	12/21/24 19:41	1
13C3 PFBS	90.9		40 - 135	12/20/24 07:16	12/21/24 19:41	1
13C3 PFHxS	89.4		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C8 PFOS	96.5		40 - 130	12/20/24 07:16	12/21/24 19:41	1
13C8 FOSA	85.6		40 - 130	12/20/24 07:16	12/21/24 19:41	1
d3-NMeFOSAA	87.2		40 - 170	12/20/24 07:16	12/21/24 19:41	1
d5-NEtFOSAA	85.2		25 - 135	12/20/24 07:16	12/21/24 19:41	1
13C2 4:2 FTS	112		40 - 200	12/20/24 07:16	12/21/24 19:41	1
13C2 6:2 FTS	101		40 - 200	12/20/24 07:16	12/21/24 19:41	1
13C2 8:2 FTS	79.3		40 - 300	12/20/24 07:16	12/21/24 19:41	1
13C3 HFPO-DA	90.9		40 - 130	12/20/24 07:16	12/21/24 19:41	1
d7-N-MeFOSE-M	71.6		10 - 130	12/20/24 07:16	12/21/24 19:41	1
d9-N-EtFOSE-M	67.2		10 - 130	12/20/24 07:16	12/21/24 19:41	1
d5-NEtPFOSA	63.7		10 - 130	12/20/24 07:16	12/21/24 19:41	1
d3-NMePFOSA	70.4		10 - 130	12/20/24 07:16	12/21/24 19:41	1

Lab Sample ID: LCS 320-823489/3-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	80.0	75.4		ng/L		94	70 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.5		ng/L		101	65 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.1		ng/L		103	70 - 145
Perfluoroheptanoic acid (PFHpA)	40.0	45.7		ng/L		114	70 - 150
Perfluorooctanoic acid (PFOA)	40.0	43.4		ng/L		108	70 - 150
Perfluorononanoic acid (PFNA)	40.0	49.3		ng/L		123	70 - 150
Perfluorodecanoic acid (PFDA)	40.0	37.4		ng/L		94	70 - 140

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-823489/3-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroundecanoic acid (PFUnA)	40.0	42.0		ng/L		105	70 - 145
Perfluorododecanoic acid (PFDoA)	40.0	44.7		ng/L		112	70 - 140
Perfluorotridecanoic acid (PFTrDA)	40.0	41.7		ng/L		104	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	40.0	35.1		ng/L		88	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.5	37.8		ng/L		106	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	37.6	40.5		ng/L		108	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.0		ng/L		99	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	38.2	40.4		ng/L		106	70 - 150
Perfluorooctanesulfonic acid (PFOS)	37.2	35.0		ng/L		94	55 - 150
Perfluorononanesulfonic acid (PFNS)	38.5	40.2		ng/L		105	65 - 145
Perfluorodecanesulfonic acid (PFDS)	38.6	38.8		ng/L		101	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	38.8	36.7		ng/L		95	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	75.0	74.8		ng/L		100	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	76.2	67.0		ng/L		88	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	76.8	82.8		ng/L		108	60 - 150
Perfluorooctanesulfonamide (PFOSA)	40.0	38.6		ng/L		97	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	40.0	43.3		ng/L		108	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	40.0	40.6		ng/L		101	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.2		ng/L		100	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.9		ng/L		105	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	200	186		ng/L		93	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	200	185		ng/L		92	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	30.0	29.1		ng/L		97	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.4		ng/L		104	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	40.0	42.5		ng/L		106	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	40.0	45.3		ng/L		113	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	40.0	38.1		ng/L		95	50 - 150

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-823489/3-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	37.4	38.1		ng/L		102	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	37.8	37.6		ng/L		99	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	35.7	35.9		ng/L		101	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	80.0	91.7		ng/L		115	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	200	194		ng/L		97	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	200	177		ng/L		89	50 - 145

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	100		5 - 130
13C5 PFPeA	96.0		40 - 130
13C5 PFHxA	94.2		40 - 130
13C4 PFHpA	85.4		40 - 130
13C8 PFOA	99.5		40 - 130
13C9 PFNA	84.0		40 - 130
13C6 PFDA	92.9		40 - 130
13C7 PFUnA	92.9		30 - 130
13C2 PFDoA	83.6		10 - 130
13C2 PFTeDA	81.6		10 - 130
13C3 PFBS	87.2		40 - 135
13C3 PFHxS	88.2		40 - 130
13C8 PFOS	92.8		40 - 130
13C8 FOSA	85.0		40 - 130
d3-NMeFOSAA	86.9		40 - 170
d5-NEtFOSAA	88.5		25 - 135
13C2 4:2 FTS	100		40 - 200
13C2 6:2 FTS	87.5		40 - 200
13C2 8:2 FTS	78.0		40 - 300
13C3 HFPO-DA	89.5		40 - 130
d7-N-MeFOSE-M	77.4		10 - 130
d9-N-EtFOSE-M	70.8		10 - 130
d5-NEtPFOSA	77.6		10 - 130
d3-NMePFOSA	79.6		10 - 130

Lab Sample ID: LCSD 320-823489/4-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Perfluorobutanoic acid (PFBA)	80.0	75.2		ng/L		94	70 - 140	0	30
Perfluoropentanoic acid (PFPeA)	40.0	39.0		ng/L		98	65 - 135	4	30
Perfluorohexanoic acid (PFHxA)	40.0	45.8		ng/L		114	70 - 145	11	30
Perfluoroheptanoic acid (PFHpA)	40.0	37.1		ng/L		93	70 - 150	21	30
Perfluorooctanoic acid (PFOA)	40.0	45.6		ng/L		114	70 - 150	5	30

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-823489/4-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	42.6		ng/L		106	70 - 150	15	30
Perfluorodecanoic acid (PFDA)	40.0	41.7		ng/L		104	70 - 140	11	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.0		ng/L		103	70 - 145	2	30
Perfluorododecanoic acid (PFDoA)	40.0	44.4		ng/L		111	70 - 140	1	30
Perfluorotridecanoic acid (PFTrDA)	40.0	41.2		ng/L		103	65 - 140	1	30
Perfluorotetradecanoic acid (PFTeDA)	40.0	40.5		ng/L		101	60 - 140	14	30
Perfluorobutanesulfonic acid (PFBS)	35.5	31.4		ng/L		88	60 - 145	18	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.4		ng/L		115	65 - 140	7	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.5		ng/L		95	65 - 145	4	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	38.7		ng/L		101	70 - 150	4	30
Perfluorooctanesulfonic acid (PFOS)	37.2	34.8		ng/L		94	55 - 150	1	30
Perfluorononanesulfonic acid (PFNS)	38.5	35.6		ng/L		93	65 - 145	12	30
Perfluorodecanesulfonic acid (PFDS)	38.6	35.8		ng/L		93	60 - 145	8	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	34.3		ng/L		88	50 - 145	7	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	75.0	81.2		ng/L		108	70 - 145	8	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	76.2	71.3		ng/L		94	65 - 155	6	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	76.8	70.4		ng/L		92	60 - 150	16	30
Perfluorooctanesulfonamide (PFOSA)	40.0	38.0		ng/L		95	70 - 145	2	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	40.0	41.9		ng/L		105	60 - 150	3	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	40.0	40.0		ng/L		100	65 - 145	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.6		ng/L		99	50 - 140	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.3		ng/L		103	70 - 145	1	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	200	195		ng/L		98	70 - 145	5	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	200	194		ng/L		97	70 - 135	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	30.0	29.5		ng/L		98	70 - 140	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	37.6		ng/L		99	65 - 145	5	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	40.0	46.3		ng/L		116	55 - 140	9	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	40.0	37.9		ng/L		95	60 - 150	18	30

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-823489/4-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nonafluoro-3,6-dioxahheptanoic acid (NFDHA)	40.0	54.9	*1	ng/L		137	50 - 150	36	30
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid (9CI-PF3ONS)	37.4	39.9		ng/L		107	70 - 155	5	30
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid (11CI-PF3OUdS)	37.8	41.2		ng/L		109	55 - 160	9	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	35.7	37.9		ng/L		106	70 - 140	6	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	80.0	93.8		ng/L		117	65 - 130	2	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	200	199		ng/L		100	70 - 135	3	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	200	178		ng/L		89	50 - 145	1	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFBA	110		5 - 130
13C5 PFPeA	101		40 - 130
13C5 PFHxA	103		40 - 130
13C4 PFHpA	108		40 - 130
13C8 PFOA	95.4		40 - 130
13C9 PFNA	95.3		40 - 130
13C6 PFDA	97.3		40 - 130
13C7 PFUnA	100		30 - 130
13C2 PFDoA	87.2		10 - 130
13C2 PFTeDA	85.8		10 - 130
13C3 PFBS	107		40 - 135
13C3 PFHxS	97.6		40 - 130
13C8 PFOS	106		40 - 130
13C8 FOSA	90.9		40 - 130
d3-NMeFOSAA	101		40 - 170
d5-NEtFOSAA	89.5		25 - 135
13C2 4:2 FTS	105		40 - 200
13C2 6:2 FTS	97.9		40 - 200
13C2 8:2 FTS	85.5		40 - 300
13C3 HFPO-DA	95.5		40 - 130
d7-N-MeFOSE-M	73.5		10 - 130
d9-N-EtFOSE-M	67.5		10 - 130
d5-NEtPFOSA	77.9		10 - 130
d3-NMePFOSA	84.2		10 - 130

Lab Sample ID: LLCS 320-823489/2-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	8.00	7.38		ng/L		92	70 - 140
Perfluoropentanoic acid (PFPeA)	4.00	4.47		ng/L		112	65 - 135
Perfluorohexanoic acid (PFHxA)	4.00	4.72		ng/L		118	70 - 145

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-823489/2-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanoic acid (PFHpA)	4.00	4.08		ng/L		102	70 - 150
Perfluorooctanoic acid (PFOA)	4.00	4.38		ng/L		109	70 - 150
Perfluorononanoic acid (PFNA)	4.00	4.79		ng/L		120	70 - 150
Perfluorodecanoic acid (PFDA)	4.00	4.13		ng/L		103	70 - 140
Perfluoroundecanoic acid (PFUnA)	4.00	4.53		ng/L		113	70 - 145
Perfluorododecanoic acid (PFDoA)	4.00	4.10		ng/L		103	70 - 140
Perfluorotridecanoic acid (PFTrDA)	4.00	4.26		ng/L		106	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	4.00	4.05		ng/L		101	60 - 140
Perfluorobutanesulfonic acid (PFBS)	3.55	3.74		ng/L		105	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.76	4.18		ng/L		111	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	3.65	3.64		ng/L		100	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.82	4.10		ng/L		107	70 - 150
Perfluorooctanesulfonic acid (PFOS)	3.72	3.90		ng/L		105	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.85	3.98		ng/L		104	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.86	3.63		ng/L		94	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.88	3.39		ng/L		87	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	7.50	6.89		ng/L		92	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	7.62	6.76		ng/L		89	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	7.68	7.79		ng/L		101	60 - 150
Perfluorooctanesulfonamide (PFOSA)	4.00	3.67		ng/L		92	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	4.00	4.10		ng/L		102	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	4.00	3.98		ng/L		100	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.00	4.00		ng/L		100	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.00	4.42		ng/L		110	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	20.0	19.7		ng/L		98	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	20.0	19.1		ng/L		95	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	3.00	2.93		ng/L		98	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	3.78	4.10		ng/L		108	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	4.00	4.20		ng/L		105	55 - 140

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-823489/2-A

Matrix: Water

Analysis Batch: 823858

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823489

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-4-methoxybutanoic acid (PFMBA)	4.00	3.92		ng/L		98	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	4.00	4.15		ng/L		104	50 - 150
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	3.74	3.57		ng/L		95	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	3.78	3.84		ng/L		102	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	3.57	3.79		ng/L		106	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	8.00	8.13		ng/L		102	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	20.0	18.8		ng/L		94	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	20.0	17.4		ng/L		87	50 - 145

Isotope Dilution	LLCS %Recovery	LLCS Qualifier	Limits
13C4 PFBA	110		5 - 130
13C5 PFPeA	103		40 - 130
13C5 PFHxA	101		40 - 130
13C4 PFHpA	107		40 - 130
13C8 PFOA	96.7		40 - 130
13C9 PFNA	88.3		40 - 130
13C6 PFDA	97.1		40 - 130
13C7 PFUnA	90.6		30 - 130
13C2 PFDoA	85.6		10 - 130
13C2 PFTeDA	81.5		10 - 130
13C3 PFBS	93.1		40 - 135
13C3 PFHxS	91.1		40 - 130
13C8 PFOS	97.0		40 - 130
13C8 FOSA	91.6		40 - 130
d3-NMeFOSAA	95.5		40 - 170
d5-NEtFOSAA	84.4		25 - 135
13C2 4:2 FTS	109		40 - 200
13C2 6:2 FTS	112		40 - 200
13C2 8:2 FTS	80.3		40 - 300
13C3 HFPO-DA	99.7		40 - 130
d7-N-MeFOSE-M	73.7		10 - 130
d9-N-EtFOSE-M	66.5		10 - 130
d5-NEtPFOSA	75.1		10 - 130
d3-NMePFOSA	76.8		10 - 130

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Lab Sample ID: MB 320-823451/1-A

Matrix: Solid

Analysis Batch: 823982

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 823451

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorooctanoic acid (PFOA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorononanoic acid (PFNA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorodecanoic acid (PFDA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorododecanoic acid (PFDoA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorotridecanoic acid (PFTriA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.20	0.050	ug/Kg		12/20/24 04:07	12/23/24 22:02	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C4 PFHpA	94		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C4 PFOA	94		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C5 PFNA	95		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C2 PFDA	90		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C2 PFUnA	85		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C2 PFDoA	77		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C2 PFTeDA	83		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C3 PFBS	88		50 - 150	12/20/24 04:07	12/23/24 22:02	1
18O2 PFHxS	96		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C4 PFOS	90		50 - 150	12/20/24 04:07	12/23/24 22:02	1
d3-NMeFOSAA	66		50 - 150	12/20/24 04:07	12/23/24 22:02	1
d5-NEtFOSAA	69		50 - 150	12/20/24 04:07	12/23/24 22:02	1
13C3 HFPO-DA	89		50 - 150	12/20/24 04:07	12/23/24 22:02	1

Lab Sample ID: LCS 320-823451/2-A

Matrix: Solid

Analysis Batch: 823982

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823451

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	2.00	1.82		ug/Kg		91	70 - 132
Perfluoroheptanoic acid (PFHpA)	2.00	1.92		ug/Kg		96	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	1.95		ug/Kg		98	69 - 133
Perfluorononanoic acid (PFNA)	2.00	1.94		ug/Kg		97	72 - 129

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: LCS 320-823451/2-A

Matrix: Solid

Analysis Batch: 823982

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 823451

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	2.06		ug/Kg		103	64 - 136
Perfluorododecanoic acid (PFDoA)	2.00	2.04		ug/Kg		102	69 - 135
Perfluorotridecanoic acid (PFTriA)	2.00	2.20		ug/Kg		110	66 - 139
Perfluorotetradecanoic acid (PFTeA)	2.00	1.94		ug/Kg		97	69 - 133
Perfluorobutanesulfonic acid (PFBS)	1.78	1.73		ug/Kg		97	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.79		ug/Kg		98	67 - 130
Perfluorooctanesulfonic acid (PFOS)	1.86	1.82		ug/Kg		98	68 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	1.98		ug/Kg		99	63 - 144
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	1.91		ug/Kg		95	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.87	1.83		ug/Kg		98	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	1.85		ug/Kg		93	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.89	1.81		ug/Kg		96	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.80		ug/Kg		95	79 - 139

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	94		50 - 150
13C4 PFHpA	88		50 - 150
13C4 PFOA	88		50 - 150
13C5 PFNA	92		50 - 150
13C2 PFDA	88		50 - 150
13C2 PFUnA	86		50 - 150
13C2 PFDoA	82		50 - 150
13C2 PFTeDA	83		50 - 150
13C3 PFBS	84		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	89		50 - 150
d3-NMeFOSAA	66		50 - 150
d5-NEtFOSAA	64		50 - 150
13C3 HFPO-DA	85		50 - 150

Lab Sample ID: 320-117793-1 MS

Matrix: Solid

Analysis Batch: 823982

Client Sample ID: B-20

Prep Type: Total/NA

Prep Batch: 823451

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	ND		2.35	2.03		ug/Kg	✱	86	70 - 132
Perfluoroheptanoic acid (PFHpA)	ND		2.35	2.23		ug/Kg	✱	95	71 - 131
Perfluorooctanoic acid (PFOA)	ND		2.35	2.24		ug/Kg	✱	95	69 - 133

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: 320-117793-1 MS

Matrix: Solid

Analysis Batch: 823982

Client Sample ID: B-20

Prep Type: Total/NA

Prep Batch: 823451

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanoic acid (PFNA)	ND		2.35	2.34		ug/Kg	⚡	99	72 - 129
Perfluorodecanoic acid (PFDA)	ND		2.35	2.26		ug/Kg	⚡	96	69 - 133
Perfluoroundecanoic acid (PFUnA)	ND		2.35	2.53		ug/Kg	⚡	108	64 - 136
Perfluorododecanoic acid (PFDoA)	ND		2.35	2.44		ug/Kg	⚡	104	69 - 135
Perfluorotridecanoic acid (PFTriA)	ND		2.35	1.98		ug/Kg	⚡	84	66 - 139
Perfluorotetradecanoic acid (PFTeA)	ND		2.35	2.27		ug/Kg	⚡	96	69 - 133
Perfluorobutanesulfonic acid (PFBS)	ND		2.09	2.09		ug/Kg	⚡	100	72 - 128
Perfluorohexanesulfonic acid (PFHxS)	ND		2.15	2.17		ug/Kg	⚡	101	67 - 130
Perfluorooctanesulfonic acid (PFOS)	ND		2.19	2.29		ug/Kg	⚡	105	68 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.35	2.25		ug/Kg	⚡	95	63 - 144
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.35	2.14		ug/Kg	⚡	91	61 - 139
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.20	2.13		ug/Kg	⚡	97	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.35	2.19		ug/Kg	⚡	93	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.22	1.94		ug/Kg	⚡	87	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.23	2.21		ug/Kg	⚡	99	79 - 139

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C2 PFHxA	92		50 - 150
13C4 PFHpA	84		50 - 150
13C4 PFOA	84		50 - 150
13C5 PFNA	90		50 - 150
13C2 PFDA	86		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	75		50 - 150
13C2 PFTeDA	43	*5-	50 - 150
13C3 PFBS	77		50 - 150
18O2 PFHxS	84		50 - 150
13C4 PFOS	79		50 - 150
d3-NMeFOSAA	65		50 - 150
d5-NEtFOSAA	59		50 - 150
13C3 HFPO-DA	76		50 - 150

Lab Sample ID: 320-117793-1 MSD

Matrix: Solid

Analysis Batch: 823982

Client Sample ID: B-20

Prep Type: Total/NA

Prep Batch: 823451

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	ND		2.34	2.06		ug/Kg	⚡	88	70 - 132	1	30
Perfluoroheptanoic acid (PFHpA)	ND		2.34	2.23		ug/Kg	⚡	95	71 - 131	0	30

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Lab Sample ID: 320-117793-1 MSD

Matrix: Solid

Analysis Batch: 823982

Client Sample ID: B-20

Prep Type: Total/NA

Prep Batch: 823451

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	ND		2.34	2.32		ug/Kg	☼	99	69 - 133	4	30
Perfluorononanoic acid (PFNA)	ND		2.34	2.29		ug/Kg	☼	98	72 - 129	2	30
Perfluorodecanoic acid (PFDA)	ND		2.34	2.24		ug/Kg	☼	96	69 - 133	1	30
Perfluoroundecanoic acid (PFUnA)	ND		2.34	2.51		ug/Kg	☼	107	64 - 136	1	30
Perfluorododecanoic acid (PFDoA)	ND		2.34	2.41		ug/Kg	☼	103	69 - 135	1	30
Perfluorotridecanoic acid (PFTriA)	ND		2.34	2.33		ug/Kg	☼	100	66 - 139	17	30
Perfluorotetradecanoic acid (PFTeA)	ND		2.34	2.37		ug/Kg	☼	101	69 - 133	4	30
Perfluorobutanesulfonic acid (PFBS)	ND		2.08	1.94		ug/Kg	☼	93	72 - 128	8	30
Perfluorohexanesulfonic acid (PFHxS)	ND		2.13	2.14	I	ug/Kg	☼	100	67 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)	ND		2.18	2.18		ug/Kg	☼	100	68 - 136	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.34	2.29		ug/Kg	☼	98	63 - 144	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.34	2.22		ug/Kg	☼	95	61 - 139	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.19	2.05		ug/Kg	☼	94	75 - 135	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.34	2.22		ug/Kg	☼	95	77 - 137	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.21	2.15		ug/Kg	☼	97	76 - 136	10	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.21	2.03		ug/Kg	☼	92	79 - 139	8	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C2 PFHxA	89		50 - 150
13C4 PFHpA	83		50 - 150
13C4 PFOA	84		50 - 150
13C5 PFNA	91		50 - 150
13C2 PFDA	90		50 - 150
13C2 PFUnA	90		50 - 150
13C2 PFDoA	87		50 - 150
13C2 PFTeDA	59		50 - 150
13C3 PFBS	83		50 - 150
18O2 PFHxS	87		50 - 150
13C4 PFOS	87		50 - 150
d3-NMeFOSAA	76		50 - 150
d5-NEtFOSAA	73		50 - 150
13C3 HFPO-DA	75		50 - 150

Eurofins Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method: D 2216 - Percent Moisture

Lab Sample ID: 320-117772-A-1 DU
Matrix: Solid
Analysis Batch: 823360

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	21.7		21.0		%		3	20
Percent Solids	78.3		79.0		%		0.9	20

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

LCMS

Prep Batch: 823451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-117793-1	B-20	Total/NA	Solid	SHAKE	
320-117793-2	B-21	Total/NA	Solid	SHAKE	
320-117793-3	B-22	Total/NA	Solid	SHAKE	
320-117793-4	B-23	Total/NA	Solid	SHAKE	
320-117793-5	B-24	Total/NA	Solid	SHAKE	
320-117793-6	B-25	Total/NA	Solid	SHAKE	
MB 320-823451/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-823451/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-117793-1 MS	B-20	Total/NA	Solid	SHAKE	
320-117793-1 MSD	B-20	Total/NA	Solid	SHAKE	

Prep Batch: 823489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-117793-7	B-1	Total/NA	Water	1633	
MB 320-823489/1-A	Method Blank	Total/NA	Water	1633	
LCS 320-823489/3-A	Lab Control Sample	Total/NA	Water	1633	
LCSD 320-823489/4-A	Lab Control Sample Dup	Total/NA	Water	1633	
LLCS 320-823489/2-A	Lab Control Sample	Total/NA	Water	1633	

Analysis Batch: 823858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-117793-7	B-1	Total/NA	Water	1633	823489
MB 320-823489/1-A	Method Blank	Total/NA	Water	1633	823489
LCS 320-823489/3-A	Lab Control Sample	Total/NA	Water	1633	823489
LCSD 320-823489/4-A	Lab Control Sample Dup	Total/NA	Water	1633	823489
LLCS 320-823489/2-A	Lab Control Sample	Total/NA	Water	1633	823489

Analysis Batch: 823982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-117793-1	B-20	Total/NA	Solid	EPA 537(Mod)	823451
320-117793-2	B-21	Total/NA	Solid	EPA 537(Mod)	823451
320-117793-3	B-22	Total/NA	Solid	EPA 537(Mod)	823451
320-117793-4	B-23	Total/NA	Solid	EPA 537(Mod)	823451
320-117793-5	B-24	Total/NA	Solid	EPA 537(Mod)	823451
320-117793-6	B-25	Total/NA	Solid	EPA 537(Mod)	823451
MB 320-823451/1-A	Method Blank	Total/NA	Solid	EPA 537(Mod)	823451
LCS 320-823451/2-A	Lab Control Sample	Total/NA	Solid	EPA 537(Mod)	823451
320-117793-1 MS	B-20	Total/NA	Solid	EPA 537(Mod)	823451
320-117793-1 MSD	B-20	Total/NA	Solid	EPA 537(Mod)	823451

General Chemistry

Analysis Batch: 823360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-117793-1	B-20	Total/NA	Solid	D 2216	
320-117793-2	B-21	Total/NA	Solid	D 2216	
320-117793-3	B-22	Total/NA	Solid	D 2216	
320-117793-4	B-23	Total/NA	Solid	D 2216	
320-117793-5	B-24	Total/NA	Solid	D 2216	
320-117793-6	B-25	Total/NA	Solid	D 2216	
320-117772-A-1 DU	Duplicate	Total/NA	Solid	D 2216	

Eurofins Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-20

Date Collected: 12/12/24 09:42

Date Received: 12/18/24 10:00

Lab Sample ID: 320-117793-1

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			823360	12/19/24 14:00	CFR	EET SAC

Client Sample ID: B-20

Date Collected: 12/12/24 09:42

Date Received: 12/18/24 10:00

Lab Sample ID: 320-117793-1

Matrix: Solid

Percent Solids: 81.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.34 g	10.0 mL	823451	12/20/24 04:07	R1T	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	823982	12/23/24 22:30	N1K	EET SAC

Client Sample ID: B-21

Date Collected: 12/12/24 10:46

Date Received: 12/18/24 10:00

Lab Sample ID: 320-117793-2

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			823360	12/19/24 14:00	CFR	EET SAC

Client Sample ID: B-21

Date Collected: 12/12/24 10:46

Date Received: 12/18/24 10:00

Lab Sample ID: 320-117793-2

Matrix: Solid

Percent Solids: 84.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.08 g	10.0 mL	823451	12/20/24 04:07	R1T	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	823982	12/23/24 23:12	N1K	EET SAC

Client Sample ID: B-22

Date Collected: 12/12/24 11:42

Date Received: 12/18/24 10:00

Lab Sample ID: 320-117793-3

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			823360	12/19/24 14:00	CFR	EET SAC

Client Sample ID: B-22

Date Collected: 12/12/24 11:42

Date Received: 12/18/24 10:00

Lab Sample ID: 320-117793-3

Matrix: Solid

Percent Solids: 86.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.02 g	10.0 mL	823451	12/20/24 04:07	R1T	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	823982	12/23/24 23:26	N1K	EET SAC

Client Sample ID: B-23

Date Collected: 12/12/24 12:55

Date Received: 12/18/24 10:00

Lab Sample ID: 320-117793-4

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			823360	12/19/24 14:00	CFR	EET SAC

Eurofins Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Client Sample ID: B-23

Lab Sample ID: 320-117793-4

Date Collected: 12/12/24 12:55

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 85.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.45 g	10.0 mL	823451	12/20/24 04:07	R1T	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	823982	12/23/24 23:40	N1K	EET SAC

Client Sample ID: B-24

Lab Sample ID: 320-117793-5

Date Collected: 12/12/24 15:05

Matrix: Solid

Date Received: 12/18/24 10:00

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			823360	12/19/24 14:00	CFR	EET SAC

Client Sample ID: B-24

Lab Sample ID: 320-117793-5

Date Collected: 12/12/24 15:05

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 86.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.29 g	10.0 mL	823451	12/20/24 04:07	R1T	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	823982	12/23/24 23:54	N1K	EET SAC

Client Sample ID: B-25

Lab Sample ID: 320-117793-6

Date Collected: 12/12/24 16:05

Matrix: Solid

Date Received: 12/18/24 10:00

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			823360	12/19/24 14:00	CFR	EET SAC

Client Sample ID: B-25

Lab Sample ID: 320-117793-6

Date Collected: 12/12/24 16:05

Matrix: Solid

Date Received: 12/18/24 10:00

Percent Solids: 80.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.12 g	10.0 mL	823451	12/20/24 04:07	R1T	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	823982	12/24/24 00:08	N1K	EET SAC

Client Sample ID: B-1

Lab Sample ID: 320-117793-7

Date Collected: 12/10/24 10:40

Matrix: Water

Date Received: 12/18/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1633			155.6 mL	5.0 mL	823489	12/20/24 07:16	CGL	EET SAC
Total/NA	Analysis	1633		1			823858	12/22/24 02:16	RS1	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Eurofins Sacramento

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Laboratory: Eurofins 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	02-20-27

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

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Method	Method Description	Protocol	Laboratory
1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	EET SAC
EPA 537(Mod)	PFAS for QSM 5.3, Table B-15	EPA	EET SAC
D 2216	Percent Moisture	ASTM	EET SAC
1633	Solid-Phase Extraction (SPE)	EPA	EET SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	EET 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:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: YAK Waterline

Job ID: 320-117793-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-117793-1	B-20	Solid	12/12/24 09:42	12/18/24 10:00
320-117793-2	B-21	Solid	12/12/24 10:46	12/18/24 10:00
320-117793-3	B-22	Solid	12/12/24 11:42	12/18/24 10:00
320-117793-4	B-23	Solid	12/12/24 12:55	12/18/24 10:00
320-117793-5	B-24	Solid	12/12/24 15:05	12/18/24 10:00
320-117793-6	B-25	Solid	12/12/24 16:05	12/18/24 10:00
320-117793-7	B-1	Water	12/10/24 10:40	12/18/24 10:00



2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

CHAIN-OF-CUSTODY RECORD

Laboratory Environ Page 1 of 1
Attn Daniel Altucher
(narrative if used)

Analytical Methods (include preservative if used)

Turn Around Time:	☒ Normal ☐ Rush	Quote No:
		MSA No:
		J-Flags: ☒ Yes ☐ No
	Please Specify	

Turn Around Time:		Quote No:	
☒ Normal	☐ Rush	MSA No:	
Please Specify		J-Flags: ☒ Yes ☐ No	
Sample Identity	Lab No	Time	Date Sampled

[illegible]

Project Information		Sample Receipt	
Number	112494-006	Total No of Containers:	
Name	YAK Water-line	COC Seals/Intact?	Y/N/A
Contact	AMJ	Received Good Cond./Cold	
Ongoing Project?	Yes ☐ No ☒	Temp	
Sampler	LDW	Delivery Method	

Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Signature <i>Lucas Woods</i>	Time: <i>10:30</i>	Signature	Time	Signature	Time
Printed Name <i>Lucas Woods</i>	Date: <i>12/16</i>	Printed Name	Date	Printed Name	Date
Company <i>Shannon Wilson</i>		Company		Company	
Received By: 1.		Received By: 2.		Received By: 3.	
Signature <i>[Signature]</i>	Time: <i>10:00</i>	Signature	Time	Signature	Time
Printed Name <i>Shannon Wilson</i>	Date: <i>12/16</i>	Printed Name	Date	Printed Name	Date
Company <i>[Signature]</i>		Company		Company	

Distribution White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - Shannon & Wilson - job file



Environment Testing

Sacramento Sample
Receiving Notes (SSRN)

Loc: 320

117793

Tracking #

5881 5597 9661

Job _____

SO (PO) FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSL / OnTrac / Goldstreak / USPS / Other _____Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations
File in the job folder with the COCTherm ID 112 Corr Factor: (+/-) _____ °CIce _____ Wet _____ Gel ☒ Other _____Cooler Custody Seal. 2551414 / 2551415

Cooler ID _____

Temp Observed: 5.6 °C Corrected: 5.6 °CFrom Temp Blank ☐ Sandwich ☒ Sidewall ☐**Opening/Processing The Shipment**

	Yes	No	NA
Cooler compromised/tampered with?	☐	☒	☐
Cooler Temperature is acceptable?	☒	☐	☐
Frozen samples show signs of thaw?	☐	☐	☒

Initials me Date 12/18/24**Unpacking/Labeling The Samples**

	Yes	No	NA
Containers are not broken or leaking?	☒	☐	☐
Samples compromised/tampered with?	☐	☒	☐
COC is complete w/o discrepancies	☒	☐	☐
Sample custody seal?	☐	☐	☒
Sample containers have legible labels?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Is the Field Sampler's name on COC?	☐	☐	☒
Samples w/o discrepancies?	☐	☒	☐
Zero headspace?*	☐	☐	☒
Alkalinity has no headspace?	☐	☐	☒
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials DM Date 12/18/24Notes: Sample time for
sample # 2? 10:45

Trizma Lot #(s) _____

Ammonium

Acetate Lot #(s) _____

Login Completion

	Yes	No	NA
Receipt Temperature on COC?	☒	☐	☐
NCM Filed?	☒	☐	☐
Samples received within hold time?	☒	☐	☐
Log Release checked in TALS?	☒	☐	☐

Initials DM Date 12/18/24

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Amber Masters	CS Site Name:	ADOT&PF Yakutat Airport Sitewide PFAS	Lab Name:	Eurofins - Sacramento
Title:	Environmental Scientist	ADEC File No.:	1530.38.022	Lab Report No.:	320-117793-1
Consulting Firm:	Shannon & Wilson, Inc.	Hazard ID No.:	27090	Lab Report Date:	12/26/2024

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?

Yes ☒ No ☐ N/A ☐

Comments: Project samples were sent to Eurofins Sacramento (Eurofins) in West Sacramento, California. Eurofins analyzed project samples for PFAS by method EPA 1633 and EPA method 537(Mod) under DEC approval 17-020 issued 2/21/2024 with an expiration of 2/20/2027.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?

Yes ☐ No ☐ N/A ☒

Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?

Yes ☒ No ☐ N/A ☐

Comments:

- b. Were the correct analyses requested?

Yes ☒ No ☐ N/A ☐

Analyses requested: PFAS by EPA 537 (modified) (soil samples), and PFAS by EPA 1633 (water samples).

Comments:

3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes ☒ No ☐ N/A ☐

Cooler temperature(s): Cooler temperature was not reported by the laboratory.

Sample temperature(s): Sample temperatures were not noted by the laboratory.

Comments: A temperature blank was included with the samples in the cooler and is used to access temperature preservation. The temperature blank was reported at 5.6° C upon arrival at the Eurofins laboratory.

- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?

Yes ☐ No ☐ N/A ☒

Comments: No preservation (other than chilling) is required for PFAS analysis.

- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?

Yes ☒ No ☐ N/A ☐

Comments: The laboratory noted that 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, canister not holding a vacuum, etc.?

Yes ☒ No ☐ N/A ☐

Comments: The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): B-21 (320-117793-2). The container label lists the following time: 10:45. The sample was logged in and labeled according to the COC. Data quality and/or usability not affected.

- e. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: See Section 3.d.

4. Case Narrative

- a. Is the case narrative present and understandable?

Yes ☒ No ☐ N/A ☐

Comments: Click or tap here to enter text.

- b. Are there discrepancies, errors, or QC failures identified by the lab?

Yes ☒ No ☐ N/A ☐

Comments:

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): B-21 (320-117793-2). The container label lists

CS Site Name: ADOT&PF Yakutat Airport Sitewide PFAS

Lab Report No.: 320-117793-1

the following time: 10:45. The sample was logged in and labeled according to the COC. Data quality and/or usability not affected.

LCMS

Method 1633: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-823489 and analytical batch 320-823858 recovered outside control limits for the following analytes: Nonafluoro-3,6-dioxaheptanoic acid (NFDHA). See Section 6.b. for details regarding impacts on data quality and/or usability, as applicable.

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was outside the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. The associated analyte(s) have been flagged: B-22 (320-117793-3) and (320-117793-A-1-C MSD). Consequently, the PFHxS result in the noted sample is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: B-20 (320-117793-1) and (320-117793-A-1-B MS). 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). See Section 6.d. for details regarding impacts on data quality and/or usability, as applicable.

Organic Prep

Method 1633: The following sample in preparation batch 320-823489 was observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction: B-1 (320-117793-7). Data quality and/or usability not affected.

- c. Were all the 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: Effects on data quality and/or usability due to discrepancies, errors, or QC failures identified by the lab are discussed in Section 4.b, or elsewhere in this checklist.

5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes ☒ No ☐ N/A ☐

Comments: Samples were analyzed as requested

CS Site Name: ADOT&PF Yakutat Airport Sitewide PFAS

Lab Report No.: 320-117793-1

- b. Are all applicable holding times met?

Yes ☒ No ☐ N/A ☐

Comments: The samples were received within holding time limits and with sufficient time to meet holding time requirements.

- c. Are all soils reported on a dry weight basis?

Yes ☒ No ☐ N/A ☐

Comments: Soil samples were reported on a dry weight basis.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes ☒ No ☐ N/A ☐

Comments: For soil samples, analytical sensitivity was evaluated to verify that reporting limits met applicable DEC's most stringent values between the DEC cleanup levels in 18 AAC 75.341 Table B1 and B2 Method Two (Migration to Groundwater or Over 40 Inch Zone Human Health). For the groundwater sample Analytical sensitivity was evaluated to verify that reporting limits met applicable Drinking Water Standards obtained from the EPA PFAS National Primary Drinking Water Regulation dated April 2024.

- e. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: No sample result discrepancies were noted by the laboratory.

6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes ☒ No ☐ N/A ☐

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes ☒ No ☐

Comments: Target analytes were not detected in the method blanks associated with this work order

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; target analytes were not detected in the method blanks.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: Project analytes were not detected in the method blanks.

v. Data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Project analytes were not detected in the method blanks.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes ☐ No ☒ N/A ☐

Comments: An LCS sample was reported for PFAS 537(mod). LLCS and LCSD samples were reported for PFAS 1633. An LCSD was not reported for method PFAS 537(Mod). Refer to MS/MSD results for the quality assessment of accuracy and precision.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes ☐ No ☐ N/A ☒

Comments: Metals analysis was not requested with this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes ☒ No ☐ N/A ☐

Comments: All percent recoveries are reported within quality control limits.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes ☐ No ☒ N/A ☐

Comments: LCS/LCSD precision was outside the data quality objective for NFDHA by method 1633. NFDHA was not detected in the associated project sample B-1. Consequently, the NFDHA result in the noted sample is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: See Section 6.b.iv. for affected samples.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

CS Site Name: ADOT&PF Yakutat Airport Sitewide PFAS

Lab Report No.: 320-117793-1

Yes ☒ No ☐ N/A ☐

Comments: See 6.b.iv. for applied qualifiers.

vii. Is the data quality or usability affected?

Yes ☒ No ☐ N/A ☐

Comments: See 6.b.iv., above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: An MS/MSD was prepared for preparation batch 320-823451 for method 537M.

An MS/MSD was not prepared for method 1633. See section 6.b. for batch accuracy and precision for this preparation batch. Data quality and/or usability not affected.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☐ N/A ☒

Comments: Metals analysis was not requested with this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes ☒ No ☐ N/A ☐

Comments: All percent recoveries were within quality control limits.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes ☒ No ☐ N/A ☐

Comments: RPDs were within quality control limits.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; method accuracy and precision were demonstrated to be within laboratory control limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: Method accuracy and precision were demonstrated to be within laboratory control limits.

vii. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Method accuracy and precision were demonstrated to be within laboratory control limits.

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: IDA recoveries were reported for this work order.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes ☐ No ☒ N/A ☐

Comments: Percent recoveries for 13C2 PFTeDA were below acceptance limits in the MS sample for 537M and the parent sample B-20. The analyte associated with 13C2 PFTeDa is PFTeA. PFTeA was not detected in the parent samples. Consequently, the result of this analyte in the noted sample is considered estimated, no direction of bias, and have been flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

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 Section 6.d.ii for applied qualifiers.

iv. Is the data quality or usability affected?

Yes ☒ No ☐ N/A ☐

Comments: See 6.d.ii.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒

Comments: Volatile analyses were not requested; a trip blank was not submitted with this work order.

ii. Are all results less than LoQ or RL?

Yes ☐ No ☐ N/A ☒

Comments: A trip blank was not required.

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not required.

- iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: A trip blank was not required.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes ☐ No ☒ N/A ☐

Comments: Field duplicate samples were inadvertently not collected with this project.

- ii. Was the duplicate submitted blind to lab?

Yes ☐ No ☒ N/A ☐

Comments: Field duplicate samples were inadvertently not collected with this project.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐

Comments: Field duplicate samples were inadvertently not collected with this project.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes ☐ No ☐ N/A ☒

Comments: Soil samples were not collected with reusable equipment. Cross-contamination is unlikely. The water sample was the only one collected for this project, so no equipment blank was collected.

- ii. Are all results less than LoQ or RL?

Yes ☐ No ☐ N/A ☒

Comments: An equipment blank was not submitted with this work order.

CS Site Name: ADOT&PF Yakutat Airport Sitewide PFAS
Lab Report No.: 320-117793-1

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Data quality and usability are not affected; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Are they defined and appropriate?

Yes ☒ No ☐ N/A ☐

Comments: See 4.b., above.

Appendix D

Eurofins – Seattle Laboratory Report
and LDRC

CONTENTS

- Eurofins – Seattle Laboratory Report 580-146688-1
- DEC Laboratory Data Review Checklist for WO 580-146688-1

ANALYTICAL REPORT

PREPARED FOR

Attn: Ashley Jaramillo
Shannon & Wilson, Inc
2355 Hill Rd.

Fairbanks, Alaska 99709-5244

Generated 1/9/2025 6:59:28 AM Revision 1

JOB DESCRIPTION

112494-002 Yakutat Airport Water System

JOB NUMBER

580-146688-1

Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization



Authorized for release by
Tracy Dutton, Client Relations Manager
Tracy.Dutton@et.eurofinsus.com
(253)248-4970

Generated
1/9/2025 6:59:28 AM
Revision 1

Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Definitions	6
Client Sample Results	8
QC Sample Results	11
Chronicle	22
Certification Summary	23
Sample Summary	24
Chain of Custody	25
Receipt Checklists	29



Case Narrative

Client: Shannon & Wilson, Inc
Project: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Job ID: 580-146688-1

Eurofins Seattle

Job Narrative 580-146688-1

Revision 1/9/2025

The report was revised to show the correct temperature that the cooler was received. The previous temperature reflected was due to a sample login error.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The sample was received on 12/17/2024 2:49 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C.

Gasoline Range Organics

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

GC/MS VOA

Method 8260D: The method blank for preparation batch 580-480913 and analytical batch 580-480934 contained 1,2,4-Trimethylbenzene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-480913 and analytical batch 580-480934 recovered outside control limits for the following analytes: Acetone.

Method 8260D_SIM_AK: The continuing calibration verification (CCV) associated with batch 580-481244 recovered outside acceptance criteria, low biased, for Vinyl chloride. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D_SIM_AK: The continuing calibration verification (CCV) associated with batch 580-481244 recovered above the upper control limit for Naphthalene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: B-23 (580-146688-1) and (CCVIS 580-481244/3).

Method 8260D_SIM_AK: The method blank for preparation batch 580-481242 and analytical batch 580-481244 contained Bromoform, Chlorodibromomethane, Dibromomethane, 1,4-Dichlorobenzene, Dichlorobromomethane, Ethylene Dibromide, Hexachlorobutadiene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethene, 1,1,2-Trichloroethane and Trichloroethene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

GC/MS Semi VOA

Method 8270E_SIM: MB recovered low for 2,4,6-Tribromophenol (Surr). LCS was within limits and samples, barring sample matrix, were passing for this surrogate. (MB 580-480917/1-A)

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

Diesel Range Organics

Method AK102_103: The matrix spike (MS) recoveries for preparation batch 580-480898 and analytical batch 580-481055 were outside control limits. Non-homogeneity is suspected because the associated laboratory control sample (LCS) recovery was within

Eurofins Seattle

Case Narrative

Client: Shannon & Wilson, Inc
Project: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Job ID: 580-146688-1 (Continued)

Eurofins Seattle

acceptance limits.

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

GC Semi VOA

Method 8011: The following sample formed emulsions during the extraction procedure: B-23 (580-146688-1). The emulsions were broken up using centrifuge. 8011.

Method 8011: The continuing calibration verification (CCV) associated with batch 580-481622 recovered above the upper control limit for 1,2,3-Trichloropropane. The samples associated with this CCV were non-detects for the affected analytes; 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.

PCBs

Method 8082A: The continuing calibration verification (CCV) associated with 580-481693 recovered high and outside the control limits for PCB-1221 on one column. Results are confirmed on both columns and reported from the passing column. The associated sample is: (CCV 580-481693/5).

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

Metals

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

General Chemistry

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

Eurofins Seattle

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

GC Semi VOA

Qualifier	Qualifier Description
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.

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)

Eurofins Seattle

Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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

1

2

3

4

5

6

7

8

9

10

11

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Client Sample ID: B-23

Lab Sample ID: 580-146688-1

Date Collected: 12/12/24 13:01

Matrix: Solid

Date Received: 12/17/24 14:49

Percent Solids: 100.0

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00083	J	0.0020	0.00038	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Bromoform	0.00098	U	0.0020	0.00044	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Bromomethane	0.00098	U M	0.0020	0.00029	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Chlorodibromomethane	0.00049	U M	0.0020	0.00022	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Chloroform	0.00044	J M	0.0020	0.00033	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
cis-1,3-Dichloropropene	0.00098	U M	0.0020	0.00053	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Dibromomethane	0.00061	J M	0.0020	0.00047	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
1,4-Dichlorobenzene	0.00098	U M	0.0020	0.00041	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Dichlorobromomethane	0.00049	U	0.0020	0.00023	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
1,2-Dichloroethane	0.00098	U	0.0020	0.00075	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
1,1-Dichloroethene	0.00031	J	0.0020	0.00024	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Ethylene Dibromide	0.0042		0.0020	0.00051	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Hexachlorobutadiene	0.0020	U M	0.0039	0.0012	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
2-Hexanone	0.22		0.014	0.0070	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Naphthalene	0.0020	U Q M	0.0078	0.0014	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
1,1,1,2-Tetrachloroethane	0.00098	U	0.0020	0.00029	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
1,1,1,2,2-Tetrachloroethane	0.00098	U	0.0039	0.00053	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Tetrachloroethene	0.0014	J	0.0020	0.00043	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
trans-1,3-Dichloropropene	0.00040	J	0.0020	0.00037	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
1,1,2-Trichloroethane	0.26	M	0.0020	0.00018	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Trichloroethene	0.00055	J	0.0020	0.00045	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1
Vinyl chloride	0.0020	U Q	0.0078	0.00093	mg/Kg	☆	12/23/24 15:14	12/23/24 22:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107	M	79 - 120	12/23/24 15:14	12/23/24 22:15	1
Dibromofluoromethane (Surr)	100		78 - 120	12/23/24 15:14	12/23/24 22:15	1
1,2-Dichloroethane-d4 (Surr)	104		79 - 121	12/23/24 15:14	12/23/24 22:15	1
Toluene-d8 (Surr)	98		79 - 120	12/23/24 15:14	12/23/24 22:15	1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.20	U Q	0.31	0.068	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Bromobenzene	0.0059	U	0.016	0.0016	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
2-Butanone (MEK)	0.059	U	0.16	0.032	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Carbon disulfide	0.011	J	0.023	0.0047	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Carbon tetrachloride	0.0059	U	0.0078	0.0017	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Chlorobenzene	0.0059	U	0.016	0.0019	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Chlorobromomethane	0.0059	U	0.016	0.0024	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Chloroethane	0.029	U	0.031	0.0082	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Chloromethane	0.012	U	0.023	0.0039	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
2-Chlorotoluene	0.012	U	0.016	0.0034	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
4-Chlorotoluene	0.012	U	0.016	0.0038	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
cis-1,2-Dichloroethene	0.012	U	0.023	0.0049	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,2-Dibromo-3-Chloropropane	0.012	U	0.023	0.0059	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,2-Dichlorobenzene	0.012	U	0.016	0.0034	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,3-Dichlorobenzene	0.012	U	0.023	0.0052	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Dichlorodifluoromethane	0.039	U	0.098	0.018	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,1-Dichloroethane	0.012	U	0.016	0.0036	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,2-Dichloropropane	0.0059	U	0.0078	0.0026	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,3-Dichloropropane	0.0059	U	0.023	0.0022	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1

Eurofins Seattle

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Client Sample ID: B-23

Lab Sample ID: 580-146688-1

Date Collected: 12/12/24 13:01

Matrix: Solid

Date Received: 12/17/24 14:49

Percent Solids: 100.0

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	0.012	U	0.016	0.0047	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,1-Dichloropropene	0.0059	U	0.016	0.0021	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Ethylbenzene	0.012	U M	0.016	0.0036	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Isopropylbenzene	0.012	U	0.016	0.0034	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
4-Isopropyltoluene	0.012	U	0.016	0.0040	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Methylene Chloride	0.039	U	0.098	0.010	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
4-Methyl-2-pentanone (MIBK)	0.029	U	0.039	0.0074	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Methyl tert-butyl ether	0.0059	U	0.016	0.0023	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
m-Xylene & p-Xylene	0.0059	U	0.016	0.0028	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
n-Butylbenzene	0.012	U	0.016	0.0072	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
N-Propylbenzene	0.012	U	0.016	0.0059	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
o-Xylene	0.0059	U	0.016	0.0020	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
sec-Butylbenzene	0.012	U	0.016	0.0034	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Styrene	0.012	U	0.016	0.0050	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
tert-Butylbenzene	0.012	U	0.016	0.0030	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Toluene	0.012	U	0.023	0.0053	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
trans-1,2-Dichloroethene	0.012	U	0.023	0.0057	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,2,3-Trichlorobenzene	0.029	U	0.031	0.016	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,2,4-Trichlorobenzene	0.029	U	0.031	0.017	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,1,1-Trichloroethane	0.0059	U	0.016	0.0018	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
Trichlorofluoromethane	0.029	U	0.031	0.010	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,2,3-Trichloropropane	0.012	U	0.016	0.0045	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,2,4-Trimethylbenzene	0.012	U M	0.016	0.0053	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1
1,3,5-Trimethylbenzene	0.012	U	0.016	0.0030	mg/Kg	☆	12/19/24 11:47	12/19/24 20:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	115	M	80 - 120	12/19/24 11:47	12/19/24 20:51	1
Dibromofluoromethane (Surr)	99		80 - 120	12/19/24 11:47	12/19/24 20:51	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 121	12/19/24 11:47	12/19/24 20:51	1
Toluene-d8 (Surr)	81		80 - 120	12/19/24 11:47	12/19/24 20:51	1

Method: ADEC AK101 - Alaska - Gasoline Range Organics (GC/MS) - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	270		48	24	mg/Kg	☆	12/23/24 10:23	12/23/24 13:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	97		50 - 150	12/23/24 10:23	12/23/24 13:29	1
4-Bromofluorobenzene (Surr)	105		50 - 150	12/23/24 10:23	12/23/24 13:29	1

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	0.0048	U M	0.0053	0.0023	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
2-Methylnaphthalene	0.0048	U M	0.0058	0.0028	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
Acenaphthene	0.0048	U M	0.0053	0.0015	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
Acenaphthylene	0.0048	U M	0.0053	0.0016	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
Anthracene	0.0048	U M	0.0053	0.0018	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
Benzo[a]anthracene	0.0048	U	0.0053	0.0021	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
Benzo[a]pyrene	0.0048	U M	0.0053	0.0018	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
Benzo[b]fluoranthene	0.0029	U	0.0048	0.0011	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1
Benzo[g,h,i]perylene	0.0048	U	0.0053	0.0017	mg/Kg	☆	12/19/24 12:49	12/26/24 17:27	1

Eurofins Seattle

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Client Sample ID: B-23

Lab Sample ID: 580-146688-1

Date Collected: 12/12/24 13:01

Matrix: Solid

Date Received: 12/17/24 14:49

Percent Solids: 100.0

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	0.0048	U	0.0053	0.0017	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Chrysene	0.0029	U	0.0048	0.0014	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Dibenz(a,h)anthracene	0.0048	U	0.0053	0.00069	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Fluoranthene	0.0029	U M	0.0048	0.0013	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Fluorene	0.0048	U M	0.0053	0.0012	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Indeno[1,2,3-cd]pyrene	0.0048	U M	0.0053	0.0021	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Naphthalene	0.068		0.0048	0.0016	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Phenanthrene	0.0038	U M	0.0048	0.0016	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1
Pyrene	0.0034	J	0.0053	0.0010	mg/Kg	✱	12/19/24 12:49	12/26/24 17:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	91		57 - 145	12/19/24 12:49	12/26/24 17:27	1

Method: EPA 8011 - EDB and DBCP in Water by Microextraction

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	0.000039	U M	0.000049	0.000012	mg/Kg	✱	12/26/24 13:19	12/30/24 23:09	1
1,2,3-Trichloropropane	0.00016	U M Q	0.00029	0.000065	mg/Kg	✱	12/26/24 13:19	12/30/24 23:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dibromopropane	88		60 - 140	12/26/24 13:19	12/30/24 23:09	1

Method: SW846 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.017	U	0.019	0.0072	mg/Kg	✱	12/19/24 15:13	01/01/25 00:47	1
PCB-1221	0.019	U	0.019	0.012	mg/Kg	✱	12/19/24 15:13	01/01/25 00:47	1
PCB-1232	0.017	U	0.019	0.0047	mg/Kg	✱	12/19/24 15:13	01/01/25 00:47	1
PCB-1242	0.017	U	0.019	0.0077	mg/Kg	✱	12/19/24 15:13	01/01/25 00:47	1
PCB-1248	0.017	U	0.019	0.0068	mg/Kg	✱	12/19/24 15:13	01/01/25 00:47	1
PCB-1254	0.019	U	0.019	0.0087	mg/Kg	✱	12/19/24 15:13	01/01/25 00:47	1
PCB-1260	0.017	U	0.019	0.0072	mg/Kg	✱	12/19/24 15:13	01/01/25 00:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	94		44 - 135	12/19/24 15:13	01/01/25 00:47	1
Tetrachloro-m-xylene	75		48 - 150	12/19/24 15:13	01/01/25 00:47	1

Method: ADEC AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	1000	J1	19	8.5	mg/Kg	✱	12/19/24 10:46	12/20/24 20:44	1
RRO (nC25-<nC36)	29	U	48	18	mg/Kg	✱	12/19/24 10:46	12/20/24 20:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	105		50 - 150	12/19/24 10:46	12/20/24 20:44	1
n-Triacontane-d62	84		50 - 150	12/19/24 10:46	12/20/24 20:44	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.8	D	0.29	0.062	mg/Kg	✱	12/26/24 13:42	12/27/24 21:56	10

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	100		0.1	0.1	%			12/20/24 11:56	1
Percent Moisture (SM22 2540G)	0.03		0.1	0.1	%			12/20/24 11:56	1

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-480913/11-A

Matrix: Solid

Analysis Batch: 480934

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 480913

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.50	U	0.80	0.17	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Bromobenzene	0.015	U	0.040	0.0042	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
2-Butanone (MEK)	0.15	U	0.40	0.083	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Carbon disulfide	0.030	U	0.060	0.012	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Carbon tetrachloride	0.015	U	0.020	0.0044	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Chlorobenzene	0.015	U	0.040	0.0048	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Chlorobromomethane	0.015	U	0.040	0.0062	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Chloroethane	0.075	U	0.080	0.021	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Chloromethane	0.030	U	0.060	0.010	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
2-Chlorotoluene	0.030	U	0.040	0.0088	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
4-Chlorotoluene	0.030	U	0.040	0.0098	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
cis-1,2-Dichloroethene	0.030	U	0.060	0.013	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,2-Dibromo-3-Chloropropane	0.030	U	0.060	0.015	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,2-Dichlorobenzene	0.030	U	0.040	0.0087	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,3-Dichlorobenzene	0.030	U	0.060	0.013	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Dichlorodifluoromethane	0.10	U	0.25	0.046	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,1-Dichloroethane	0.030	U	0.040	0.0092	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,2-Dichloropropane	0.015	U	0.020	0.0066	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,3-Dichloropropane	0.015	U	0.060	0.0056	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
2,2-Dichloropropane	0.030	U	0.040	0.012	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,1-Dichloropropene	0.015	U	0.040	0.0053	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Ethylbenzene	0.030	U	0.040	0.0091	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Isopropylbenzene	0.030	U	0.040	0.0086	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
4-Isopropyltoluene	0.030	U	0.040	0.010	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Methylene Chloride	0.10	U	0.25	0.026	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
4-Methyl-2-pentanone (MIBK)	0.075	U	0.10	0.019	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Methyl tert-butyl ether	0.015	U	0.040	0.0060	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
m-Xylene & p-Xylene	0.015	U	0.040	0.0071	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
n-Butylbenzene	0.030	U M	0.040	0.019	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
N-Propylbenzene	0.030	U	0.040	0.015	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
o-Xylene	0.015	U	0.040	0.0050	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
sec-Butylbenzene	0.030	U	0.040	0.0086	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Styrene	0.030	U	0.040	0.013	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
tert-Butylbenzene	0.030	U	0.040	0.0077	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Toluene	0.030	U	0.060	0.014	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
trans-1,2-Dichloroethene	0.030	U	0.060	0.015	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,2,3-Trichlorobenzene	0.075	U	0.080	0.040	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,2,4-Trichlorobenzene	0.075	U	0.080	0.043	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,1,1-Trichloroethane	0.015	U	0.040	0.0046	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
Trichlorofluoromethane	0.075	U	0.080	0.026	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,2,3-Trichloropropane	0.030	U	0.040	0.012	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,2,4-Trimethylbenzene	0.0212	J	0.040	0.014	mg/Kg		12/19/24 14:39	12/19/24 19:27	1
1,3,5-Trimethylbenzene	0.030	U	0.040	0.0076	mg/Kg		12/19/24 14:39	12/19/24 19:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120	12/19/24 14:39	12/19/24 19:27	1
Dibromofluoromethane (Surr)	104		80 - 120	12/19/24 14:39	12/19/24 19:27	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 121	12/19/24 14:39	12/19/24 19:27	1

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-480913/11-A

Matrix: Solid

Analysis Batch: 480934

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 480913

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120	12/19/24 14:39	12/19/24 19:27	1

Lab Sample ID: LCS 580-480913/7-A

Matrix: Solid

Analysis Batch: 480934

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 480913

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acetone	4.00	3.73		mg/Kg		93	43 - 150
Bromobenzene	0.800	0.738		mg/Kg		92	78 - 126
2-Butanone (MEK)	4.00	4.61		mg/Kg		115	72 - 134
Carbon disulfide	0.800	0.659		mg/Kg		82	67 - 137
Carbon tetrachloride	0.800	0.873		mg/Kg		109	76 - 140
Chlorobenzene	0.800	0.729		mg/Kg		91	80 - 125
Chlorobromomethane	0.800	0.770		mg/Kg		96	76 - 131
Chloroethane	0.800	0.729		mg/Kg		91	26 - 150
Chloromethane	0.800	0.706		mg/Kg		88	52 - 142
2-Chlorotoluene	0.800	0.773		mg/Kg		97	77 - 134
4-Chlorotoluene	0.800	0.780		mg/Kg		98	71 - 137
cis-1,2-Dichloroethene	0.800	0.781		mg/Kg		98	80 - 125
1,2-Dibromo-3-Chloropropane	0.800	0.790		mg/Kg		99	64 - 129
1,2-Dichlorobenzene	0.800	0.778		mg/Kg		97	78 - 126
1,3-Dichlorobenzene	0.800	0.767		mg/Kg		96	78 - 132
Dichlorodifluoromethane	0.800	0.787		mg/Kg		98	33 - 150
1,1-Dichloroethane	0.800	0.768		mg/Kg		96	78 - 126
1,2-Dichloropropane	0.800	0.803		mg/Kg		100	73 - 130
1,3-Dichloropropane	0.800	0.771		mg/Kg		96	80 - 120
2,2-Dichloropropane	0.800	0.765		mg/Kg		96	75 - 134
1,1-Dichloropropene	0.800	0.769		mg/Kg		96	76 - 140
Ethylbenzene	0.800	0.813		mg/Kg		102	80 - 135
Isopropylbenzene	0.800	0.861		mg/Kg		108	80 - 131
4-Isopropyltoluene	0.800	0.713		mg/Kg		89	71 - 142
Methylene Chloride	0.800	0.750		mg/Kg		94	56 - 140
4-Methyl-2-pentanone (MIBK)	4.00	4.07		mg/Kg		102	68 - 134
Methyl tert-butyl ether	0.800	0.860		mg/Kg		108	71 - 126
m-Xylene & p-Xylene	0.800	0.821		mg/Kg		103	80 - 132
n-Butylbenzene	0.800	0.712		mg/Kg		89	69 - 143
N-Propylbenzene	0.800	0.813		mg/Kg		102	78 - 133
o-Xylene	0.800	0.763		mg/Kg		95	80 - 132
sec-Butylbenzene	0.800	0.740		mg/Kg		93	71 - 143
Styrene	0.800	0.749		mg/Kg		94	79 - 129
tert-Butylbenzene	0.800	0.734		mg/Kg		92	72 - 144
Toluene	0.800	0.724		mg/Kg		90	75 - 125
trans-1,2-Dichloroethene	0.800	0.746		mg/Kg		93	77 - 134
1,2,3-Trichlorobenzene	0.800	0.699		mg/Kg		87	58 - 146
1,2,4-Trichlorobenzene	0.800	0.730		mg/Kg		91	74 - 131
1,1,1-Trichloroethane	0.800	0.827		mg/Kg		103	78 - 135
Trichlorofluoromethane	0.800	0.844		mg/Kg		105	71 - 150
1,2,3-Trichloropropane	0.800	0.760		mg/Kg		95	77 - 127

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-480913/7-A

Matrix: Solid

Analysis Batch: 480934

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 480913

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,4-Trimethylbenzene	0.800	0.766		mg/Kg		96	73 - 138
1,3,5-Trimethylbenzene	0.800	0.770		mg/Kg		96	72 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	102		80 - 121
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: LCSD 580-480913/8-A

Matrix: Solid

Analysis Batch: 480934

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 480913

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Acetone	4.00	5.51	Q	mg/Kg		138	43 - 150	39	28
Bromobenzene	0.800	0.723		mg/Kg		90	78 - 126	2	20
2-Butanone (MEK)	4.00	4.70		mg/Kg		118	72 - 134	2	31
Carbon disulfide	0.800	0.643		mg/Kg		80	67 - 137	3	20
Carbon tetrachloride	0.800	0.852		mg/Kg		107	76 - 140	2	20
Chlorobenzene	0.800	0.725		mg/Kg		91	80 - 125	1	20
Chlorobromomethane	0.800	0.754		mg/Kg		94	76 - 131	2	20
Chloroethane	0.800	0.487		mg/Kg		61	26 - 150	40	40
Chloromethane	0.800	0.719		mg/Kg		90	52 - 142	2	40
2-Chlorotoluene	0.800	0.771		mg/Kg		96	77 - 134	0	21
4-Chlorotoluene	0.800	0.774		mg/Kg		97	71 - 137	1	21
cis-1,2-Dichloroethene	0.800	0.766		mg/Kg		96	80 - 125	2	20
1,2-Dibromo-3-Chloropropane	0.800	0.819		mg/Kg		102	64 - 129	4	40
1,2-Dichlorobenzene	0.800	0.785		mg/Kg		98	78 - 126	1	20
1,3-Dichlorobenzene	0.800	0.766		mg/Kg		96	78 - 132	0	20
Dichlorodifluoromethane	0.800	0.759		mg/Kg		95	33 - 150	4	31
1,1-Dichloroethane	0.800	0.755		mg/Kg		94	78 - 126	2	20
1,2-Dichloropropane	0.800	0.805		mg/Kg		101	73 - 130	0	20
1,3-Dichloropropane	0.800	0.747		mg/Kg		93	80 - 120	3	20
2,2-Dichloropropane	0.800	0.750		mg/Kg		94	75 - 134	2	20
1,1-Dichloropropene	0.800	0.765		mg/Kg		96	76 - 140	0	20
Ethylbenzene	0.800	0.796		mg/Kg		99	80 - 135	2	20
Isopropylbenzene	0.800	0.892		mg/Kg		111	80 - 131	3	20
4-Isopropyltoluene	0.800	0.781		mg/Kg		98	71 - 142	9	29
Methylene Chloride	0.800	0.736		mg/Kg		92	56 - 140	2	20
4-Methyl-2-pentanone (MIBK)	4.00	4.07		mg/Kg		102	68 - 134	0	20
Methyl tert-butyl ether	0.800	0.852		mg/Kg		106	71 - 126	1	20
m-Xylene & p-Xylene	0.800	0.819		mg/Kg		102	80 - 132	0	20
n-Butylbenzene	0.800	0.791		mg/Kg		99	69 - 143	10	31
N-Propylbenzene	0.800	0.809		mg/Kg		101	78 - 133	0	24
o-Xylene	0.800	0.763		mg/Kg		95	80 - 132	0	20
sec-Butylbenzene	0.800	0.794		mg/Kg		99	71 - 143	7	29
Styrene	0.800	0.734		mg/Kg		92	79 - 129	2	20
tert-Butylbenzene	0.800	0.764		mg/Kg		96	72 - 144	4	27

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-480913/8-A

Matrix: Solid

Analysis Batch: 480934

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 480913

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene	0.800	0.708		mg/Kg		88	75 - 125	2	20
trans-1,2-Dichloroethene	0.800	0.742		mg/Kg		93	77 - 134	1	20
1,2,3-Trichlorobenzene	0.800	0.926		mg/Kg		116	58 - 146	28	28
1,2,4-Trichlorobenzene	0.800	0.905		mg/Kg		113	74 - 131	21	26
1,1,1-Trichloroethane	0.800	0.761		mg/Kg		95	78 - 135	8	20
Trichlorofluoromethane	0.800	0.772		mg/Kg		96	71 - 150	9	30
1,2,3-Trichloropropane	0.800	0.734		mg/Kg		92	77 - 127	3	20
1,2,4-Trimethylbenzene	0.800	0.785		mg/Kg		98	73 - 138	3	22
1,3,5-Trimethylbenzene	0.800	0.792		mg/Kg		99	72 - 134	3	24

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 121
Toluene-d8 (Surr)	94		80 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-481242/3-A

Matrix: Solid

Analysis Batch: 481244

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 481242

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0013	U	0.0050	0.00098	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Bromoform	0.00206	J	0.0050	0.0011	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Bromomethane	0.0025	U	0.0050	0.00074	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Chlorodibromomethane	0.00127	J	0.0050	0.00057	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Chloroform	0.0025	U M	0.0050	0.00085	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
cis-1,3-Dichloropropene	0.0025	U	0.0050	0.0013	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Dibromomethane	0.00144	J	0.0050	0.0012	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
1,4-Dichlorobenzene	0.00191	J	0.0050	0.0011	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Dichlorobromomethane	0.00112	J	0.0050	0.00059	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
1,2-Dichloroethane	0.0025	U	0.0050	0.0019	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
1,1-Dichloroethene	0.0013	U	0.0050	0.00062	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Ethylene Dibromide	0.00188	J	0.0050	0.0013	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Hexachlorobutadiene	0.00634	J	0.010	0.0030	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
2-Hexanone	0.025	U	0.036	0.018	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Naphthalene	0.0050	U	0.020	0.0035	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
1,1,1,2-Tetrachloroethane	0.00122	J	0.0050	0.00075	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
1,1,1,2,2-Tetrachloroethane	0.00249	J	0.010	0.0014	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Tetrachloroethene	0.00236	J	0.0050	0.0011	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
trans-1,3-Dichloropropene	0.0025	U	0.0050	0.00094	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
1,1,2-Trichloroethane	0.00226	J	0.0050	0.00046	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Trichloroethene	0.00124	J	0.0050	0.0012	mg/Kg		12/23/24 15:14	12/23/24 21:12	1
Vinyl chloride	0.0050	U	0.020	0.0024	mg/Kg		12/23/24 15:14	12/23/24 21:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105	M	79 - 120	12/23/24 15:14	12/23/24 21:12	1

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-481242/3-A

Matrix: Solid

Analysis Batch: 481244

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 481242

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	106		78 - 120	12/23/24 15:14	12/23/24 21:12	1
1,2-Dichloroethane-d4 (Surr)	104		79 - 121	12/23/24 15:14	12/23/24 21:12	1
Toluene-d8 (Surr)	97		79 - 120	12/23/24 15:14	12/23/24 21:12	1

Lab Sample ID: LCS 580-481242/1-A

Matrix: Solid

Analysis Batch: 481244

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 481242

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.200	0.175		mg/Kg		88	80 - 120
Bromoform	0.200	0.200		mg/Kg		100	71 - 143
Bromomethane	0.200	0.248		mg/Kg		124	34 - 150
Chlorodibromomethane	0.200	0.190		mg/Kg		95	76 - 138
Chloroform	0.200	0.167		mg/Kg		83	80 - 122
cis-1,3-Dichloropropene	0.200	0.164		mg/Kg		82	73 - 130
Dibromomethane	0.200	0.177		mg/Kg		89	78 - 128
1,4-Dichlorobenzene	0.200	0.172		mg/Kg		86	78 - 127
Dichlorobromomethane	0.200	0.176		mg/Kg		88	75 - 134
1,2-Dichloroethane	0.200	0.188		mg/Kg		94	75 - 127
1,1-Dichloroethene	0.200	0.159		mg/Kg		80	65 - 129
Ethylene Dibromide	0.200	0.176		mg/Kg		88	77 - 130
Hexachlorobutadiene	0.200	0.195		mg/Kg		98	73 - 135
2-Hexanone	1.00	1.01		mg/Kg		101	64 - 143
Naphthalene	0.200	0.282		mg/Kg		141	41 - 150
1,1,1,2-Tetrachloroethane	0.200	0.177		mg/Kg		88	80 - 127
1,1,2,2-Tetrachloroethane	0.200	0.169		mg/Kg		84	65 - 139
Tetrachloroethene	0.200	0.167		mg/Kg		83	76 - 127
trans-1,3-Dichloropropene	0.200	0.195		mg/Kg		98	66 - 138
1,1,2-Trichloroethane	0.200	0.176		mg/Kg		88	80 - 123
Trichloroethene	0.200	0.169		mg/Kg		85	80 - 127
Vinyl chloride	0.200	0.164		mg/Kg		82	56 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	106	M	79 - 120
Dibromofluoromethane (Surr)	100		78 - 120
1,2-Dichloroethane-d4 (Surr)	100		79 - 121
Toluene-d8 (Surr)	96		79 - 120

Lab Sample ID: LCSD 580-481242/2-A

Matrix: Solid

Analysis Batch: 481244

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 481242

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.200	0.180		mg/Kg		90	80 - 120	3	20
Bromoform	0.200	0.204		mg/Kg		102	71 - 143	2	20
Bromomethane	0.200	0.183		mg/Kg		92	34 - 150	30	35
Chlorodibromomethane	0.200	0.192		mg/Kg		96	76 - 138	1	20
Chloroform	0.200	0.168		mg/Kg		84	80 - 122	1	20

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-481242/2-A

Matrix: Solid

Analysis Batch: 481244

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 481242

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,3-Dichloropropene	0.200	0.167		mg/Kg		83	73 - 130	2	20
Dibromomethane	0.200	0.181		mg/Kg		90	78 - 128	2	20
1,4-Dichlorobenzene	0.200	0.180		mg/Kg		90	78 - 127	5	20
Dichlorobromomethane	0.200	0.180		mg/Kg		90	75 - 134	2	20
1,2-Dichloroethane	0.200	0.192		mg/Kg		96	75 - 127	2	20
1,1-Dichloroethene	0.200	0.164		mg/Kg		82	65 - 129	3	23
Ethylene Dibromide	0.200	0.178		mg/Kg		89	77 - 130	1	20
Hexachlorobutadiene	0.200	0.204		mg/Kg		102	73 - 135	5	20
2-Hexanone	1.00	1.03		mg/Kg		103	64 - 143	2	20
Naphthalene	0.200	0.286		mg/Kg		143	41 - 150	1	21
1,1,1,2-Tetrachloroethane	0.200	0.180		mg/Kg		90	80 - 127	2	20
1,1,2,2-Tetrachloroethane	0.200	0.177		mg/Kg		89	65 - 139	5	20
Tetrachloroethene	0.200	0.171		mg/Kg		85	76 - 127	3	20
trans-1,3-Dichloropropene	0.200	0.201		mg/Kg		100	66 - 138	3	20
1,1,2-Trichloroethane	0.200	0.179		mg/Kg		90	80 - 123	2	20
Trichloroethene	0.200	0.173		mg/Kg		86	80 - 127	2	20
Vinyl chloride	0.200	0.171		mg/Kg		86	56 - 144	4	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	104	M	79 - 120
Dibromofluoromethane (Surr)	100		78 - 120
1,2-Dichloroethane-d4 (Surr)	101		79 - 121
Toluene-d8 (Surr)	97		79 - 120

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Lab Sample ID: MB 580-481190/5-A

Matrix: Solid

Analysis Batch: 481185

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 481190

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	11	U	12	5.6	mg/Kg		12/23/24 10:23	12/23/24 12:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	57		50 - 150	12/23/24 10:23	12/23/24 12:26	1
4-Bromofluorobenzene (Surr)	100		50 - 150	12/23/24 10:23	12/23/24 12:26	1

Lab Sample ID: LCS 580-481190/3-A

Matrix: Solid

Analysis Batch: 481185

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 481190

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	40.0	37.5		mg/Kg		94	60 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	100		50 - 150

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS) (Continued)

Lab Sample ID: LCS 580-481190/3-A

Matrix: Solid

Analysis Batch: 481185

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 481190

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		50 - 150

Lab Sample ID: LCSD 580-481190/4-A

Matrix: Solid

Analysis Batch: 481185

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 481190

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	40.0	41.9		mg/Kg		105	60 - 120	11	20

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
Trifluorotoluene (Surr)	102		50 - 150
4-Bromofluorobenzene (Surr)	98		50 - 150

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - RA

Lab Sample ID: MB 580-480917/1-A

Matrix: Solid

Analysis Batch: 481470

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 480917

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene - RA	0.0050	U	0.0055	0.0024	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
2-Methylnaphthalene - RA	0.0050	U	0.0060	0.0030	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Acenaphthene - RA	0.0050	U	0.0055	0.0016	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Acenaphthylene - RA	0.0050	U	0.0055	0.0017	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Anthracene - RA	0.0050	U	0.0055	0.0019	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Benzo[a]anthracene - RA	0.0050	U	0.0055	0.0022	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Benzo[a]pyrene - RA	0.0050	U	0.0055	0.0019	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Benzo[b]fluoranthene - RA	0.0030	U	0.0050	0.0012	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Benzo[g,h,i]perylene - RA	0.0050	U	0.0055	0.0018	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Benzo[k]fluoranthene - RA	0.0050	U	0.0055	0.0017	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Chrysene - RA	0.0030	U	0.0050	0.0015	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Dibenz(a,h)anthracene - RA	0.0050	U	0.0055	0.00072	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Fluoranthene - RA	0.0030	U	0.0050	0.0014	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Fluorene - RA	0.0050	U	0.0055	0.0013	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Indeno[1,2,3-cd]pyrene - RA	0.0050	U	0.0055	0.0022	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Naphthalene - RA	0.0040	U	0.0050	0.0016	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Phenanthrene - RA	0.0040	U	0.0050	0.0016	mg/Kg		12/19/24 12:49	12/27/24 14:47	1
Pyrene - RA	0.0050	U	0.0055	0.0010	mg/Kg		12/19/24 12:49	12/27/24 14:47	1

	MB	MB					Prepared	Analyzed	Dil Fac
Surrogate	%Recovery	Qualifier	Limits						
Terphenyl-d14 - RA	80		57 - 145				12/19/24 12:49	12/27/24 14:47	1

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - RA (Continued)

Lab Sample ID: LCS 580-480917/2-A

Matrix: Solid

Analysis Batch: 481470

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 480917

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene - RA	2.00	1.67		mg/Kg		84	64 - 120
2-Methylnaphthalene - RA	2.00	1.67		mg/Kg		84	64 - 120
Acenaphthene - RA	2.00	1.62		mg/Kg		81	65 - 120
Acenaphthylene - RA	2.00	1.59		mg/Kg		79	66 - 120
Anthracene - RA	2.00	1.71		mg/Kg		85	53 - 132
Benzo[a]anthracene - RA	2.00	1.71		mg/Kg		85	66 - 127
Benzo[a]pyrene - RA	2.00	1.86		mg/Kg		93	66 - 124
Benzo[b]fluoranthene - RA	2.00	1.80		mg/Kg		90	54 - 122
Benzo[g,h,i]perylene - RA	2.00	1.74		mg/Kg		87	61 - 128
Benzo[k]fluoranthene - RA	2.00	1.82		mg/Kg		91	51 - 131
Chrysene - RA	2.00	1.66		mg/Kg		83	57 - 128
Dibenz(a,h)anthracene - RA	2.00	1.72		mg/Kg		86	64 - 133
Fluoranthene - RA	2.00	1.76		mg/Kg		88	64 - 130
Fluorene - RA	2.00	1.66		mg/Kg		83	62 - 126
Indeno[1,2,3-cd]pyrene - RA	2.00	1.81		mg/Kg		90	63 - 132
Naphthalene - RA	2.00	1.62		mg/Kg		81	65 - 120
Phenanthrene - RA	2.00	1.77		mg/Kg		89	63 - 120
Pyrene - RA	2.00	1.78		mg/Kg		89	62 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Terphenyl-d14 - RA	84		57 - 145

Method: 8011 - EDB and DBCP in Water by Microextraction

Lab Sample ID: MB 580-481320/1-A

Matrix: Solid

Analysis Batch: 481622

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 481320

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	0.000040	U M	0.000050	0.000012	mg/Kg		12/26/24 13:19	12/30/24 19:12	1
1,2,3-Trichloropropane	0.00016	U M	0.00030	0.000066	mg/Kg		12/26/24 13:19	12/30/24 19:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dibromopropane	101		60 - 140	12/26/24 13:19	12/30/24 19:12	1

Lab Sample ID: LCS 580-481320/2-A

Matrix: Solid

Analysis Batch: 481622

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 481320

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylene Dibromide	0.000400	0.000398		mg/Kg		99	60 - 140
1,2,3-Trichloropropane	0.000400	0.000418		mg/Kg		105	60 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dibromopropane	102		60 - 140

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 8011 - EDB and DBCP in Water by Microextraction (Continued)

Lab Sample ID: LCSD 580-481320/3-A

Matrix: Solid

Analysis Batch: 481622

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 481320

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ethylene Dibromide	0.000400	0.000363		mg/Kg		91	60 - 140	9	20
1,2,3-Trichloropropane	0.000400	0.000434	M	mg/Kg		109	60 - 140	4	20
Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits						
1,2-Dibromopropane	104		60 - 140						

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 580-480945/1-A

Matrix: Solid

Analysis Batch: 481693

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 480945

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.018	U	0.020	0.0074	mg/Kg		12/19/24 15:13	12/31/24 20:22	1
PCB-1221	0.020	U	0.020	0.012	mg/Kg		12/19/24 15:13	12/31/24 20:22	1
PCB-1232	0.018	U	0.020	0.0049	mg/Kg		12/19/24 15:13	12/31/24 20:22	1
PCB-1242	0.018	U	0.020	0.0080	mg/Kg		12/19/24 15:13	12/31/24 20:22	1
PCB-1248	0.018	U	0.020	0.0070	mg/Kg		12/19/24 15:13	12/31/24 20:22	1
PCB-1254	0.020	U	0.020	0.0090	mg/Kg		12/19/24 15:13	12/31/24 20:22	1
PCB-1260	0.018	U	0.020	0.0074	mg/Kg		12/19/24 15:13	12/31/24 20:22	1
Surrogate	MB %Recovery	MB Qualifier	MB Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	92		44 - 135				12/19/24 15:13	12/31/24 20:22	1
Tetrachloro-m-xylene	85		48 - 150				12/19/24 15:13	12/31/24 20:22	1

Lab Sample ID: LCS 580-480945/3-A

Matrix: Solid

Analysis Batch: 481693

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 480945

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
PCB-1016	0.100	0.0903		mg/Kg		90	42 - 150		
PCB-1260	0.100	0.0894		mg/Kg		89	43 - 145		
Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits						
DCB Decachlorobiphenyl	92		44 - 135						
Tetrachloro-m-xylene	92		48 - 150						

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Lab Sample ID: MB 580-480898/1-A

Matrix: Solid

Analysis Batch: 481055

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 480898

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	15	U	20	8.9	mg/Kg		12/19/24 10:45	12/20/24 15:42	1
RRO (nC25-nC36)	30	U	50	19	mg/Kg		12/19/24 10:45	12/20/24 15:42	1

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) (Continued)

Lab Sample ID: MB 580-480898/1-A
Matrix: Solid
Analysis Batch: 481055

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 480898

	MB	MB								
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
o-Terphenyl	92		60 - 120	12/19/24 10:45	12/20/24 15:42	1				
n-Triacontane-d62	74		60 - 120	12/19/24 10:45	12/20/24 15:42	1				

Lab Sample ID: LCS 580-480898/2-A
Matrix: Solid
Analysis Batch: 481055

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 480898

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
DRO (nC10-<nC25)			500	443		mg/Kg		89	75 - 125		
RRO (nC25-nC36)			500	456		mg/Kg		91	60 - 120		
Surrogate	LCS	LCS									
%Recovery	Qualifier	Limits									
o-Terphenyl	96		60 - 120								
n-Triacontane-d62	88		60 - 120								

Lab Sample ID: 580-146688-1 MS
Matrix: Solid
Analysis Batch: 481055

Client Sample ID: B-23
Prep Type: Total/NA
Prep Batch: 480898

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
DRO (nC10-<nC25)	1000	J1	470	1660	J1	mg/Kg	✱	134	75 - 125		
RRO (nC25-nC36)	29	U	470	448		mg/Kg	✱	95	60 - 120		
Surrogate	MS	MS									
%Recovery	Qualifier	Limits									
o-Terphenyl	90		50 - 150								
n-Triacontane-d62	94		50 - 150								

Lab Sample ID: 580-146688-1 MSD
Matrix: Solid
Analysis Batch: 481055

Client Sample ID: B-23
Prep Type: Total/NA
Prep Batch: 480898

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
DRO (nC10-<nC25)	1000	J1	476	1590		mg/Kg	✱	118	75 - 125	4	20
RRO (nC25-nC36)	29	U	476	458		mg/Kg	✱	96	60 - 120	2	20
Surrogate	MSD	MSD									
%Recovery	Qualifier	Limits									
o-Terphenyl	91		50 - 150								
n-Triacontane-d62	87		50 - 150								

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 350-4116/23-A
Matrix: Solid
Analysis Batch: 4185

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4116

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.10	U	0.25	0.053	mg/Kg		12/26/24 13:42	12/27/24 21:11	5

Eurofins Seattle

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: LCS 350-4116/24-A				Client Sample ID: Lab Control Sample			
Matrix: Solid				Prep Type: Total/NA			
Analysis Batch: 4185				Prep Batch: 4116			
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	50.0	50.7	D	mg/Kg		101	80 - 120

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Client Sample ID: B-23

Date Collected: 12/12/24 13:01

Date Received: 12/17/24 14:49

Lab Sample ID: 580-146688-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	2540G		1	481062	NH	EET SEA	12/20/24 11:56

Client Sample ID: B-23

Date Collected: 12/12/24 13:01

Date Received: 12/17/24 14:49

Lab Sample ID: 580-146688-1

Matrix: Solid

Percent Solids: 100.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			480913	AA	EET SEA	12/19/24 11:47
Total/NA	Analysis	8260D		1	480934	TL1	EET SEA	12/19/24 20:51
Total/NA	Prep	5035			481242	BYM	EET SEA	12/23/24 15:14
Total/NA	Analysis	8260D SIM		1	481244	K1K	EET SEA	12/23/24 22:15
Total/NA	Prep	5035	DL		481190	BYM	EET SEA	12/23/24 10:23
Total/NA	Analysis	AK101	DL	1	481185	TL1	EET SEA	12/23/24 13:29
Total/NA	Prep	3546			480917	KI	EET SEA	12/19/24 12:49
Total/NA	Analysis	8270E SIM		1	481338	VLF	EET SEA	12/26/24 17:27
Total/NA	Prep	8011			481320	TOA	EET SEA	12/26/24 13:19
Total/NA	Analysis	8011		1	481622	SW	EET SEA	12/30/24 23:09
Total/NA	Prep	3546			480945	KI	EET SEA	12/19/24 15:13
Total/NA	Analysis	8082A		1	481693	T1L	EET SEA	01/01/25 00:47
Total/NA	Prep	3546			480898	KI	EET SEA	12/19/24 10:46
Total/NA	Analysis	AK102 & 103		1	481055	SW	EET SEA	12/20/24 20:44
Total/NA	Prep	3050B			4116	J1H	EET SSM	12/26/24 13:42
Total/NA	Analysis	6020B		10	4185	CW	EET SSM	12/27/24 21:56

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

EET SSM = Eurofins Seattle Specialty Metals, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Laboratory: Eurofins Seattle

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
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
2540G		Solid	Percent Moisture
2540G		Solid	Percent Solids
8260D	5035	Solid	1,1-Dichloropropene
8260D	5035	Solid	1,2-Dibromo-3-Chloropropane
8260D	5035	Solid	1,3-Dichloropropane
8260D	5035	Solid	2,2-Dichloropropane
8260D	5035	Solid	2-Chlorotoluene
8260D	5035	Solid	4-Chlorotoluene
8260D	5035	Solid	4-Isopropyltoluene
8260D	5035	Solid	Chlorobromomethane
ANAB	Dept. of Defense ELAP	L2236	01-19-25
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
2540G		Solid	Percent Moisture
2540G		Solid	Percent Solids

Laboratory: Eurofins Seattle Specialty Metals

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
ANAB	Dept. of Defense ELAP	L2236	01-19-25
ANAB	ISO/IEC 17025	L2236	01-19-25
California	State	2954	07-07-25
Florida	NELAP	E87575	06-30-25
Louisiana (All)	NELAP	03073	06-30-25
Maine	State	WA01273	05-02-26
New Jersey	NELAP	WA014	06-30-25
New York	NELAP	11662	04-01-25
Oregon	NELAP	4167-008	07-07-25
US Fish & Wildlife	US Federal Programs	A20571	06-30-25
USDA	US Federal Programs	525-23-4-22573	01-04-26
Washington	State	C788-23a	07-13-25
Wisconsin	State	399133460	07-31-25

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport Water System

Job ID: 580-146688-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-146688-1	B-23	Solid	12/12/24 13:01	12/17/24 14:49

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Page 1 of 1
Final
laboratory

Laboratory Ecology
Attn: Tracy Darity

Analytical Methods (include preservative if used)

Remarks/Matrix Composition/Grab?	Sample Containers	Total Number of Containers
620 AK 101 (Gravel)	VOC	620
DPG/Pro (Gravel)	DPG/Pro	62600
PR-Total Lead	PR	62700
TCB ₃	TCB ₃	62700
5082 A	5082 A	5082 A

[illegible]

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: <u>Lucas Wrobley</u> Date: <u>12/16</u> Printed Name: <u>Lucas Wrobley</u> Company: <u>Shannon's holson</u>	Signature: <u>[Signature]</u> Date: <u>12/17/24</u> Printed Name: <u>Ricky Reyes</u> Company: <u>EETN</u>	Signature: _____ Date: _____ Printed Name: _____ Company: _____
Signature: _____ Date: _____ Printed Name: _____ Company: _____	Signature: _____ Date: _____ Printed Name: _____ Company: _____	Signature: _____ Date: _____ Printed Name: _____ Company: _____

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - Shannon & Wilson - job file

Alaska AIR CARGO		
GOLDSTREAK		
Route : FAI - SEA AS0106 16DEC		
SCC : FRA, PER, COL		
Destination : SEA	Total Pieces : 1	Total Weight(lbs) : 26.0
027-70207104		
Air Waybill No :		
0277020710400001		
GOLDSTREAK		

Job Number: 112494-006 Date: 12/16/24

Print Name: Lucas Wausley

Signature: Lucas Wausley

SHANNON & WILSON

2355 Hill Road
Fairbanks, Alaska 99709
907-479-0600

Cooler ID No. 10f1

TAL Work Order _____

COOLER RECEIPT FORM

Project Yak Waterline

Cooler received on 12/17/24 and opened on 12/17/24 by Ricky Reyes
[Signature]

(signature)

Temperature upon receipt:

Cooler: Corr 33 °C, Uncorr 2.9 °C Therm ID: IR14

Temp. Blank: Corr 3-0.1 °C, Uncorr 0.4 °C Therm ID: 13

1. Were custody seals on outside of cooler and intact?

a. If yes, how many and where: 2

b. Were signature and date correct?

☒ YES ☐ NO

2. Were custody papers taped to lid inside cooler?

☒ YES ☐ NO

3. Were custody papers properly filled out (ink, signed, etc)?

☒ YES ☐ NO

4. Did you sign custody papers in the appropriate place?

☒ YES ☐ NO

5. Did you attach shipper's packing slip to this form?

☒ YES ☐ NO

6. What kind of packing material was used? Bub bag

7. Was sufficient ice used?

☒ YES ☐ NO

8. Were all bottles sealed in separate plastic bags?

☒ YES ☐ NO

9. Did all bottles arrive in good condition (unbroken)?

☒ YES ☐ NO

10. Were all bottle labels complete (no., date, signed, pres, etc)?

☒ YES ☐ NO

11. Did all bottle labels and tags agree with custody papers?

☒ YES ☐ NO

12. Were correct bottles used for the test indicated?

☒ YES ☐ NO

13. If present, were vov vials checked for absence of airbubbles and noted if found?

N/A YES NO

14. Adequate volume of vov vials received per sample?

N/A YES NO

15. Was sufficient amount of sample sent in each bottle?

☒ YES ☐ NO

16. Were correct preservatives used?

☒ YES ☐ NO

17. Were extra labels added to pre-tared containers?

☒ YES ☐ NO

18. Corrective action taken, if necessary:

a. Name of person contacted:

b. Date:

10/15/10

Self-Service Pick Up



Air Waybill Number **027-70207104** Total pieces **1** Total weight **26.0 lbs** Product **GOLDSTREAK**

Shipper

SHANNON AND WILSON INC
2355 HILL RD
FAIRBANKS, AK-99712

Consignee

EUROFINS ENVIRONMENT TESTING
SAMPLE CONTROL
5755 8TH STREET
SEATTLE, WA-98424

Pieces	Weight	Description	Origin/Destination	Status
1	26.0 lbs	DANGEROUS GOODS IN EXCEPTED QUANTITY DGD AND NOTOC NOT REQUIRE...	FAI - SEA	Ready

The undersigned acknowledges the receipt of above mentioned consignment is complete and in good condition.

Picked up by
Ricky Reyes

Date
12/17/2024

Time
2:49 PM

Picking up from our GoldStreak lockers?
Proceed to the lockers and scan this code.



Book your next shipment at alaskacargo.com.

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 580-146688-1

Login Number: 146688

List Source: Eurofins Seattle

List Number: 1

Creator: Groves, Elizabeth

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 580-146688-1

Login Number: 146688

List Number: 2

Creator: Miller, Darren R

List Source: Eurofins Seattle Specialty Metals

List Creation: 12/19/24 06:50 AM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Ashley Jaramillo	CS Site Name:	ADOT&PF Yakutat Airport Multiple Sites	Lab Name:	Eurofins Seattle
Title:	Senior Chemist	ADEC File No.:	1530.38.018	Lab Report No.:	580-146688-1 (Rev1)
Consulting Firm:	Shannon & Wilson, Inc.	Hazard ID No.:	25640	Lab Report Date:	1/9/2025

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
Yes ☒ No ☐ N/A ☐
Comments: Project samples were sent to Eurofins Seattle (Eurofins) laboratory in Tacoma, Washington. Eurofins is certified for the requested analyses under DEC approval 20-004 issued 2/7/2022 with an expiration of 2/19/2025.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
Yes ☐ No ☐ N/A ☒
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?
Yes ☒ No ☐ N/A ☐
Comments: However, the lab signed the next relinquished by section of the CoC instead of the received by section of the CoC at sample login. Analyses performed as requested. Data quality and/or usability not affected.
- b. Were the correct analyses requested?
Yes ☒ No ☐ N/A ☐
Analyses requested: GRO by AK101, DRO by AK102, RRO by AK103, VOCs by 8260D, total lead by 6020B, PAHs by 8270E-SIM, and PCBs by 8082A.

CS Site Name: ADOT&PF Yakutat Airport Multiple Sites

Lab Report No.: 580-146688-1 (Rev1)

Comments: The lab analyzed VOCs by 8260D in addition to 8011 and 8260D-SIM. These are the correct methods for this project. Data quality and/or usability not affected.

3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes ☒ No ☐ N/A ☐

Cooler temperature(s): Cooler temperature was noted at 3.3° C

Sample temperature(s): Not reported.

Comments: Cooler temperature is within acceptable limits.

- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?

Yes ☒ No ☐ N/A ☐

Comments: None

- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?

Yes ☒ No ☐ N/A ☐

Comments: Samples were noted to have arrived in good condition.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?

Yes ☐ No ☐ N/A ☒

Comments: No discrepancies were noted at sample login.

- e. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: No sample handling discrepancies were noted at sample login.

4. Case Narrative

- a. Is the case narrative present and understandable?

Yes ☒ No ☐ N/A ☐

Comments: None

- b. Are there discrepancies, errors, or QC failures identified by the lab?

Yes ☒ No ☐ N/A ☐

Comments:

Revision 1/9/2025

The report was revised to show the correct temperature that the cooler was received. The previous temperature reflected was due to a sample login error. Data quality and/or usability not affected.

GC/MS VOA

Method 8260D: The method blank for preparation batch 580-480913 and analytical batch 580-480934 contained 1,2,4-Trimethylbenzene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed. See Section 6.a. for details regarding impacts to data quality and/or usability, as applicable.

Method 8260D: The RPD for acetone demonstrated between the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-480913 and analytical batch 580-480934 was outside control limits. See Section 6.b. for details regarding impacts to data quality and/or usability, as applicable.

Method 8260D_SIM_AK: The continuing calibration verification (CCV) associated with batch 580-481244 exhibited low recovery for vinyl chloride. A RL standard was analyzed, and the target analytes were detected. Since the associated samples were non-detect for vinyl chloride, the data are reported. Consequently, the vinyl chloride result in sample B-23 is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

Method 8260D_SIM_AK: The CCV associated with batch 580-481244 exhibited elevated recovery for Naphthalene. The samples associated with this CCV were non-detect; therefore, the data have been reported. Consequently, the naphthalene result of sample B-23 is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

Method 8260D_SIM_AK: The method blank for preparation batch 580-481242 and analytical batch 580-481244 contained Bromoform, Chlorodibromomethane, Dibromomethane, 1,4-Dichlorobenzene, Dichlorobromomethane, Ethylene Dibromide, Hexachlorobutadiene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethene, 1,1,2-Trichloroethane and Trichloroethene above the method detection limit. These target analyte concentrations were less than the RL in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed. See Section 6.a. for details regarding impacts to data quality and/or usability, as applicable.

Method 8270E_SIM: The method blank MB 580-480917/1-A exhibited low recovery for the surrogate 2,4,6-Tribromophenol. The LCS surrogate recovery was within limits and samples, barring sample matrix, were passing for this surrogate. Data quality and/or usability not affected.

Diesel Range Organics

CS Site Name: ADOT&PF Yakutat Airport Multiple Sites

Lab Report No.: 580-146688-1 (Rev1)

Method AK102_103: The matrix spike (MS) recoveries for preparation batch 580-480898 and analytical batch 580-481055 were outside control limits. Non-homogeneity is suspected because the associated LCS recovery was within acceptance limits. See Section 6.c. for details regarding impacts to data quality and/or usability, as applicable.

Method 8011: Sample B-23 formed emulsions during the extraction procedure. The emulsions were broken up using centrifuge. Data quality and/or usability not affected.

Method 8011: The CCV associated with batch 580-481622 exhibited elevated recovery for 1,2,3-Trichloropropane. The samples associated with this CCV were non-detects; therefore, the data have been reported. Data quality and/or usability not affected.

Method 8082A: The CCV associated with batch 580-481693 exhibited elevated recovery for PCB-1221 on one column. Results are confirmed on both columns and reported from the passing column. Data quality and/or usability not affected.

- c. Were all the corrective actions documented?

Yes ☒ No ☐ N/A ☐

Comments: Where needed.

- d. What is the effect on data quality/usability according to the case narrative?

Comments: Effect on data quality and/or usability due to discrepancies, errors, or QC failures identified by the lab in the case narrative are either discussed above in Section 4.b. or elsewhere in this checklist.

5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes ☒ No ☐ N/A ☐

Comments: The lab analyzed VOCs by 8260D in addition to 8011 and 8260D-SIM. These are the correct methods for this project. Data quality and/or usability not affected.

- b. Are all applicable holding times met?

Yes ☒ No ☐ N/A ☐

Comments: None

- c. Are all soils reported on a dry weight basis?

Yes ☒ No ☐ N/A ☐

Comments: None

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes ☒ No ☐ N/A ☐

Comments: Analytical sensitivity was evaluated to verify that LODs met applicable DEC's most stringent values between the DEC cleanup levels in 18 AAC 75.341 Table B1 and B2 Method Two (Migration to Groundwater or Over 40 Inch Zone Human Health) for non-detect results, as appropriate. Analytes with LODs that do not meet applicable cleanup levels are bolded in the analytical results table. Data quality and/or usability may be affected as these analytes cannot be detected, if present, at their respective cleanup level.

- e. Is the data quality or usability affected?

Yes ☒ No ☐ N/A ☐

Comments: See 5.d., above.

6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes ☒ No ☐ N/A ☐

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes ☒ No ☐

Comments: However, the following analytes were detected in their respective method blank samples below the RL: VOC analyte 1,2,4-Trimethylbenzene and VOC-SIM analytes 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,4-Dichlorobenzene, Bromoform, Chlorodibromomethane, Dichlorobromomethane, Hexachlorobutadiene, 1,1,2-Trichloroethane, Dibromomethane, Tetrachloroethene, Trichloroethene, and Ethylene Dibromide.

- 1,2,4-Trimethylbenzene was not detected in associated sample B-23 analyzed with the method blank sample for batch 580-480913. Data quality and/or usability not affected.
- 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,4-Dichlorobenzene, Bromoform, Chlorodibromomethane, Dichlorobromomethane, Hexachlorobutadiene, and 1,1,2-Trichloroethane were not detected in associated sample B-23 analyzed with the method blank sample for batch 580-481242. Data quality and/or usability not affected.
- Dibromomethane, Tetrachloroethene, and Trichloroethene were detected below the LOQ and within ten times the concentration detected in the method blank sample for batch 580-481242 in associated sample B-23. Consequently, the results of these

analytes in the noted sample are considered not detected due to method blank contamination and are reported at the LOQ and are flagged 'B*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with the applied flags.

- Ethylene dibromide was detected above the LOQ and within ten times the concentration detected in the method blank sample for batch 580-481242 in associated sample B-23. Consequently, the result of this analyte in the noted sample is considered an estimate, biased high, and is flagged 'JH*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with the applied flags.

- iii. If above LoQ or RL, what samples are affected?

Comments: See 6.a.ii., above.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☒ No ☐ N/A ☐

Comments: See 6.a.ii., above.

- v. Data quality or usability affected?

Yes ☒ No ☐ N/A ☐

Comments: See 6.a.ii., above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes ☐ No ☒ N/A ☐

Comments: LCS samples were reported for DRO, RRO, PAH, and PCBs.

LCS/LCSD samples were reported for GRO, VOC, and VOC-SIM analyses.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: An LCS was reported for lead analysis.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes ☒ No ☐ N/A ☐

Comments: None

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes ☐ No ☒ N/A ☐

Comments: The VOC LCS/LCSD RPD for acetone was outside laboratory limits for batch 580-480913. Acetone was not detected in the associated project sample B-23; therefore, the result of this analyte in the noted sample is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected, however, data is considered usable with applied flags.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: %Rs were within acceptable limits. See 6.b.iv. for RPDs outside of 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 6.b.iv.

- vii. Is the data quality or usability affected?

Yes ☒ No ☐ N/A ☐

Comments: See 6.b.iv.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: MS/MSD samples were reported for DRO and RRO analyses.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: None

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes ☐ No ☒ N/A ☐

Comments: The MS recovery for DRO in parent sample B-23 was above laboratory limits. The DRO concentration in the parent sample was much

larger than the spike concentration added. The spike therefore could not be quantified against the background concentration. Data quality and/or usability not affected.

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes ☒ No ☐ N/A ☐

Comments: None

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: See 6.b.iii for %Rs outside of acceptable limits. RPDs 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 6.b.iii.

- vii. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: See 6.b.iii

- 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: None

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes ☒ No ☐ N/A ☐

Comments: None

- 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: No samples had failed surrogate recoveries.

- iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: No samples had failed surrogate recoveries.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples?

Yes ☐ No ☒ N/A ☐

Comments: A trip blank was erroneously not included in the cooler with volatile samples. We cannot access transportation cross-contamination.

- ii. Are all results less than LoQ or RL?

Yes ☐ No ☐ N/A ☒

Comments: A trip blank was inadvertently not included in the cooler with volatile samples.

- iii. If above LoQ or RL, what samples are affected?

Comments: Not applicable. A trip blank was not included in the cooler with volatile samples.

- iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: A trip blank was not included in the cooler with volatile samples.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes ☐ No ☒ N/A ☐

Comments: Field duplicates were erroneously not collected for this project.

- ii. Was the duplicate submitted blind to lab?

Yes ☐ No ☐ N/A ☒

Comments: Field duplicates were not collected for this project.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☐ No ☐ N/A ☒

CS Site Name: ADOT&PF Yakutat Airport Multiple Sites

Lab Report No.: 580-146688-1 (Rev1)

Comments: Field duplicates were not collected for this project.

iv. Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐

Comments: Field duplicates were not collected for this project.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?

Yes ☐ No ☐ N/A ☒

Comments: Samples were not collected using reusable equipment.

ii. Are all results less than LoQ or RL?

Yes ☐ No ☐ N/A ☒

Comments: Samples were not collected using reusable equipment.

iii. If above LoQ or RL, specify what samples are affected.

Comments: Not applicable, samples were not collected using reusable equipment.

iv. Are data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Samples were not collected using reusable equipment.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?

Yes ☐ No ☐ N/A ☒

Comments: No other data flags/qualifiers were required.

Appendix E

Eurofins – South Bend Laboratory Report and LDRC

CONTENTS

- Eurofins – South Bend Laboratory Report 810-131289-1
- DEC Laboratory Data Review Checklist for WO 810-131289-1

ANALYTICAL REPORT

PREPARED FOR

Attn: Ashley Jaramillo
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Generated 12/26/2024 9:39:51 PM

JOB DESCRIPTION

112494-002 Yakutat Airport

JOB NUMBER

810-131289-1

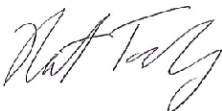
Eurofins Eaton Analytical South Bend

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Authorization



Generated
12/26/2024 9:39:51 PM

Authorized for release by
Nathan Trowbridge, Manager of Project Management
Nathan.Trowbridge@et.eurofinsus.com
(574)233-4777

Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Surrogate Summary	12
QC Sample Results	13
QC Association Summary	24
Lab Chronicle	28
Certification Summary	29
Method Summary	30
Sample Summary	31
Chain of Custody	32
Receipt Checklists	34



Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Qualifiers

HPLC/IC

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

Metals

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

General Chemistry

Qualifier	Qualifier Description
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Biology

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.

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: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Job ID: 810-131289-1

Eurofins Eaton Analytical South Bend

Job Narrative 810-131289-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 12/12/2024 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C.

Receipt Exceptions

The following sample(s) was received outside of holding time: <Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis.>

GC/MS VOA

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

HPLC/IC

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

Metals

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

General Chemistry

Method 150.1: The following sample(s) was received outside of holding time: <Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis.>

Method 353.2: The following sample(s) was received outside of holding time: <Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis.>

Method Nitrate_Calc: The following sample(s) was received outside of holding time: <Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis.>

Method SM2330B: The Langlier Index result for B-1 (810-131289-1) was calculated using Lab pH and Default Temperature of 20 Degrees Celsius.

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

Biology

Method 9223B_CIPA18_DW: The following sample(s) was received outside of holding time: <Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis.>

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

Eurofins Eaton Analytical South Bend

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Client Sample ID: B-1

Lab Sample ID: 810-131289-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Chloride	3.5		2.0	mg/L	1		300.0	Total/NA
Sulfate	7.1		5.0	mg/L	1		300.0	Total/NA
Sodium	3.4		0.10	mg/L	1		200.7	Total
Potassium	2.6		0.20	mg/L	1		200.7	Total
Magnesium	4.3		0.10	mg/L	1		200.7	Total
Iron	1.1		0.010	mg/L	1		200.7	Total
Calcium	57		0.10	mg/L	1		200.7	Total
Iron, Dissolved	0.012		0.010	mg/L	1		200.7	Dissolved
Aluminum	960		20	ug/L	1		200.8	Total
Arsenic	1.7		1.0	ug/L	1		200.8	Total
Barium	32		2.0	ug/L	1		200.8	Total
Chromium	3.2		0.90	ug/L	1		200.8	Total
Zinc	6.0		5.0	ug/L	1		200.8	Total
Copper	5.5		2.0	ug/L	1		200.8	Total
Manganese	130		2.0	ug/L	1		200.8	Total
Manganese, Dissolved	120		2.0	ug/L	1		200.8	Dissolved
Calcium hardness as CaCO3	140		0.25	mg/L	1		SM 2340B	Total/NA
pH	7.6	HF	0.1	SU	1		150.1	Total/NA
Nitrite as N	0.011		0.010	mg/L	1		353.2	Total/NA
Total Alkalinity as CaCO3	140		1.0	mg/L	1		SM 2320B	Total/NA
Langelier Index	0.12			LangSU	1		SM 2330B	Total/NA
Total Dissolved Solids	190		10	mg/L	1		SM 2540C	Total/NA

Client Sample ID: B-1 LTB (10-28-2024)

Lab Sample ID: 810-131289-2

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Client Sample ID: B-1

Lab Sample ID: 810-131289-1

Date Collected: 12/10/24 10:40

Matrix: Drinking Water

Date Received: 12/12/24 09:30

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,1,1-Trichloroethane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,1,2-Trichloroethane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,1-Dichloroethane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,1-Dichloroethene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,1-Dichloropropene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,2,3-Trichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,2,3-Trichloropropane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,2,4-Trichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,2,4-Trimethylbenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,2-Dibromo-3-Chloropropane	<0.20		0.20	ug/L			12/13/24 08:34	1
1,2-Dibromoethane (EDB)	<0.20		0.20	ug/L			12/13/24 08:34	1
1,2-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,2-Dichloroethane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,2-Dichloropropane	<0.25		0.25	ug/L			12/13/24 08:34	1
o-Xylene	<0.50		0.50	ug/L			12/13/24 08:34	1
m-Xylene & p-Xylene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,3,5-Trimethylbenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,3-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
1,3-Dichloropropane	<0.50		0.50	ug/L			12/13/24 08:34	1
1,4-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
2,2-Dichloropropane	<0.50		0.50	ug/L			12/13/24 08:34	1
2-Chlorotoluene	<0.50		0.50	ug/L			12/13/24 08:34	1
4-Chlorotoluene	<0.50		0.50	ug/L			12/13/24 08:34	1
Benzene	<0.50		0.50	ug/L			12/13/24 08:34	1
4-Isopropyltoluene	<0.50		0.50	ug/L			12/13/24 08:34	1
Bromobenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
Bromochloromethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Bromodichloromethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Bromoform	<0.50		0.50	ug/L			12/13/24 08:34	1
Bromomethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Carbon tetrachloride	<0.50		0.50	ug/L			12/13/24 08:34	1
Chloroethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Chlorobenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
Chloromethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Chloroform	<0.50		0.50	ug/L			12/13/24 08:34	1
Dibromomethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Dichlorodifluoromethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Dichloromethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Dibromochloromethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Ethylbenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
Hexachlorobutadiene	<0.25		0.25	ug/L			12/13/24 08:34	1
Isopropylbenzene	<0.25		0.25	ug/L			12/13/24 08:34	1
Naphthalene	<0.50		0.50	ug/L			12/13/24 08:34	1
Methyl-tert-butyl Ether (MTBE)	<0.50		0.50	ug/L			12/13/24 08:34	1
Styrene	<0.50		0.50	ug/L			12/13/24 08:34	1
Tetrachloroethene	<0.50		0.50	ug/L			12/13/24 08:34	1
Toluene	<0.50		0.50	ug/L			12/13/24 08:34	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Client Sample ID: B-1

Lab Sample ID: 810-131289-1

Date Collected: 12/10/24 10:40

Matrix: Drinking Water

Date Received: 12/12/24 09:30

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethylene	<0.50		0.50	ug/L			12/13/24 08:34	1
Trichlorofluoromethane	<0.50		0.50	ug/L			12/13/24 08:34	1
Vinyl chloride	<0.20		0.20	ug/L			12/13/24 08:34	1
tert-Butylbenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L			12/13/24 08:34	1
cis-1,3-Dichloropropylene	<0.50		0.50	ug/L			12/13/24 08:34	1
n-Butylbenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
N-Propylbenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
sec-Butylbenzene	<0.50		0.50	ug/L			12/13/24 08:34	1
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L			12/13/24 08:34	1
trans-1,3-Dichloropropylene	<0.50		0.50	ug/L			12/13/24 08:34	1
Xylenes, Total	<0.50		0.50	ug/L			12/13/24 08:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 130		12/13/24 08:34	1
Toluene-d8 (Surr)	97		70 - 130		12/13/24 08:34	1
4-Bromofluorobenzene (Surr)	85		70 - 130		12/13/24 08:34	1
1,2-Dichlorobenzene-d4 (Surr)	78		70 - 130		12/13/24 08:34	1

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.5		2.0	mg/L			12/14/24 20:46	1
Sulfate	7.1		5.0	mg/L			12/14/24 20:46	1

Method: EPA 200.7 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	3.4		0.10	mg/L		12/18/24 12:01	12/19/24 17:57	1
Potassium	2.6		0.20	mg/L		12/18/24 12:01	12/19/24 17:57	1
Magnesium	4.3		0.10	mg/L		12/18/24 12:01	12/19/24 17:57	1
Iron	1.1		0.010	mg/L		12/18/24 12:01	12/19/24 17:57	1
Calcium	57		0.10	mg/L		12/18/24 12:01	12/19/24 17:57	1

Method: EPA 200.7 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.012		0.010	mg/L			12/16/24 17:52	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	960		20	ug/L		12/18/24 12:01	12/19/24 10:21	1
Antimony	<1.0		1.0	ug/L		12/18/24 12:01	12/19/24 10:21	1
Arsenic	1.7		1.0	ug/L		12/18/24 12:01	12/19/24 10:21	1
Barium	32		2.0	ug/L		12/18/24 12:01	12/19/24 10:21	1
Beryllium	<0.30		0.30	ug/L		12/18/24 12:01	12/19/24 10:21	1
Cadmium	<0.50		0.50	ug/L		12/18/24 12:01	12/19/24 10:21	1
Chromium	3.2		0.90	ug/L		12/18/24 12:01	12/19/24 10:21	1
Nickel	<5.0		5.0	ug/L		12/18/24 12:01	12/19/24 10:21	1
Selenium	<2.0		2.0	ug/L		12/18/24 12:01	12/19/24 10:21	1
Silver	<0.50		0.50	ug/L		12/18/24 12:01	12/19/24 12:43	1
Thallium	<0.30		0.30	ug/L		12/18/24 12:01	12/19/24 10:21	1
Zinc	6.0		5.0	ug/L		12/18/24 12:01	12/19/24 10:21	1
Copper	5.5		2.0	ug/L		12/18/24 12:01	12/19/24 10:21	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Client Sample ID: B-1

Lab Sample ID: 810-131289-1

Date Collected: 12/10/24 10:40

Matrix: Drinking Water

Date Received: 12/12/24 09:30

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	130		2.0	ug/L		12/18/24 12:01	12/19/24 10:21	1

Method: EPA 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese, Dissolved	120		2.0	ug/L			12/16/24 13:07	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	ug/L		12/18/24 12:47	12/18/24 23:00	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium hardness as CaCO3	140		0.25	mg/L			12/26/24 21:28	1

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (EPA 150.1)	7.6	HF	0.1	SU			12/12/24 15:26	1
Cyanide, Total (EPA 335.4)	<0.0050		0.0050	mg/L		12/13/24 09:50	12/13/24 10:39	1
Nitrite as N (EPA 353.2)	0.011		0.010	mg/L			12/12/24 13:00	1
Nitrate Nitrite as N (EPA 353.2)	<0.10		0.10	mg/L			12/12/24 13:45	1
Nitrate as N (SM Nitrate by calc)	<0.10		0.10	mg/L			12/12/24 22:20	1
Color, True (SM 2120B)	<3.0		3.0	Color Units			12/12/24 13:46	1
Total Alkalinity as CaCO3 (SM 2320B)	140		1.0	mg/L			12/13/24 15:18	1
Langelier Index (SM 2330B)	0.12			LangSU			12/20/24 14:37	1
Total Dissolved Solids (SM 2540C)	190		10	mg/L			12/12/24 15:00	1
Fluoride (SM 4500 F C)	<0.050		0.050	mg/L			12/13/24 11:30	1

Method: SM 9223B - Coliforms, Total, and E.Coli (Colilert - Presence/Absence)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	ABSENT	H H3		NONE			12/12/24 13:34	1
Coliform, Total	ABSENT	H H3		NONE			12/12/24 13:34	1

Client Sample ID: B-1 LTB (10-28-2024)

Lab Sample ID: 810-131289-2

Date Collected: 12/10/24 00:00

Matrix: Drinking Water

Date Received: 12/12/24 09:30

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,1,1-Trichloroethane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,1,2-Trichloroethane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,1-Dichloroethane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,1-Dichloroethene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,1-Dichloropropene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,2,3-Trichlorobenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,2,3-Trichloropropane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,2,4-Trichlorobenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,2,4-Trimethylbenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,2-Dibromo-3-Chloropropane	<0.20		0.20	ug/L			12/13/24 09:23	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Client Sample ID: B-1 LTB (10-28-2024)

Lab Sample ID: 810-131289-2

Date Collected: 12/10/24 00:00

Matrix: Drinking Water

Date Received: 12/12/24 09:30

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	<0.20		0.20	ug/L			12/13/24 09:23	1
1,2-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,2-Dichloroethane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,2-Dichloropropane	<0.25		0.25	ug/L			12/13/24 09:23	1
o-Xylene	<0.50		0.50	ug/L			12/13/24 09:23	1
m-Xylene & p-Xylene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,3,5-Trimethylbenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,3-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
1,3-Dichloropropane	<0.50		0.50	ug/L			12/13/24 09:23	1
1,4-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
2,2-Dichloropropane	<0.50		0.50	ug/L			12/13/24 09:23	1
2-Chlorotoluene	<0.50		0.50	ug/L			12/13/24 09:23	1
4-Chlorotoluene	<0.50		0.50	ug/L			12/13/24 09:23	1
Benzene	<0.50		0.50	ug/L			12/13/24 09:23	1
4-Isopropyltoluene	<0.50		0.50	ug/L			12/13/24 09:23	1
Bromobenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
Bromochloromethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Bromodichloromethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Bromoform	<0.50		0.50	ug/L			12/13/24 09:23	1
Bromomethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Carbon tetrachloride	<0.50		0.50	ug/L			12/13/24 09:23	1
Chloroethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Chlorobenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
Chloromethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Chloroform	<0.50		0.50	ug/L			12/13/24 09:23	1
Dibromomethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Dichlorodifluoromethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Dichloromethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Dibromochloromethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Ethylbenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
Hexachlorobutadiene	<0.25		0.25	ug/L			12/13/24 09:23	1
Isopropylbenzene	<0.25		0.25	ug/L			12/13/24 09:23	1
Naphthalene	<0.50		0.50	ug/L			12/13/24 09:23	1
Methyl-tert-butyl Ether (MTBE)	<0.50		0.50	ug/L			12/13/24 09:23	1
Styrene	<0.50		0.50	ug/L			12/13/24 09:23	1
Tetrachloroethene	<0.50		0.50	ug/L			12/13/24 09:23	1
Toluene	<0.50		0.50	ug/L			12/13/24 09:23	1
Trichloroethylene	<0.50		0.50	ug/L			12/13/24 09:23	1
Trichlorofluoromethane	<0.50		0.50	ug/L			12/13/24 09:23	1
Vinyl chloride	<0.20		0.20	ug/L			12/13/24 09:23	1
tert-Butylbenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L			12/13/24 09:23	1
cis-1,3-Dichloropropylene	<0.50		0.50	ug/L			12/13/24 09:23	1
n-Butylbenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
N-Propylbenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
sec-Butylbenzene	<0.50		0.50	ug/L			12/13/24 09:23	1
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L			12/13/24 09:23	1
trans-1,3-Dichloropropylene	<0.50		0.50	ug/L			12/13/24 09:23	1
Xylenes, Total	<0.50		0.50	ug/L			12/13/24 09:23	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Client Sample ID: B-1 LTB (10-28-2024)

Lab Sample ID: 810-131289-2

Date Collected: 12/10/24 00:00

Matrix: Drinking Water

Date Received: 12/12/24 09:30

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,2-Dichloroethane-d4 (Surr)	104		70 - 130		12/13/24 09:23	1
Toluene-d8 (Surr)	98		70 - 130		12/13/24 09:23	1
4-Bromofluorobenzene (Surr)	98		70 - 130		12/13/24 09:23	1
1,2-Dichlorobenzene-d4 (Surr)	77		70 - 130		12/13/24 09:23	1

Surrogate Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA	TOL	BFB	DCZ
		(70-130)	(70-130)	(70-130)	(70-130)
810-131289-1	B-1	107	97	85	78
810-131289-1 DU	B-1	108	99	87	81
810-131289-2	B-1 LTB (10-28-2024)	104	98	98	77
MB 810-126447/5	Method Blank	103	99	88	80
Surrogate Legend					
DCA = 1,2-Dichloroethane-d4 (Surr)					
TOL = Toluene-d8 (Surr)					
BFB = 4-Bromofluorobenzene (Surr)					
DCZ = 1,2-Dichlorobenzene-d4 (Surr)					

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 810-126447/5

Matrix: Drinking Water

Analysis Batch: 126447

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,1,1-Trichloroethane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,1,2-Trichloroethane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,1-Dichloroethane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,1-Dichloroethene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,1-Dichloropropene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,2,3-Trichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,2,3-Trichloropropane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,2,4-Trichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,2,4-Trimethylbenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,2-Dibromo-3-Chloropropane	<0.20		0.20	ug/L			12/13/24 08:09	1
1,2-Dibromoethane (EDB)	<0.20		0.20	ug/L			12/13/24 08:09	1
1,2-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,2-Dichloroethane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,2-Dichloropropane	<0.25		0.25	ug/L			12/13/24 08:09	1
o-Xylene	<0.50		0.50	ug/L			12/13/24 08:09	1
m-Xylene & p-Xylene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,3,5-Trimethylbenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,3-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
1,3-Dichloropropane	<0.50		0.50	ug/L			12/13/24 08:09	1
1,4-Dichlorobenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
2,2-Dichloropropane	<0.50		0.50	ug/L			12/13/24 08:09	1
2-Chlorotoluene	<0.50		0.50	ug/L			12/13/24 08:09	1
4-Chlorotoluene	<0.50		0.50	ug/L			12/13/24 08:09	1
Benzene	<0.50		0.50	ug/L			12/13/24 08:09	1
4-Isopropyltoluene	<0.50		0.50	ug/L			12/13/24 08:09	1
Bromobenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
Bromochloromethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Bromodichloromethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Bromoform	<0.50		0.50	ug/L			12/13/24 08:09	1
Bromomethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Carbon tetrachloride	<0.50		0.50	ug/L			12/13/24 08:09	1
Chloroethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Chlorobenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
Chloromethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Chloroform	<0.50		0.50	ug/L			12/13/24 08:09	1
Dibromomethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Dichlorodifluoromethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Dichloromethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Dibromochloromethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Ethylbenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
Hexachlorobutadiene	<0.25		0.25	ug/L			12/13/24 08:09	1
Isopropylbenzene	<0.25		0.25	ug/L			12/13/24 08:09	1
Naphthalene	<0.50		0.50	ug/L			12/13/24 08:09	1
Methyl-tert-butyl Ether (MTBE)	<0.50		0.50	ug/L			12/13/24 08:09	1
Styrene	<0.50		0.50	ug/L			12/13/24 08:09	1
Tetrachloroethene	<0.50		0.50	ug/L			12/13/24 08:09	1

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 810-126447/5

Matrix: Drinking Water

Analysis Batch: 126447

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Toluene	<0.50		0.50	ug/L			12/13/24 08:09	1
Trichloroethylene	<0.50		0.50	ug/L			12/13/24 08:09	1
Trichlorofluoromethane	<0.50		0.50	ug/L			12/13/24 08:09	1
Vinyl chloride	<0.20		0.20	ug/L			12/13/24 08:09	1
tert-Butylbenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L			12/13/24 08:09	1
cis-1,3-Dichloropropylene	<0.50		0.50	ug/L			12/13/24 08:09	1
n-Butylbenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
N-Propylbenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
sec-Butylbenzene	<0.50		0.50	ug/L			12/13/24 08:09	1
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L			12/13/24 08:09	1
trans-1,3-Dichloropropylene	<0.50		0.50	ug/L			12/13/24 08:09	1
Xylenes, Total	<0.50		0.50	ug/L			12/13/24 08:09	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		12/13/24 08:09	1
Toluene-d8 (Surr)	99		70 - 130		12/13/24 08:09	1
4-Bromofluorobenzene (Surr)	88		70 - 130		12/13/24 08:09	1
1,2-Dichlorobenzene-d4 (Surr)	80		70 - 130		12/13/24 08:09	1

Lab Sample ID: 810-131289-1 DU

Matrix: Drinking Water

Analysis Batch: 126447

Client Sample ID: B-1

Prep Type: Total/NA

Analyte	Sample	Sample	Result	DU	Unit	D	RPD	RPD
	Result	Qualifier		Qualifier				Limit
1,1,1,2-Tetrachloroethane	<0.50		<0.50		ug/L		NC	20
1,1,1-Trichloroethane	<0.50		<0.50		ug/L		NC	20
1,1,2,2-Tetrachloroethane	<0.50		<0.50		ug/L		NC	20
1,1,2-Trichloroethane	<0.50		<0.50		ug/L		NC	20
1,1-Dichloroethane	<0.50		<0.50		ug/L		NC	20
1,1-Dichloroethene	<0.50		<0.50		ug/L		NC	20
1,1-Dichloropropene	<0.50		<0.50		ug/L		NC	20
1,2,3-Trichlorobenzene	<0.50		<0.50		ug/L		NC	20
1,2,3-Trichloropropane	<0.50		<0.50		ug/L		NC	20
1,2,4-Trichlorobenzene	<0.50		<0.50		ug/L		NC	20
1,2,4-Trimethylbenzene	<0.50		<0.50		ug/L		NC	20
1,2-Dibromo-3-Chloropropane	<0.20		<0.20		ug/L		NC	20
1,2-Dibromoethane (EDB)	<0.20		<0.20		ug/L		NC	20
1,2-Dichlorobenzene	<0.50		<0.50		ug/L		NC	20
1,2-Dichloroethane	<0.50		<0.50		ug/L		NC	20
1,2-Dichloropropane	<0.25		<0.25		ug/L		NC	20
o-Xylene	<0.50		<0.50		ug/L		NC	20
m-Xylene & p-Xylene	<0.50		<0.50		ug/L		NC	20
1,3,5-Trimethylbenzene	<0.50		<0.50		ug/L		NC	20
1,3-Dichlorobenzene	<0.50		<0.50		ug/L		NC	20
1,3-Dichloropropane	<0.50		<0.50		ug/L		NC	20
1,4-Dichlorobenzene	<0.50		<0.50		ug/L		NC	20
2,2-Dichloropropane	<0.50		<0.50		ug/L		NC	20

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 810-131289-1 DU

Matrix: Drinking Water

Analysis Batch: 126447

Client Sample ID: B-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
2-Chlorotoluene	<0.50		<0.50		ug/L		NC	20
4-Chlorotoluene	<0.50		<0.50		ug/L		NC	20
Benzene	<0.50		<0.50		ug/L		NC	20
4-Isopropyltoluene	<0.50		<0.50		ug/L		NC	20
Bromobenzene	<0.50		<0.50		ug/L		NC	20
Bromochloromethane	<0.50		<0.50		ug/L		NC	20
Bromodichloromethane	<0.50		<0.50		ug/L		NC	20
Bromoform	<0.50		<0.50		ug/L		NC	20
Bromomethane	<0.50		<0.50		ug/L		NC	20
Carbon tetrachloride	<0.50		<0.50		ug/L		NC	20
Chloroethane	<0.50		<0.50		ug/L		NC	20
Chlorobenzene	<0.50		<0.50		ug/L		NC	20
Chloromethane	<0.50		<0.50		ug/L		NC	20
Chloroform	<0.50		<0.50		ug/L		NC	20
Dibromomethane	<0.50		<0.50		ug/L		NC	20
Dichlorodifluoromethane	<0.50		<0.50		ug/L		NC	20
Dichloromethane	<0.50		<0.50		ug/L		NC	20
Dibromochloromethane	<0.50		<0.50		ug/L		NC	20
Ethylbenzene	<0.50		<0.50		ug/L		NC	20
Hexachlorobutadiene	<0.25		<0.25		ug/L		NC	20
Isopropylbenzene	<0.25		<0.25		ug/L		NC	20
Naphthalene	<0.50		<0.50		ug/L		NC	20
Methyl-tert-butyl Ether (MTBE)	<0.50		<0.50		ug/L		NC	20
Styrene	<0.50		<0.50		ug/L		NC	20
Tetrachloroethene	<0.50		<0.50		ug/L		NC	20
Toluene	<0.50		<0.50		ug/L		NC	20
Trichloroethylene	<0.50		<0.50		ug/L		NC	20
Trichlorofluoromethane	<0.50		<0.50		ug/L		NC	20
Vinyl chloride	<0.20		<0.20		ug/L		NC	20
tert-Butylbenzene	<0.50		<0.50		ug/L		NC	20
cis-1,2-Dichloroethylene	<0.50		<0.50		ug/L		NC	20
cis-1,3-Dichloropropylene	<0.50		<0.50		ug/L		NC	20
n-Butylbenzene	<0.50		<0.50		ug/L		NC	20
N-Propylbenzene	<0.50		<0.50		ug/L		NC	20
sec-Butylbenzene	<0.50		<0.50		ug/L		NC	20
trans-1,2-Dichloroethylene	<0.50		<0.50		ug/L		NC	20
trans-1,3-Dichloropropylene	<0.50		<0.50		ug/L		NC	20
Xylenes, Total	<0.50		<0.50		ug/L		NC	20

Surrogate	%Recovery	DU Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		70 - 130
Toluene-d8 (Surr)	99		70 - 130
4-Bromofluorobenzene (Surr)	87		70 - 130
1,2-Dichlorobenzene-d4 (Surr)	81		70 - 130

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 810-126572/4

Matrix: Drinking Water

Analysis Batch: 126572

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<2.0		2.0	mg/L			12/14/24 13:36	1
Sulfate	<5.0		5.0	mg/L			12/14/24 13:36	1

Lab Sample ID: LCS 810-126572/5

Matrix: Drinking Water

Analysis Batch: 126572

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.44		mg/L		94	90 - 110
Sulfate	25.0	24.4		mg/L		98	90 - 110

Lab Sample ID: LLCS 810-126572/3

Matrix: Drinking Water

Analysis Batch: 126572

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	2.00	1.58	J	mg/L		79	50 - 150
Sulfate	5.00	4.82	J	mg/L		96	50 - 150

Method: 200.7 - Metals (ICP)

Lab Sample ID: MBL 810-127140/1-A

Matrix: Drinking Water

Analysis Batch: 127354

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 127140

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	<0.035		0.10	mg/L		12/18/24 12:01	12/19/24 17:30	1
Potassium	<0.032		0.20	mg/L		12/18/24 12:01	12/19/24 17:30	1
Magnesium	<0.037		0.10	mg/L		12/18/24 12:01	12/19/24 17:30	1
Iron	<0.0095		0.010	mg/L		12/18/24 12:01	12/19/24 17:30	1
Calcium	<0.034		0.10	mg/L		12/18/24 12:01	12/19/24 17:30	1

Lab Sample ID: LCS 810-127140/4-A

Matrix: Drinking Water

Analysis Batch: 127354

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 127140

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	5.00	4.93		mg/L		99	85 - 115
Potassium	5.00	4.92		mg/L		98	85 - 115
Magnesium	5.00	4.96		mg/L		99	85 - 115
Iron	5.00	4.93		mg/L		99	85 - 115
Calcium	5.00	4.91		mg/L		98	85 - 115

Lab Sample ID: LLCS 810-127140/2-A

Matrix: Drinking Water

Analysis Batch: 127354

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 127140

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	0.0100	<0.035		mg/L		90	50 - 150
Potassium	0.0100	<0.032		mg/L		102	50 - 150

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 200.7 - Metals (ICP) (Continued)

Lab Sample ID: LLCS 810-127140/2-A

Matrix: Drinking Water

Analysis Batch: 127354

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 127140

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Magnesium	0.0100	<0.037		mg/L		97	50 - 150
Iron	0.0100	0.0106		mg/L		106	50 - 150

Lab Sample ID: LLCS 810-127140/3-A

Matrix: Drinking Water

Analysis Batch: 127354

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 127140

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	0.100	0.0954	J	mg/L		95	50 - 150
Potassium	0.100	0.0980	J	mg/L		98	50 - 150
Magnesium	0.100	0.0954	J	mg/L		95	50 - 150
Calcium	0.100	0.0924	J	mg/L		92	50 - 150

Lab Sample ID: MBL 810-126511/22-A

Matrix: Drinking Water

Analysis Batch: 126686

Client Sample ID: Method Blank

Prep Type: Dissolved

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	<0.0095		0.010	mg/L			12/16/24 17:48	1

Lab Sample ID: LCS 810-126511/23-A

Matrix: Drinking Water

Analysis Batch: 126686

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron, Dissolved	5.00	4.94		mg/L		99	85 - 115

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: LLCS 810-126651/11

Matrix: Drinking Water

Analysis Batch: 126651

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Manganese, Dissolved	0.300	<0.63		ug/L		109	50 - 150

Lab Sample ID: LLCS 810-126651/12

Matrix: Drinking Water

Analysis Batch: 126651

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Manganese, Dissolved	1.00	1.02	J	ug/L		102	50 - 150

Lab Sample ID: MBL 810-127141/1-A

Matrix: Drinking Water

Analysis Batch: 127252

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 127141

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<1.7		20	ug/L		12/18/24 12:01	12/19/24 09:36	1
Antimony	<0.079		1.0	ug/L		12/18/24 12:01	12/19/24 09:36	1

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MBL 810-127141/1-A

Matrix: Drinking Water

Analysis Batch: 127252

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 127141

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.59		1.0	ug/L		12/18/24 12:01	12/19/24 09:36	1
Barium	<0.21		2.0	ug/L		12/18/24 12:01	12/19/24 09:36	1
Beryllium	<0.075		0.30	ug/L		12/18/24 12:01	12/19/24 09:36	1
Cadmium	<0.16		0.50	ug/L		12/18/24 12:01	12/19/24 09:36	1
Chromium	<0.29		0.90	ug/L		12/18/24 12:01	12/19/24 09:36	1
Nickel	<0.77		5.0	ug/L		12/18/24 12:01	12/19/24 09:36	1
Selenium	<1.4		2.0	ug/L		12/18/24 12:01	12/19/24 09:36	1
Silver	<0.34		0.50	ug/L		12/18/24 12:01	12/19/24 09:36	1
Thallium	<0.053		0.30	ug/L		12/18/24 12:01	12/19/24 09:36	1
Zinc	<2.3		5.0	ug/L		12/18/24 12:01	12/19/24 09:36	1
Copper	<0.33		2.0	ug/L		12/18/24 12:01	12/19/24 09:36	1
Manganese	<0.63		2.0	ug/L		12/18/24 12:01	12/19/24 09:36	1

Lab Sample ID: MBL 810-127141/1-A

Matrix: Drinking Water

Analysis Batch: 127278

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 127141

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	<0.34		0.50	ug/L		12/18/24 12:01	12/19/24 12:20	1

Lab Sample ID: LCS 810-127141/6-A

Matrix: Drinking Water

Analysis Batch: 127252

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 127141

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	50.0	50.6		ug/L		101	85 - 115
Antimony	50.0	50.5		ug/L		101	85 - 115
Arsenic	50.0	49.2		ug/L		98	85 - 115
Barium	50.0	49.0		ug/L		98	85 - 115
Beryllium	50.0	50.0		ug/L		100	85 - 115
Cadmium	50.0	49.6		ug/L		99	85 - 115
Chromium	50.0	50.4		ug/L		101	85 - 115
Nickel	50.0	49.5		ug/L		99	85 - 115
Selenium	50.0	48.9		ug/L		98	85 - 115
Silver	50.0	48.3		ug/L		97	85 - 115
Thallium	50.0	49.2		ug/L		98	85 - 115
Zinc	50.0	49.5		ug/L		99	85 - 115
Copper	50.0	49.2		ug/L		98	85 - 115
Manganese	50.0	50.6		ug/L		101	85 - 115

Lab Sample ID: LCS 810-127141/6-A

Matrix: Drinking Water

Analysis Batch: 127278

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 127141

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Silver	50.0	46.3		ug/L		93	85 - 115

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-127141/2-A
Matrix: Drinking Water
Analysis Batch: 127252

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 127141

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.300	0.331	J	ug/L		110	50 - 150
Arsenic	0.300	<0.59		ug/L		107	50 - 150
Barium	0.300	0.297	J	ug/L		99	50 - 150
Beryllium	0.300	0.332		ug/L		111	50 - 150
Cadmium	0.300	0.261	J	ug/L		87	50 - 150
Chromium	0.300	0.299	J	ug/L		100	50 - 150
Selenium	0.300	<1.4		ug/L		104	50 - 150
Thallium	0.300	0.305		ug/L		102	50 - 150
Zinc	0.300	<2.3		ug/L		144	50 - 150
Copper	0.300	<0.33		ug/L		64	50 - 150
Manganese	0.300	<0.63		ug/L		108	50 - 150

Lab Sample ID: LLCS 810-127141/2-A
Matrix: Drinking Water
Analysis Batch: 127278

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 127141

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Silver	0.300	<0.34		ug/L		91	50 - 150

Lab Sample ID: LLCS 810-127141/3-A
Matrix: Drinking Water
Analysis Batch: 127252

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 127141

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	1.00	1.00		ug/L		100	50 - 150
Arsenic	1.00	1.10		ug/L		110	50 - 150
Barium	1.00	1.01	J	ug/L		101	50 - 150
Nickel	1.00	<0.77		ug/L		62	50 - 150
Selenium	1.00	<1.4		ug/L		114	50 - 150
Zinc	1.00	<2.3		ug/L		115	50 - 150
Copper	1.00	0.895	J	ug/L		90	50 - 150
Manganese	1.00	1.03	J	ug/L		103	50 - 150

Lab Sample ID: LLCS 810-127141/4-A
Matrix: Drinking Water
Analysis Batch: 127252

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 127141

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	2.00	2.66	J	ug/L		133	50 - 150
Barium	2.00	2.01		ug/L		101	50 - 150
Nickel	2.00	1.60	J	ug/L		80	50 - 150
Selenium	2.00	2.03		ug/L		102	50 - 150
Zinc	2.00	<2.3		ug/L		113	50 - 150
Copper	2.00	1.89	J	ug/L		95	50 - 150
Manganese	2.00	2.02		ug/L		101	50 - 150

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-127141/5-A
Matrix: Drinking Water
Analysis Batch: 127252

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 127141

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	5.00	5.94	J	ug/L		119	50 - 150
Nickel	5.00	4.52	J	ug/L		90	50 - 150
Zinc	5.00	5.57		ug/L		111	50 - 150

Lab Sample ID: MBL 810-126511/1-A
Matrix: Drinking Water
Analysis Batch: 126651

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese, Dissolved	<0.63		2.0	ug/L			12/16/24 12:18	1

Lab Sample ID: LCS 810-126511/2-A
Matrix: Drinking Water
Analysis Batch: 126651

Client Sample ID: Lab Control Sample
Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Manganese, Dissolved	50.0	50.0		ug/L		100	85 - 115

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 810-127080/1-A
Matrix: Drinking Water
Analysis Batch: 127169

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 127080

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	ug/L		12/18/24 12:47	12/18/24 22:48	1

Lab Sample ID: LCS 810-127080/3-A
Matrix: Drinking Water
Analysis Batch: 127169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 127080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	1.00	0.943		ug/L		94	85 - 115

Method: 150.1 - pH (Electrometric)

Lab Sample ID: LCSSRM 810-126353/4
Matrix: Drinking Water
Analysis Batch: 126353

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

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
pH	9.00	9.0		SU		100.4	98.9 - 101.1

Lab Sample ID: LCSSRM 810-126353/7
Matrix: Drinking Water
Analysis Batch: 126353

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

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
pH	9.00	9.1		SU		100.8	98.9 - 101.1

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 335.4 - Cyanide, Total

Lab Sample ID: MBL 810-126457/5-A
Matrix: Drinking Water
Analysis Batch: 126484

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 126457

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	<0.0016		0.0050	mg/L		12/13/24 08:48	12/13/24 10:23	1

Lab Sample ID: LCS 810-126457/2-A
Matrix: Drinking Water
Analysis Batch: 126484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 126457

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.100	0.0990		mg/L		99	90 - 110

Lab Sample ID: LLCS 810-126457/3-A
Matrix: Drinking Water
Analysis Batch: 126484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 126457

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.00500	0.00540		mg/L		108	50 - 150

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MBL 810-126345/20
Matrix: Drinking Water
Analysis Batch: 126345

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

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.041		0.10	mg/L			12/12/24 13:44	1

Lab Sample ID: LCS 810-126345/16
Matrix: Drinking Water
Analysis Batch: 126345

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	4.00	4.00		mg/L		100	90 - 110

Lab Sample ID: LLCS 810-126345/19
Matrix: Drinking Water
Analysis Batch: 126345

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	0.100	0.0964	J	mg/L		96	50 - 150

Lab Sample ID: 810-131289-1 MS
Matrix: Drinking Water
Analysis Batch: 126345

Client Sample ID: B-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	<0.10		4.00	4.09		mg/L		100	90 - 110

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: 810-131289-1 MSD
Matrix: Drinking Water
Analysis Batch: 126345

Client Sample ID: B-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrate Nitrite as N	<0.10		4.00	4.18		mg/L		103	90 - 110	2	10

Lab Sample ID: MBL 810-126346/15
Matrix: Drinking Water
Analysis Batch: 126346

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

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	<0.0069		0.010	mg/L			12/12/24 12:57	1

Lab Sample ID: LCS 810-126346/13
Matrix: Drinking Water
Analysis Batch: 126346

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrite as N	0.200	0.202		mg/L		101	90 - 110

Lab Sample ID: LLCS 810-126346/14
Matrix: Drinking Water
Analysis Batch: 126346

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrite as N	0.0100	0.00930	J	mg/L		93	50 - 150

Lab Sample ID: 810-131289-1 MS
Matrix: Drinking Water
Analysis Batch: 126346

Client Sample ID: B-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrite as N	0.011		0.200	0.216		mg/L		102	90 - 110

Lab Sample ID: 810-131289-1 MSD
Matrix: Drinking Water
Analysis Batch: 126346

Client Sample ID: B-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrite as N	0.011		0.200	0.218		mg/L		103	90 - 110	1	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MBL 810-126553/6
Matrix: Drinking Water
Analysis Batch: 126553

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

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3	<1.0		1.0	mg/L			12/13/24 14:33	1

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 810-126553/4

Matrix: Drinking Water

Analysis Batch: 126553

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Alkalinity as CaCO ₃	100	91.6		mg/L		92	78 - 114

Lab Sample ID: LLCS 810-126553/5

Matrix: Drinking Water

Analysis Batch: 126553

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Alkalinity as CaCO ₃	1.00	1.08		mg/L		108	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MBL 810-126347/1

Matrix: Drinking Water

Analysis Batch: 126347

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	mg/L			12/12/24 14:40	1

Lab Sample ID: LCS 810-126347/2

Matrix: Drinking Water

Analysis Batch: 126347

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	1010		mg/L		101	85 - 115

Method: SM 4500 F C - Fluoride

Lab Sample ID: MBL 810-126505/7

Matrix: Drinking Water

Analysis Batch: 126505

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.020		0.050	mg/L			12/13/24 10:48	1

Lab Sample ID: LCS 810-126505/5

Matrix: Drinking Water

Analysis Batch: 126505

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	2.00	2.02		mg/L		101	90 - 110

Lab Sample ID: LLCS 810-126505/6

Matrix: Drinking Water

Analysis Batch: 126505

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	0.0500	0.0600		mg/L		120	50 - 150

Eurofins Eaton Analytical South Bend

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

GC/MS VOA

Analysis Batch: 126447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	524.2	
810-131289-2	B-1 LTB (10-28-2024)	Total/NA	Drinking Water	524.2	
MB 810-126447/5	Method Blank	Total/NA	Drinking Water	524.2	
810-131289-1 DU	B-1	Total/NA	Drinking Water	524.2	

HPLC/IC

Analysis Batch: 126572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	300.0	
MB 810-126572/4	Method Blank	Total/NA	Drinking Water	300.0	
LCS 810-126572/5	Lab Control Sample	Total/NA	Drinking Water	300.0	
LLCS 810-126572/3	Lab Control Sample	Total/NA	Drinking Water	300.0	

Metals

Filtration Batch: 126511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Dissolved	Drinking Water	Filtration	
MBL 810-126511/1-A	Method Blank	Dissolved	Drinking Water	Filtration	
MBL 810-126511/22-A	Method Blank	Dissolved	Drinking Water	Filtration	
LCS 810-126511/23-A	Lab Control Sample	Dissolved	Drinking Water	Filtration	
LCS 810-126511/2-A	Lab Control Sample	Dissolved	Drinking Water	Filtration	

Analysis Batch: 126651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Dissolved	Drinking Water	200.8	126511
MBL 810-126511/1-A	Method Blank	Dissolved	Drinking Water	200.8	126511
LCS 810-126511/2-A	Lab Control Sample	Dissolved	Drinking Water	200.8	126511
LLCS 810-126651/11	Lab Control Sample	Total/NA	Drinking Water	200.8	
LLCS 810-126651/12	Lab Control Sample	Total/NA	Drinking Water	200.8	

Analysis Batch: 126686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Dissolved	Drinking Water	200.7	126511
MBL 810-126511/22-A	Method Blank	Dissolved	Drinking Water	200.7	126511
LCS 810-126511/23-A	Lab Control Sample	Dissolved	Drinking Water	200.7	126511

Analysis Batch: 126841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	SM 2340B	

Prep Batch: 127080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	245.1	
MB 810-127080/1-A	Method Blank	Total/NA	Drinking Water	245.1	
LCS 810-127080/3-A	Lab Control Sample	Total/NA	Drinking Water	245.1	

Prep Batch: 127140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total Recoverable	Drinking Water	200.2	
MBL 810-127140/1-A	Method Blank	Total Recoverable	Drinking Water	200.2	

Eurofins Eaton Analytical South Bend

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Metals (Continued)

Prep Batch: 127140 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 810-127140/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.2	
LLCS 810-127140/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.2	
LLCS 810-127140/3-A	Lab Control Sample	Total Recoverable	Drinking Water	200.2	

Prep Batch: 127141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total Recoverable	Drinking Water	200.8	
MBL 810-127141/1-A	Method Blank	Total Recoverable	Drinking Water	200.8	
LCS 810-127141/6-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	
LLCS 810-127141/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	
LLCS 810-127141/3-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	
LLCS 810-127141/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	
LLCS 810-127141/5-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	

Analysis Batch: 127169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	245.1	127080
MB 810-127080/1-A	Method Blank	Total/NA	Drinking Water	245.1	127080
LCS 810-127080/3-A	Lab Control Sample	Total/NA	Drinking Water	245.1	127080

Analysis Batch: 127252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total Recoverable	Drinking Water	200.8	127141
MBL 810-127141/1-A	Method Blank	Total Recoverable	Drinking Water	200.8	127141
LCS 810-127141/6-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	127141
LLCS 810-127141/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	127141
LLCS 810-127141/3-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	127141
LLCS 810-127141/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	127141
LLCS 810-127141/5-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	127141

Analysis Batch: 127278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total Recoverable	Drinking Water	200.8	127141
MBL 810-127141/1-A	Method Blank	Total Recoverable	Drinking Water	200.8	127141
LCS 810-127141/6-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	127141
LLCS 810-127141/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	127141

Analysis Batch: 127354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total Recoverable	Drinking Water	200.7	127140
MBL 810-127140/1-A	Method Blank	Total Recoverable	Drinking Water	200.7	127140
LCS 810-127140/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.7	127140
LLCS 810-127140/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.7	127140
LLCS 810-127140/3-A	Lab Control Sample	Total Recoverable	Drinking Water	200.7	127140

General Chemistry

Analysis Batch: 126340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	SM 2120B	
LCSSRM 810-126340/11	Lab Control Sample	Total/NA	Drinking Water	SM 2120B	

Eurofins Eaton Analytical South Bend

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

General Chemistry

Analysis Batch: 126345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	353.2	
MBL 810-126345/20	Method Blank	Total/NA	Drinking Water	353.2	
LCS 810-126345/16	Lab Control Sample	Total/NA	Drinking Water	353.2	
LLCS 810-126345/19	Lab Control Sample	Total/NA	Drinking Water	353.2	
810-131289-1 MS	B-1	Total/NA	Drinking Water	353.2	
810-131289-1 MSD	B-1	Total/NA	Drinking Water	353.2	

Analysis Batch: 126346

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	353.2	
MBL 810-126346/15	Method Blank	Total/NA	Drinking Water	353.2	
LCS 810-126346/13	Lab Control Sample	Total/NA	Drinking Water	353.2	
LLCS 810-126346/14	Lab Control Sample	Total/NA	Drinking Water	353.2	
810-131289-1 MS	B-1	Total/NA	Drinking Water	353.2	
810-131289-1 MSD	B-1	Total/NA	Drinking Water	353.2	

Analysis Batch: 126347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	SM 2540C	
MBL 810-126347/1	Method Blank	Total/NA	Drinking Water	SM 2540C	
LCS 810-126347/2	Lab Control Sample	Total/NA	Drinking Water	SM 2540C	

Analysis Batch: 126353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	150.1	
LCSSRM 810-126353/4	Lab Control Sample	Total/NA	Drinking Water	150.1	
LCSSRM 810-126353/7	Lab Control Sample	Total/NA	Drinking Water	150.1	

Analysis Batch: 126398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	Nitrate by calc	

Prep Batch: 126457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	Distill/CN	
MBL 810-126457/5-A	Method Blank	Total/NA	Drinking Water	Distill/CN	
LCS 810-126457/2-A	Lab Control Sample	Total/NA	Drinking Water	Distill/CN	
LLCS 810-126457/3-A	Lab Control Sample	Total/NA	Drinking Water	Distill/CN	

Analysis Batch: 126484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	335.4	126457
MBL 810-126457/5-A	Method Blank	Total/NA	Drinking Water	335.4	126457
LCS 810-126457/2-A	Lab Control Sample	Total/NA	Drinking Water	335.4	126457
LLCS 810-126457/3-A	Lab Control Sample	Total/NA	Drinking Water	335.4	126457

Analysis Batch: 126505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	SM 4500 F C	
MBL 810-126505/7	Method Blank	Total/NA	Drinking Water	SM 4500 F C	
LCS 810-126505/5	Lab Control Sample	Total/NA	Drinking Water	SM 4500 F C	

Eurofins Eaton Analytical South Bend

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

General Chemistry (Continued)

Analysis Batch: 126505 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-126505/6	Lab Control Sample	Total/NA	Drinking Water	SM 4500 F C	

Analysis Batch: 126553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	SM 2320B	
MBL 810-126553/6	Method Blank	Total/NA	Drinking Water	SM 2320B	
LCS 810-126553/4	Lab Control Sample	Total/NA	Drinking Water	SM 2320B	
LLCS 810-126553/5	Lab Control Sample	Total/NA	Drinking Water	SM 2320B	

Analysis Batch: 127559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	SM 2330B	

Biology

Analysis Batch: 126339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-131289-1	B-1	Total/NA	Drinking Water	SM 9223B	

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Client Sample ID: B-1

Lab Sample ID: 810-131289-1

Date Collected: 12/10/24 10:40

Matrix: Drinking Water

Date Received: 12/12/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	126447	AC	EA SB	12/13/24 08:34
Total/NA	Analysis	300.0		1	126572	NR	EA SB	12/14/24 20:46
Dissolved	Filtration	Filtration			126511	CA	EA SB	12/13/24 14:31
Dissolved	Analysis	200.7		1	126686	AC	EA SB	12/16/24 17:52
Total Recoverable	Prep	200.2			127140	NB	EA SB	12/18/24 12:01
Total Recoverable	Analysis	200.7		1	127354	AC	EA SB	12/19/24 17:57
Dissolved	Filtration	Filtration			126511	CA	EA SB	12/13/24 14:31
Dissolved	Analysis	200.8		1	126651	CA	EA SB	12/16/24 13:07
Total Recoverable	Prep	200.8			127141	NB	EA SB	12/18/24 12:01
Total Recoverable	Analysis	200.8		1	127252	CA	EA SB	12/19/24 10:21
Total Recoverable	Prep	200.8			127141	NB	EA SB	12/18/24 12:01
Total Recoverable	Analysis	200.8		1	127278	CA	EA SB	12/19/24 12:43
Total/NA	Prep	245.1			127080	AC	EA SB	12/18/24 12:47
Total/NA	Analysis	245.1		1	127169	AC	EA SB	12/18/24 23:00
Total/NA	Analysis	SM 2340B		1	126841	AC	EA SB	12/26/24 21:28
Total/NA	Analysis	150.1		1	126353	KH	EA SB	12/12/24 15:26
Total/NA	Prep	Distill/CN			126457	KH	EA SB	12/13/24 09:50
Total/NA	Analysis	335.4		1	126484	KH	EA SB	12/13/24 10:39
Total/NA	Analysis	353.2		1	126346	KH	EA SB	12/12/24 13:00
Total/NA	Analysis	353.2		1	126345	KH	EA SB	12/12/24 13:45
Total/NA	Analysis	Nitrate by calc		1	126398	JT	EA SB	12/12/24 22:20
Total/NA	Analysis	SM 2120B		1	126340	GB	EA SB	12/12/24 13:46
Total/NA	Analysis	SM 2320B		1	126553	KH	EA SB	12/13/24 15:18
Total/NA	Analysis	SM 2330B		1	127559	KH	EA SB	12/20/24 14:37
Total/NA	Analysis	SM 2540C		1	126347	KH	EA SB	12/12/24 15:00
Total/NA	Analysis	SM 4500 F C		1	126505	KH	EA SB	12/13/24 11:30
Total/NA	Analysis	SM 9223B		1	126339	RR	EA SB	12/12/24 13:34 - 12/13/24 10:15 ¹

Client Sample ID: B-1 LTB (10-28-2024)

Lab Sample ID: 810-131289-2

Date Collected: 12/10/24 00:00

Matrix: Drinking Water

Date Received: 12/12/24 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	126447	AC	EA SB	12/13/24 09:23

¹ This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

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

Eurofins Eaton Analytical South Bend

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Laboratory: Eurofins Eaton Analytical South Bend

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

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-25
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
524.2		Drinking Water	1,1,1,2-Tetrachloroethane
524.2		Drinking Water	1,1,2,2-Tetrachloroethane
524.2		Drinking Water	1,1-Dichloroethane
524.2		Drinking Water	1,1-Dichloropropene
524.2		Drinking Water	1,2,3-Trichlorobenzene
524.2		Drinking Water	1,2,3-Trichloropropane
524.2		Drinking Water	1,2,4-Trimethylbenzene
524.2		Drinking Water	1,2-Dibromo-3-Chloropropane
524.2		Drinking Water	1,2-Dibromoethane (EDB)
524.2		Drinking Water	1,3,5-Trimethylbenzene
524.2		Drinking Water	1,3-Dichlorobenzene
524.2		Drinking Water	1,3-Dichloropropane
524.2		Drinking Water	2,2-Dichloropropane
524.2		Drinking Water	2-Chlorotoluene
524.2		Drinking Water	4-Chlorotoluene
524.2		Drinking Water	4-Isopropyltoluene
524.2		Drinking Water	Bromobenzene
524.2		Drinking Water	Bromochloromethane
524.2		Drinking Water	Bromomethane
524.2		Drinking Water	Chloroethane
524.2		Drinking Water	Chloromethane
524.2		Drinking Water	cis-1,3-Dichloropropylene
524.2		Drinking Water	Dibromomethane
524.2		Drinking Water	Dichlorodifluoromethane
524.2		Drinking Water	Hexachlorobutadiene
524.2		Drinking Water	Isopropylbenzene
524.2		Drinking Water	Methyl-tert-butyl Ether (MTBE)
524.2		Drinking Water	m-Xylene & p-Xylene
524.2		Drinking Water	Naphthalene
524.2		Drinking Water	n-Butylbenzene
524.2		Drinking Water	N-Propylbenzene
524.2		Drinking Water	o-Xylene
524.2		Drinking Water	sec-Butylbenzene
524.2		Drinking Water	tert-Butylbenzene
524.2		Drinking Water	trans-1,3-Dichloropropylene
524.2		Drinking Water	Trichlorofluoromethane
SM 2330B		Drinking Water	Langelier Index
SM 2340B		Drinking Water	Calcium hardness as CaCO3
SM 9223B		Drinking Water	Coliform, Total
SM 9223B		Drinking Water	Escherichia coli

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Method	Method Description	Protocol	Laboratory
524.2	Volatile Organic Compounds (GC/MS)	EPA-DW	EA SB
300.0	Anions, Ion Chromatography	EPA	EA SB
200.7	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
245.1	Mercury (CVAA)	EPA	EA SB
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	EA SB
150.1	pH (Electrometric)	EPA	EA SB
335.4	Cyanide, Total	EPA	EA SB
353.2	Nitrogen, Nitrate-Nitrite	EPA	EA SB
Nitrate by calc	Nitrogen, Nitrate-Nitrite	SM	EA SB
SM 2120B	Color, True, Colorimetric	SM	EA SB
SM 2320B	Alkalinity	SM	EA SB
SM 2330B	Corrosivity, LSI Calculation	SM	EA SB
SM 2540C	Solids, Total Dissolved (TDS)	SM	EA SB
SM 4500 F C	Fluoride	SM	EA SB
SM 9223B	Coliforms, Total, and E.Coli (Colilert - Presence/Absence)	SM	EA SB
200.2	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
245.1	Preparation, Mercury	EPA	EA SB
Distill/CN	Distillation, Cyanide	None	EA SB
Filtration	Sample Filtration	None	EA SB

Protocol References:

EPA = US Environmental Protection Agency

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: 112494-002 Yakutat Airport

Job ID: 810-131289-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-131289-1	B-1	Drinking Water	12/10/24 10:40	12/12/24 09:30
810-131289-2	B-1 LTB (10-28-2024)	Drinking Water	12/10/24 00:00	12/12/24 09:30

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

urofins Eaton Analytical South Bend
10 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-4777



810-131289 COC

Client Information

Client Contact:
Ashley Jaramillo
Company:
Shannon & Wilson, Inc
Address:
2355 Hill Rd.
City:
Fairbanks
State, Zip:
AK 99709-5244
Phone:
907-251-7534
Email:
ashley.jaramillo@shannonil.com
Project Name:
112494-002 Yakutat Airport
Site:

Due Date Requested:
810-131289 COC

TAT Requested (days):
Standard

Compliance Project: ☐ Yes ☒ No

Purchase Order not required

PO #:

W/O #:

Project #:
81009381

SSOW#:

Sampler:
Lucas Jaramillo

Phone:

PWSID:
NA

Lab PM:
Trowbridge, Nathan

E-Mail:
Nathan.Trowbridge@eurofins.com

Carrier Tracking No(s):
State of Origin:
Alaska

Analysis Requested

COC No:
810-47609-15450.1
Page:
Page 1 of 1
Job #:

Preservation Codes:
HA - Asb&Cd&HCL
N - None
R - NaOH/SO4
D - HNO3
PX - NaOH/NaBH4

Special Instructions/Note:

Other:

Initial Temp: 1.6

Corrected Temp: 1.0

IR Gun # 7500

Laber comment
as result not good
kill 11.10.2024
hold test required
- Jan 12-2024

Sample Date
12/10/24 1040

Sample Time

Sample Type
(C=Comp, G=grab)

Matrix
(W=Water, S=solid, O=overhead, BI=trans, A=air)

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method

200.7_SDWA, 200.8_SDWA, 245.1_SDWA

2120B_True - True Color

200.7_SDWA, 200.8_SDWA

335.4 - Total Cyanide

150.1, 353.2

4500_F_C - Fluoride

2320B - Total Alkalinity Only / Corrosivity

300_OF_28D_PREC - Chloride, Sulfate

Total Number of containers

Sample Identification

Sample Date

Sample Time

Sample Type

Matrix

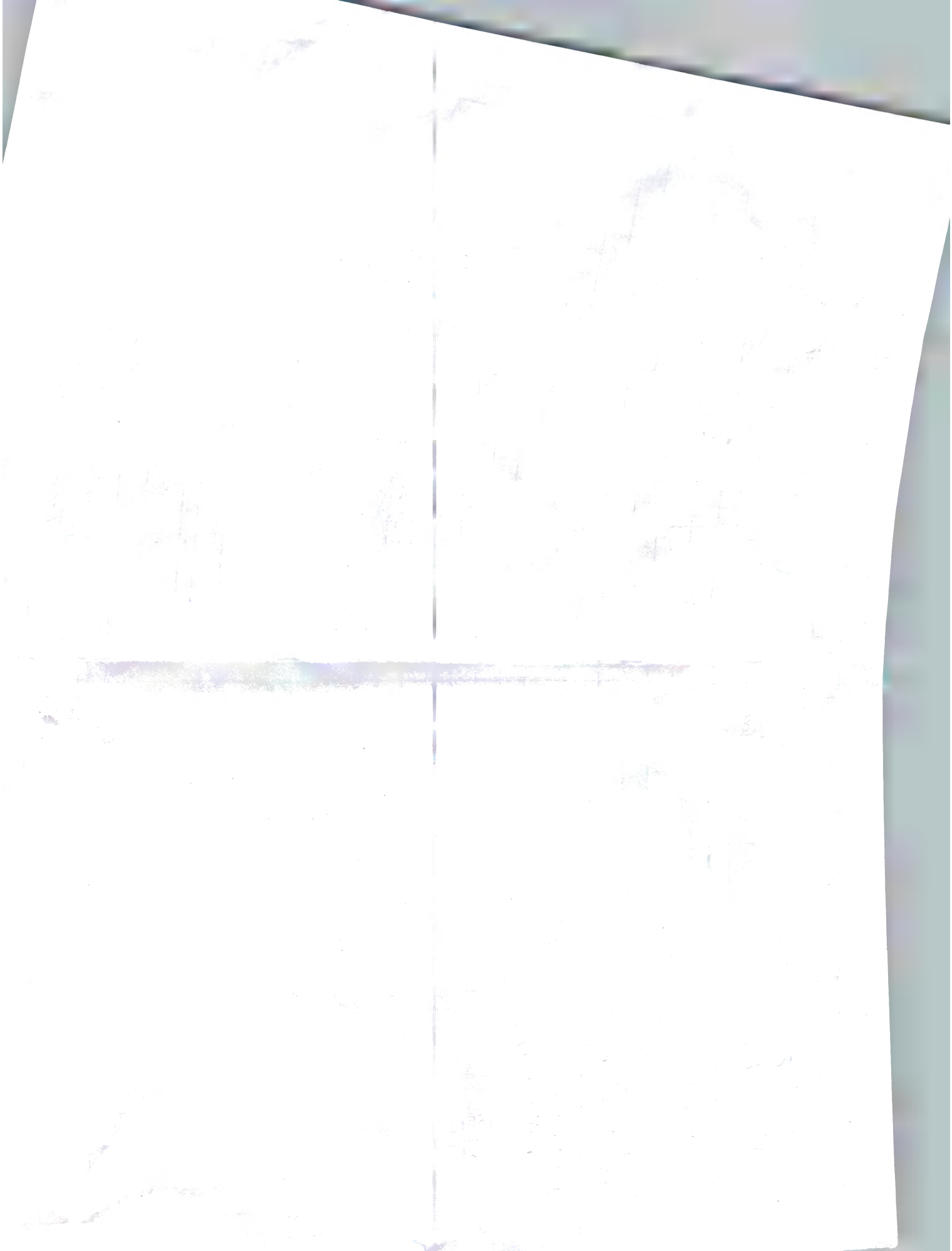
Field Filtered Sample (Yes or No)

Perform AS-100

524.2 Pres_PREC - Phase I, II & V Regulated & Unregulated V

2540C Calcd - Total Dissolved Solids (TDS)

9223B_CIPA18_DW - Local Method



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 810-131289-1

Login Number: 131289

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Moore, Gary

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

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Ashley Jaramillo	CS Site Name:	NA	Lab Name:	Eurofins Eaton Analytical, LLC
Title:	Senior Chemist	ADEC File No.:	NA	Lab Report No.:	810-131289-1
Consulting Firm:	Shannon & Wilson, Inc.	Hazard ID No.:	NA	Lab Report Date:	12/26/24

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?

Yes ☐ No ☒ N/A ☐

Comments: The project sample was sent to Eurofins Eaton Analytical, LLC (Eurofins) in South Bend, IN for analysis. This lab does not have a CS-LAP approval; however, the project sample is a drinking water sample and Eurofins is approved by DEC's drinking water program under certification IN00035 expiring 6/30/2025.

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?

Yes ☐ No ☐ N/A ☒

Comments: Samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.

2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?

Yes ☒ No ☐ N/A ☐

Comments:

- b. Were the correct analyses requested?

Yes ☒ No ☐ N/A ☐

Analyses requested: VOCs by 524.2, Anions by 300.0, metals by 200.7 and 200.8, mercury by 245.1, pH by 150.1, cyanide by 335.4, nitrite/nitrate by 353.2, color by SM2120B, total alkalinity by SM2320B, total dissolved solids by SM2540C, fluoride by SM4500FC, and coliform by SM9223B.

CS Site Name: NA

Lab Report No.: 810-131289-1

Comments: Hardness by SM2340B and Langelier index by SM2330B were not listed on the but were reported and these are the correct analyses for the project. Data quality and/or usability not affected.

3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes ☒ No ☐ N/A ☐

Cooler temperature(s): See below.

Sample temperature(s): See below.

Comments: A temperature blank was included with the cooler to assess temperature preservation. The temperature blank was reported at 1.8° C which is within the acceptable range.

- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?

Yes ☒ No ☐ N/A ☐

Comments:

- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?

Yes ☒ No ☐ N/A ☐

Comments: No sample condition discrepancies were noted by the lab.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?

Yes ☐ No ☒ N/A ☐

Comments: No discrepancies were noted by the laboratory.

- e. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: No laboratory sample receipt documentation discrepancies were noted by the laboratory.

4. Case Narrative

- a. Is the case narrative present and understandable?

Yes ☒ No ☐ N/A ☐

Comments:

- b. Are there discrepancies, errors, or QC failures identified by the lab?

Yes ☒ No ☐ N/A ☐

Comments: Receipt Exceptions

CS Site Name: NA

Lab Report No.: 810-131289-1

The following sample(s) was received outside of holding time: Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result, the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis. See Section 5.b. for details regarding impacts to data quality and/or usability.

General Chemistry

Method 150.1: The following sample(s) was received outside of holding time: Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result, the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis. See Section 5.b. for details regarding impacts to data quality and/or usability.

Method 353.2: The following sample(s) was received outside of holding time: Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result, the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis. See Section 5.b. for details regarding impacts to data quality and/or usability.

Method Nitrate_Calc: The following sample(s) was received outside of holding time: Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result, the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis. See Section 5.b. for details regarding impacts to data quality and/or usability.

Method SM2330B: The Langlier Index result for B-1 (810-131289-1) was calculated using Lab pH and Default Temperature of 20 Degrees Celsius. Data quality and/or usability not affected.

Biology

Method 9223B_CIPA18_DW: The following sample(s) was received outside of holding time: Sample cooler wasn't marked with short hold sticker or a biology sticker. As a result, the cooler wasn't opened till 1110. which caused samples to be out of hold. Proceed with analysis. See Section 5.b. for details regarding impacts to data quality and/or usability.

c. Were all the 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: Effect on data quality and/or usability due to discrepancies, errors, or QC failures identified by the lab in the case narrative are either discussed above in Section 4.b. or elsewhere in this checklist.

CS Site Name: NA

Lab Report No.: 810-131289-1

5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes ☒ No ☐ N/A ☐

Comments: VOCs by 524.2, Anions by 300.0, metals by 200.7 and 200.8, mercury by 245.1, pH by 150.1, cyanide by 335.4, nitrite/nitrate by 353.2, color by SM2120B, total alkalinity by SM2320B, total dissolved solids by SM2540C, fluoride by SM4500FC, and coliform by SM9223B were requested on the CoC. Hardness by SM2340B and Langelier index by SM2330B were not listed on the but were reported and these are the correct analyses for the project. Data quality and/or usability not affected.

- b. Are all applicable holding times met?

Yes ☐ No ☒ N/A ☐

Comments: pH, nitrite/nitrate, nitrate calculation, and coliform analyses were performed after the method specified holding times. Although some holding time exceedances are gross (greater than twice the method hold time), all results are being reported for informational purposes as estimates, no direction of bias, and are flags 'J*' in the analytical table. Data quality is considered affected; however, data is considered usable with the applied flags.

- c. Are all soils reported on a dry weight basis?

Yes ☐ No ☒ N/A ☐

Comments: Soil samples were not included with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes ☐ No ☒ N/A ☐

Comments: Analytical sensitivity was evaluated to verify that reporting limits met applicable Federal MCLs or secondary MCLs for non-detect results, as appropriate. Analytes with RLs that do not meet applicable Federal MCLs are bolded in the analytical results table. Data quality and/or usability may be affected as these analytes cannot be detected, if present, at their respective MCL.

- e. Is the data quality or usability affected?

Yes ☒ No ☐ N/A ☐

Comments: See 5.d. above.

CS Site Name: NA

Lab Report No.: 810-131289-1

6. QC Samples

a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: Method blanks were not reported for hardness, pH, color, or Langelier index. Hardness and Langelier index are calculations and do not include method blanks. Color and pH methods do not include method blanks. Data quality and/or usability not affected.

- ii. Are all method blank results less than LOQ (or RL)?

Yes ☒ No ☐

Comments: No analytes were detected in method blank samples.

- iii. If above LoQ or RL, what samples are affected?

Comments: Not applicable, no analytes were detected in method blank samples.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: No analytes were detected in method blank samples.

- v. Data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: No analytes were detected in method blank samples.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes ☐ No ☒ N/A ☐

Comments: A laboratory duplicate was included for VOC analysis.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: LCS and LLCs were reported for anions, metals, cyanide, nitrite/nitrate, total alkalinity and fluoride analyses.

A LCS was reported for mercury and total dissolved solids.

CS Site Name: NA

Lab Report No.: 810-131289-1

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes ☒ No ☐ N/A ☐

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes ☒ No ☐ N/A ☐

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: %Rs and RPDs were within limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: No samples are affected.

- vii. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: %Rs and RPDs were within limits.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments:

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes ☐ No ☒ N/A ☐

Comments: MS/MSD samples were reported for nitrite/nitrate analysis.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes ☒ No ☐ N/A ☐

Comments:

CS Site Name: NA

Lab Report No.: 810-131289-1

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes ☒ No ☐ N/A ☐

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: Not applicable, %Rs and RPDs were within limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: No samples are affected.

- vii. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: %Rs and RPDs were within limits.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes ☒ No ☐ N/A ☐

Comments:

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes ☒ No ☐ N/A ☐

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐ N/A ☒

Comments: No samples had failed surrogate recoveries.

- iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: %Rs were within limits.

CS Site Name: NA

Lab Report No.: 810-131289-1

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples?

Yes ☒ No ☐ N/A ☐

Comments:

- ii. Are all results less than LoQ or RL?

Yes ☒ No ☐ N/A ☐

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: No analytes were detected in the trip blank sample.

- iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: No analytes were detected in the trip blank sample.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes ☐ No ☒ N/A ☐

Comments: Field duplicate samples were not collected or required for this project.

- ii. Was the duplicate submitted blind to lab?

Yes ☐ No ☒ N/A ☐

Comments: Field duplicate samples were not collected or required for this project.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☐ No ☐ N/A ☒

Comments: Field duplicate samples were not collected or required for this project.

CS Site Name: NA

Lab Report No.: 810-131289-1

iv. Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐

Comments: Field duplicate samples were not collected or required for this project.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?

Yes ☐ No ☒ N/A ☐

Comments: The water sample was the only one collected for this project, so no equipment blank was collected.

ii. Are all results less than LoQ or RL?

Yes ☐ No ☐ N/A ☒

Comments: An equipment blank was not collected.

iii. If above LoQ or RL, specify what samples are affected.

Comments: Not applicable, an equipment blank was not collected.

iv. Are data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: An equipment blank was not collected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?

Yes ☐ No ☐ N/A ☒

Comments: Other data flags/qualifiers not required.

Quality Assurance/Quality Control Summary

CONTENTS

F.1	Introduction	1
F.1.1	Analytical Methods and Data Quality Objectives	1
F.1.2	Data Qualifiers	3
F.1.3	Summary of Soil Samples	3
F.1.4	Summary of Drinking Water Samples	4
F.2	Soil Data Quality Review	5
F.2.1	Sample Collection	5
F.2.2	Sample Handling	6
F.2.3	Blanks	6
F.2.4	Laboratory Control Samples	7
F.2.5	Matrix Spike Samples	7
F.2.6	Surrogates	7
F.2.7	IDAs	8
F.2.8	Field Duplicates	8
F.2.9	Other Quality Control Discrepancies	8
F.2.10	Analytical Sensitivity	9
F.2.11	Summary of Qualified Results	9
F.2.12	Completeness	9
F.3	Drinking Water Data Quality Review	9
F.3.1	Sample Collection	9
F.3.2	Sample Handling	9
F.3.3	Method Blanks	10
F.3.4	Laboratory Control Samples	10
F.3.5	Surrogates	10

APPENDIX F: QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

F.3.6	IDAs	10
F.3.7	Field Duplicates.....	11
F.3.8	Analytical Sensitivity	11
F.3.9	Summary of Qualified Results	11
F.3.10	Completeness.....	11

Exhibits

Exhibit F-1: Definition of Flags.....	3
---------------------------------------	---

APPENDIX F: QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

°C	degrees Celcius
AAC	Alaska Administrative Code
AK	Alaska Method
CCV	continuing calibration verification
CFR	Code of Federal Regulation
CoC	chain-of-custody
DEC	Alaska Departemtn of Environmetnal Conservation
DoD	U.S. Department of Defense
DQO	data quality objective
DRO	diesel range organics
GRO	gasoline range organics
IDA	isotope dilution analytes
LCS	laboraotry control sample
LCSD	laboroatry control sample duplicate
LDRC	labroatory data review checklist
LOD	limit of detection
LOQ	limit of quantitation
MCL	Maximum Contaminant Level
MS	matrix spike
MSD	matrix spike duplicate
MRL	method reporting limit
PCB	polychlorinated biphenyl
PAH	polycyclic aromatic hydrocarbon
PFAS	per- and polyfluoroalkyl substances
PQL	practical quantitation limit
QA	quality assurance
QC	quality control
QSM	Quality Systems Manual
RL	reporting limt
RPD	relative percent difference
RRO	residual range organics
SMCL	Secondary Maximum Contaminant Level
VOC	volatile orgainc compounds
WO	work order

F.1 INTRODUCTION

This quality assurance/quality control (QA/QC) summary outlines the technical review of analytical results generated in support of the Yakutat Water Line Extension project conducted in December 2024.

We reviewed project samples and QC analytical data to assess whether the data met the designated data quality objectives (DQOs) and were acceptable for project use. The project data was reviewed for deviations to the requirements presented in *Final – Yakutat Airport Water Line Extension Exploration Phase Sampling and Analysis Plan*, approved by the Alaska Department of Environmental Conservation (DEC) in August 2024. As appropriate, the review includes evaluation of sample collection and handling, holding times, blanks, project sample and laboratory QC sample duplicates, laboratory control samples (LCSs) and sample surrogate or isotope dilution analyte (IDA) recoveries, and matrix spike sample (MS) recoveries. Calibration curves and continuing calibration verification recoveries were not reviewed unless a QC discrepancy was noted by the laboratory in a case narrative. Full data quality descriptions are reported in the DEC Laboratory Data Review Checklists (LDRC) prepared for each laboratory report. LDRCs and laboratory reports are included in Appendix C, D, and E.

Soil limits of detection (LODs) or reporting limits (RLs) were compared to the most stringent values between the DEC cleanup levels in 18 Alaska Administrative Code (AAC) 75.341 Table B1 and B2 Method Two (Migration to Groundwater or Over 40 Inch Zone Human Health). Aside from per- and polyfluoroalkyl substances (PFAS), drinking water RLs were compared to Drinking Water Standards obtained from the U.S. Environmental Protection Agency's 40 code of Federal regulation (CFR) 141 for Maximum Contaminant Levels (MCLs) and 40 CFR 143 for Secondary Maximum Contaminant Levels (SMCLs). PFAS drinking water RLs were compared to Drinking Water Standards obtained from the EPA PFAS National Primary Drinking Water Regulation dated April 2024.

Soil data quality is discussed in Section F.2, below. Drinking water data quality is discussed in Section F.3, below. Data which did not meet acceptance criteria have been described, and the associated samples and data quality implications or qualifications are summarized.

F.1.1 Analytical Methods and Data Quality Objectives

The analytical methods and associated DQOs used for this review were established in the Work Plan. The DQOs represent the minimum acceptable QC limits and goals for analytical

measurements and are used as comparison criteria during data quality review to determine both the quality and usability of the analytical data.

The six DQOs used for this review were accuracy, precision, representativeness, comparability, sensitivity, and completeness.

- Accuracy measures the correctness, or the closeness, between the true value and the quantity detected. It is measured by calculating the percent recovery of known concentrations of spiked compounds that were introduced into the appropriate sample matrix. IDA, LCS, and MS sample recoveries are used to measure accuracy.
- Precision measures the reproducibility of repetitive measurements. It is measured by calculating the relative percent difference (RPD) between duplicate samples. Laboratory duplicate samples, field duplicate samples, MS and matrix spike duplicate sample (MSD) sample pairs, and LCS and laboratory control sample duplicate (LCSD) pairs are used to measure precision.
- Representativeness describes the degree to which data accurately and precisely represents site characteristics. This is addressed in more detail in the following section(s).
- Comparability describes whether two data sets can be considered equivalent with respect to the project goal. This is addressed in more detail in the following section(s).
- Sensitivity describes the lowest concentration that the analytical method can reliably quantitate and is evaluated by verifying that the detected results and/or limits of detection meet the project-specific cleanup levels and/or screening levels.
- Completeness describes the amount of valid data obtained from the sampling event(s). It is calculated as the percentage of valid measurements compared to the total number of measurements. The completeness goal for this project was set at 90 percent.

In addition to these criteria for the six DQOs described above, sample collection and handling procedures and blank samples were reviewed to ensure overall data quality. Sample collection forms were reviewed to verify that representative samples were collected, and samples were without headspace (if applicable). Sample handling was reviewed to assess parameters such as chain-of-custody documentation, the use of appropriate sample containers and preservatives, shipment cooler temperature, and method-specified sample holding times. Each of these parameters contributes to the general representativeness and comparability of the project data. The combination of evaluations of the above-mentioned items leads to a determination of the overall project data completeness.

F.1.2 Data Qualifiers

Exhibit F-1, below, outlines general flagging criteria used for this project, listed in increasing severity, to indicate QC deficiencies. Data are qualified pursuant to findings determined in the review of project data.

Exhibit F-1: Definition of Flags

Flag	Displayed as	Description
U	< [RL]	The analyte was not detected; the result is listed as less than the RL ¹ .
UJ	< [RL] J*	The analyte was not detected; the listed RL may not represent the true reporting limit due to sample-handling or laboratory QC failures (i.e., the listed reporting limit may be inaccurate or imprecise).
UB	< [RL or reported concentration] B*	The analyte is considered not detected due to sample-contamination identified in a blank; the result is listed as less than the RL or the concentration originally reported in the sample, whichever is greater.
UN	<[RL] N*	The analyte was not detected; the analyte was tentatively not identified, and the not-detected result is an estimated quantity.
J	[Result] J – Flag applied by laboratory [Result] J* – Flag applied by reviewer	The result is an estimated quantity. The analyte was detected below the LOQ or was affected by QC failures.
JL	[Result] JL*	The result is considered an estimated quantity and may be biased low due to QC failures.
JH	[Result] JH*	The result is considered an estimated quantity and may be biased high due to QC failures.
N	[Result] N*	The analyte was tentatively identified, and the result is considered an estimated quantity affected by QC failures.
R	R*	The results are unusable. The sample results are rejected due to severe QC deficiencies. The analyte may or may not be present in the sample.

NOTES:

1 The RL could be the LOQ, PQL or MRL. LOQ, PQL, and MRL are interchangeable terms. Which term is used depends on the laboratory reporting the results.

* Flag applied by reviewer.

LOQ = limit of quantitation, MRL = method reporting limit, PQL = practical quantitation limit, QC = quality control, RL = reporting limit

F.1.3 Summary of Soil Samples

A total of six soil samples were collected from soil borings advanced during December 2024. A trip blank sample was inadvertently not included with the cooler containing samples for volatile analyses. The collection of an equipment blank sample was not required as soil samples were collected employing new, disposable boring liners and clean, stainless-steel

spoons at each boring and sample interval. Soil samples were analyzed by one or more of the following analytical methods:

- per- and polyfluoroalkyl substances (PFAS) by LCMSMS compliant with the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) Version 5.3 Table B-15,
- gasoline range organics (GRO) by Alaska Method (AK)101,
- diesel range organics (DRO) by AK102,
- residual range organics (RRO) by AK103,
- volatile organic compounds (VOCs) by SW8260D,
- polycyclic aromatic hydrocarbons (PAHs) by SW8270-SIM
- polychlorinated biphenyls (PCBs) by SW8082A, and
- Lead by SW6020.

Project and QC samples for PFAS were analyzed by Eurofins Sacramento in West Sacramento, California under DEC contaminated sites laboratory approval program approval 17-020. Project and QC samples for the remaining parameters were analyzed by Eurofins Seattle is Tacoma, Washington under DEC contaminated sites laboratory approval program approval 20-004.

PFAS soil samples were shipped via FedEx directly to Eurofins Sacramento. The remaining parameters soil samples were shipped to Eurofins Seattle via Alaska Airlines Goldstreak. The laboratory reports were assigned the following work order (WO) numbers:

- Eurofins Sacramento: 320-117793-1 and
- Eurofins Seattle: 580-146688-1 Revision 1

The laboratory reports and associated DEC LDRCs are included in Appendix C and D. Soil sample data quality is discussed in Section F.2. Please reference the LDRCs for additional information.

F.1.4 Summary of Drinking Water Samples

A total of one drinking water sample was collected from the temporary well point installed near the future pumphouse location during December 2024, boring B-1. The collection of an equipment blank sample was not required as only one sample was collected using a submersible pump. The drinking water sample was analyzed for the following drinking water methods:

- VOCs by 524.2,
- anions by 300.0,

- metals by 200.7 and 200.8,
- mercury by 245.1,
- pH by 150.1,
- cyanide by 335.4,
- nitrite/nitrate by 353.2,
- color by SM2120B,
- total alkalinity by SM2320B,
- total dissolved solids by SM2540C,
- fluoride by SM4500FC,
- coliform by SM9223B,
- Hardness by SM2340B,
- Langelier index by SM2330B, and
- PFAS by 1633.

The drinking water sample was shipped via Alaska Airlines Goldstreak to Eurofins Eaton Analytical, LLC in South Bend, Indiana under DEC's drinking water program certification IN00035. The laboratory assigned 810-131289-1 as the WO number.

The laboratory report and associated DEC LDRC is included in Appendix E. Drinking water sample data quality is discussed in Section F.3.

F.2 SOIL DATA QUALITY REVIEW

This section presents the findings of the data quality review and the resulting data qualifications for soil samples. Soil samples were analyzed by Eurofins Sacramento under WO 320-117793-1 and Eurofins Seattle under WO 580-146688-1 Revision 1. See the associated LDRCs in Appendix C and D for more elaborate data quality descriptions.

F.2.1 Sample Collection

Soil sample collection associated with boring activities was recorded on soil boring logs provided in Appendix A. The collection of an equipment blank sample was not required as soil samples were collected employing new, disposable boring liners and new, stainless-steel spoons at each boring and sample interval. No sample collection discrepancies were noted.

F.2.2 Sample Handling

The evaluation of proper sample handling procedures includes verification of the following: correct chain-of-custody (CoC) documentation, appropriate sample containers and preservatives, cooler temperatures maintained within the DEC-recommended temperature range (0 to 6 degrees Celsius [°C]), and sample analyses performed within method-specified holding times. The following discrepancies were observed.

- WO 580-146688-1 Revision 1: The lab signed the next relinquished by section of the CoC instead of the received by section of the CoC at sample login. Analyses performed as requested. Data quality and/or usability not affected.
- WO 320-117793-1: The container label for the following sample did not match the information listed on the CoC: B-21 (320-117793-2). The container label lists the following time: 10:45. The sample was logged in and labeled according to the CoC. Data quality and/or usability not affected.

F.2.3 Blanks

Method blanks were utilized to detect potential cross-contamination of project samples. Method blanks detect laboratory cross-contamination. A trip blank sample was inadvertently not included with the cooler containing samples for volatile analyses. The collection of an equipment blank sample was not required as soil samples were collected employing new, disposable boring liners and clean, stainless-steel spoons at each boring and sample interval. The following method blank detections were identified.

- WO 580-146688-1 Revision 1: The following analytes were detected in their respective method blank samples below the LOQ: VOC analyte 1,2,4-Trimethylbenzene and VOC-SIM analytes 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,4-Dichlorobenzene, Bromoform, Chlorodibromomethane, Dichlorobromomethane, Hexachlorobutadiene, 1,1,2-Trichloroethane, Dibromomethane, Tetrachloroethene, Trichloroethene, and Ethylene Dibromide.
 - 1,2,4-Trimethylbenzene was not detected in associated sample B-23 analyzed with the method blank sample for batch 580-480913. Data quality and/or usability not affected.
 - 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,4-Dichlorobenzene, Bromoform, Chlorodibromomethane, Dichlorobromomethane, Hexachlorobutadiene, and 1,1,2-Trichloroethane were not detected in associated sample B-23 analyzed with the method blank sample for batch 580-481242. Data quality and/or usability not affected.
 - Dibromomethane, Tetrachloroethene, and Trichloroethene were detected below the LOQ and within ten times the concentration detected in the method blank sample for batch 580-481242 in associated sample B-23. Consequently, the results of these analytes in the noted sample are considered not detected due to method blank

contamination and are reported at the LOQ and are flagged 'B*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with the applied flags.

- Ethylene dibromide was detected above the LOQ and within ten times the concentration detected in the method blank sample for batch 580-481242 in associated sample B-23. Consequently, the result of this analyte in the noted sample is considered an estimate, biased high, and is flagged 'JH*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with the applied flags.

F.2.4 Laboratory Control Samples

The LCS/LCSD samples were prepared by adding spike compounds to blank samples to assess laboratory extraction and instrumentation performance. LCS and/or LCSD accuracy and precision were within the established control limits with the following exceptions.

- WO 580-146688-1 Revision 1: The VOC LCS/LCSD RPD for acetone was outside laboratory limits for batch 580-480913. Acetone was not detected in the associated project sample B-23; therefore, the result of this analyte in the noted sample is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected, however, data is considered usable with applied flags.

F.2.5 Matrix Spike Samples

MS samples were prepared by adding spike compounds to project samples to assess potential matrix interference. Where performed, the accuracy of analyte recoveries for MS and MSD samples and the precision of the MS/MSD samples were within the established control limits with the following exception.

- WO 580-146688-1 Revision 1: The MS recovery for DRO in parent sample B-23 was above laboratory limits. The DRO concentration in the parent sample was much larger than the spike concentration added. The spike therefore could not be quantified against the background concentration. Data quality and/or usability not affected.

F.2.6 Surrogates

Surrogates (compounds similar to the analytes of interest) were added to some project samples by the laboratory prior to sample extraction, in accordance with method requirements. Surrogate recoveries were then calculated as percentages and reported by the laboratory as a measure of analytical extraction efficiency. Surrogate recoveries were within the established control limits.

F.2.7 IDAs

IDA compounds were added to PFAS project samples by the laboratory prior to analysis in accordance with method requirements. IDAs were then calculated as percentages and reported by the laboratory as a measure of extraction and analytical efficiency, and to evaluate potential matrix interference associated with a specific analyte of interest. IDA recoveries were within control limits for the soil project samples with the following exception.

- WO 320-117793-1: Percent recoveries for 13C2 PFTeDA were below acceptance limits in the MS sample for 537M and the parent sample B-20. The analyte associated with 13C2 PFTeDa is PFTeA. PFTeA was not detected in the parent samples. Consequently, the result of this analyte in the noted sample is considered estimated, no direction of bias, and have been flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

F.2.8 Field Duplicates

A field duplicate pair was inadvertently not collected during field activities.

F.2.9 Other Quality Control Discrepancies

The following additional quality control discrepancies were identified.

- WO 580-146688-1 Revision 1
 - The continuing calibration verification (CCV) associated with batch 580-481244 exhibited low recovery for vinyl chloride. A RL standard was analyzed, and the target analytes were detected. Since the associated samples were non-detect for vinyl chloride, the data are reported. Consequently, the vinyl chloride result in sample B-23 is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.
 - The CCV associated with batch 580-481244 exhibited elevated recovery for Naphthalene. The samples associated with this CCV were non-detect; therefore, the data have been reported. Consequently, the naphthalene result of sample B-23 is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.
- WO 320-117793-1: The "I" qualifier means the transition mass ratio for the indicated analyte was outside the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. The associated analyte(s) have been flagged: B-22 (320-117793-3) and (320-117793-A-1-C MSD). Consequently, the PFHxS result in the noted sample is considered an estimate, no direction of bias, and is flagged 'J*' in the

analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

F.2.10 Analytical Sensitivity

Analytical sensitivity was evaluated to verify that LODs or RLs met applicable DEC's most stringent values between the DEC cleanup levels in 18 AAC 75.341 Table B1 and B2 Method Two (Migration to Groundwater or Over 40 Inch Zone Human Health) for non-detect results, as appropriate. Analytes with LODs that do not meet applicable cleanup levels are bolded in the analytical results table. Data quality and/or usability may be affected as these analytes cannot be detected, if present, at their respective cleanup level.

F.2.11 Summary of Qualified Results

Overall, the data validation process deemed the soil data acceptable for use with applied flags, as noted.

F.2.12 Completeness

Overall, the data validation process deemed the soil data acceptable for use. No data were rejected pursuant to the data quality review, and data may be used as applicable for the purposes of the Yakutat Water Line Expansion Environmental Summary Report.

F.3 DRINKING WATER DATA QUALITY REVIEW

This section presents the findings of the data quality review and the resulting data qualifications for the drinking water sample. See the associated LDRC in Appendix E for more elaborate data quality descriptions. The drinking water sample was analyzed by Eurofins Eaton Analytical, LLC in South Bend, Indiana and was included in one WOs (810-131289-1).

F.3.1 Sample Collection

Drinking water sample collection forms were reviewed to confirm samples were collected properly. Water quality parameters were not collected during development, rather the TWP was purged until the water was clear and at least three well volumes had passed through.

F.3.2 Sample Handling

The evaluation of proper sample handling procedures includes verification of the following: correct chain-of-custody documentation, appropriate sample containers and preservatives, cooler temperatures maintained within the DEC-recommended temperature range (0 to 6

°C), and sample analyses performed within method-specified holding times. The following sample handling discrepancies were noted upon receipt at the laboratory.

- WO 320-117793-1: pH, nitrite/nitrate, nitrate calculation, and coliform analyses were performed after the method specified holding times. Although some holding time exceedances are gross (greater than twice the method hold time), all results are being reported for informational purposes as estimates, no direction of bias, and are flags 'J*' in the analytical table. Data quality is considered affected; however, data is considered usable with the applied flags.

F.3.3 Method Blanks

Method blanks were utilized to detect potential laboratory cross-contamination of project samples. Project samples are considered affected if results are detected within ten times the concentration of the detection in the method blank. Method blanks were not reported for hardness, pH, color, or Langelier index. Hardness and Langelier index are calculations and do not include method blanks. Color and pH methods do not include method blanks. Data quality and/or usability not affected. No analytes were detected in method blank samples.

F.3.4 Laboratory Control Samples

The LCS/LCSD samples were prepared by adding spike compounds to blank samples to assess laboratory extraction and instrumentation performance. LCS/LCSD recoveries and/or RPDs were within laboratory and project limits with the following exception.

- WO 320-117793-1: The PFAS LCS/LCSD precision was outside the data quality objective for NFDHA by method 1633. NFDHA was not detected in the associated project sample B-1. Consequently, the NFDHA result in the noted sample is considered an estimate, no direction of bias, and is flagged 'J*' in the analytical table. Data quality is considered affected as noted, however, data is considered usable with applied flags.

F.3.5 Surrogates

Surrogates (compounds similar to the analytes of interest) were added to some project samples by the laboratory prior to sample extraction, in accordance with method requirements. Surrogate recoveries were then calculated as percentages and reported by the laboratory as a measure of analytical extraction efficiency. Surrogate recoveries were within the established control limits.

F.3.6 IDAs

IDA compounds were added to project samples by the laboratory prior to analysis, in accordance with method requirements. IDAs were then calculated as percentages and reported by the laboratory as a measure of extraction and analytical efficiency, and to

evaluate potential matrix interference associated with a specific analyte of interest. IDA recoveries were within the established control limits.

F.3.7 Field Duplicates

Field duplicate samples were not a part of the scope of drinking water sample collection.

F.3.8 Analytical Sensitivity

Analytical sensitivity was evaluated to verify that reporting limits met applicable Federal MCLs, SMCLs, or PRAS Drinking Water Standards obtained from the EPA PFAS National Primary Drinking Water Regulation dated April 2024 for non-detect results, as appropriate. Analytes with RLs that do not meet applicable limits are bolded in the analytical results table. Data quality and/or usability may be affected as these analytes cannot be detected, if present, at their respective MCL.

F.3.9 Summary of Qualified Results

Overall, the data validation process deemed the drinking water data acceptable for use with applied flags.

F.3.10 Completeness

Overall, the data validation process deemed the drinking water data acceptable for use. No data were rejected pursuant to the data quality review, and data may be used as applicable for the purposes of the Yakutat Water Line Expansion Environmental Summary Report.

IMPORTANT INFORMATION

Important Information

About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining

your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims

being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland