SUBMITTED TO:
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6474 E Palmer Wasilla Hwy
Palmer, Alaska 99645

BY:
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FINAL

SAMPLING AND ANALYSIS PLAN

Avis Car Wash and Maintenance Facility Expansion

FAIRBANKS, ALASKA

SHANNON & WILSON

November 2022

Shannon & Wilson No: 109759

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Submitted To: TBI Construction Co.
6474 E Palmer Wasilla Hwy
Palmer, Alaska 99645
Attn: Mr. John Rowe, PLA

Subject: FINAL SAMPLING AND ANALYSIS PLAN, AVIS CAR WASH AND MAINTENANCE FACILITY EXPANSION, FAIRBANKS, ALASKA

Shannon & Wilson has prepared this Sampling and Analysis Plan (SAP) and participated in this project as a consultant to TBI Construction Company (TBI). Our scope of services was specified in the *Proposal for Geotechnical Services; Avis Car Wash and Maintenance Facility Expansion; Fairbanks, Alaska* dated July 14, 2022. This SAP presents the proposed approach for collecting analytical soil samples associated with 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 SAP, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.

Michael Jaramillo
Senior Chemist

Nathan Adamczak, Project Manager
For Michael Jaramillo

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ACRONYMS

°C	degree Celsius
°F	degree Fahrenheit
AAC	Alaska Administrative Code
bgs	below the ground surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
COC	chain of custody
COPC	contaminant of potential concern
DEC	Alaska Department of Environmental Conservation
DoD	Department of Defense
DOE	Department of Energy
EPA	Environmental Protection Agency
Eurofins	Eurofins Environmental Testing America
GRO	Gasoline Range Organics
PID	Photoionization Detector
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PM	project manager
POC	point of contact
ppm	parts per million
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QES	qualified environmental sampler
QSM	Quality Systems Manual
Shannon & Wilson	Shannon & Wilson, Inc.
SAP	Sampling and Analysis Plan
SGS	SGS North America, Inc.
TBI	TBI Construction Company

1 INTRODUCTION

Shannon & Wilson, Inc. (Shannon & Wilson) has developed this Sampling and Analysis Plan (SAP) for soil sampling activities to assist TBI Construction Company (TBI) with environmental exploration at the Avis Car Wash and Maintenance Facility Expansion, in Fairbanks, Alaska. The purpose of the overall project is to remove the current Avis Car Wash and Maintenance Facility and replace it with a new 5,700 square-foot facility. We understand the proposed facility will be constructed over the original building footprint. The new building will be used by the owner to wash and maintain their rental car fleet, and includes office and breakroom areas, restrooms and laundry, and a mechanical/electric room.

The current Avis car wash maintenance facility is designated as a contaminated site with institutional controls by the Alaska Department of Environmental Conservation (DEC) due to the presence of gasoline range organics (GRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) under DEC File No. 100.26.176. The project site also lies within the bounds of a per- and polyfluoroalkyl substances (PFAS) groundwater-contaminant plume (DEC File No. 100.38.277) associated with the Fairbanks International Airport. Based on this information, the COPCs for this site include PFAS, GRO, and BTEX.

This SAP consists of three sections. Section 1 provides project purpose, scope of services, general information, and the project team list. Section 2 presents the field sampling plan, and Section 3 presents the Quality Assurance Project Plan (QAPP). We have also included the applicable Project Field Forms (Appendix A).

1.1 Project Description

The work performed under this SAP will support efforts associated with the removal of the current Avis Car Wash and Maintenance Facility. Shannon & Wilson's field activities, as described in this SAP and the separate geotechnical work plan, are intended to obtain information on subsurface conditions by collecting soil samples for geotechnical and chemical analysis. Shannon & Wilson will provide one summary report presenting the findings from the geotechnical and chemical findings from investigation activities.

The work described in this SAP covers analytical sampling to be conducted during geotechnical drilling activities. Our field services and analytical sampling results will be used to identify areas of soil and sediment contamination that will need to be addressed during construction activities.

We plan to advance four borings to a depth of fifteen feet below ground surface (bgs) and one boring to a depth of fifty feet bgs using a drill rig equipped with a hollow stem auger and split-spoon sampling techniques. The shallow borings will be performed in the paved parking lot and the deep drilling will occur within the footprint of the old Avis Car Wash and Maintenance Facility (Figure 1). We will field screen soil for volatile compounds using a photoionization detector (PID). Soil borings will be field screened at a minimum frequency of one sample for every five feet, until the groundwater table is encountered. We plan to collect approximately four analytical samples from each boring, as described in the sections below. Samples will be submitted for analysis of PFAS, BTEX, and GRO analyses. Field duplicate samples will be collected at a frequency of 10-percent of the total number of primary samples collected, with a minimum one field duplicate collected per day and/or analysis batch.

1.2 Environmental Scope of Services

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

- Preparing this SAP;
- Consulting with agencies and finalizing the SAP;
- Collecting soil samples from five geotechnical borings for chemical analysis;
- Submitting soil samples to a DEC-certified analytical testing laboratory;
- Preparing a summary report of the results of chemical analysis, separate from the geotechnical reporting.

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

1.3 Project Team

Chris Darrah is Shannon & Wilson's Principal-in-Charge and is responsible for overseeing the contract requirements for the project. Nathan Adamczak is Shannon & Wilson's Project Manager (PM) and is responsible for the routine technical, financial, and administrative aspects of the project. He will oversee the day-to-day operations and correspondence and be responsible for final review of Shannon & Wilson's submittals. Michael Jaramillo will serve as Shannon & Wilson's Environmental Lead. He will be the point of contact for the environmental field sampling operations and will be responsible for Shannon & Wilson's environmental report.

Shannon & Wilson's geotechnical and environmental field staff will be identified prior to mobilization, depending on staff availability. Shannon & Wilson's project team will include

an experienced geotechnical staff member and a State of Alaska Qualified Environmental Sampler (QES). This person will be responsible for implementing the soil sampling tasks in accordance with this SAP and the geotechnical work plan and supporting reporting tasks.

The project team points of contact (POCs) and their responsibilities are summarized in Exhibit 1-1 below.

Exhibit 1-1: Project Team

Affiliation	Responsibility	Representative	Contact Number
DOT&PF	FAI POC, Environmental Manager	Elise Thomas	(907) 474-2598
	Statewide PFAS POC	Sammy Cummings	(907) 888-5671
DEC	DEC Staff	Robert Burgess	(907) 451-2153
TBI Construction Co.	Client	Jason Bergman	(907) 376-1685
Shannon & Wilson	Principal-in-charge	Chris Darrah, CPG, CPESC	(907) 458-3143
	Project Manager	Nathan Adamczak	(907) 987-5246
	Environmental Lead	Michael Jaramillo	(907) 458-3156
SGS North America, Inc.	BTEX and GRO analytical laboratory services	Jen Dawkins	(907) 474-8656
Eurofins Environmental Testing America, Sacramento	PFAS analytical laboratory services	David Alltucker	(916) 374-4383

2 FIELD SAMPLING PLAN

Our field sampling plan is discussed in this section, as described below.

2.1 Rationale

The planned site exploration effort will include geotechnical drilling and environmental sampling. We plan to advance and sample five borings within the project area and submit soil samples for analysis of PFAS, BTEX, and GRO (Figure 1).

2.2 Field Screening Procedures

Our QEP will be present during the subsurface explorations to conduct field screening for volatiles with a PID. Field screening will only be performed on soils above the groundwater table. The PID can detect some volatile organic compounds but is not able to detect PFAS or other non-volatile compounds. Currently, there are no field-screening methods for PFAS analytes.

We will use a PID to field-screen soil for volatile contamination using the heated headspace methodology described in the DEC *Field Sampling Guidance*, dated January 2022. We will use a hand-held Rea Systems, Inc. MiniRae3000, or equivalent for field screening. The PID measures total volatile compounds present in vapors as a semi-quantitative indication of volatile contamination. The MiniRae provides a three-second response time up to 10,000 parts per million (ppm). We will calibrate the PID daily, or more often as needed, to a 100-ppm isobutylene standard according to the manufacturer's instructions. Shannon & Wilson field representatives are trained and experienced in the calibration, operation, routine maintenance, and troubleshooting of the PID, as well as interpreting PID results.

We will retrieve headspace samples from split spoons using a clean, stainless-steel spoon and place the soil in a clean, sealable plastic bag, filling it one-third to one-half full and quickly sealing it closed. We will maintain the headspace samples within our custody and screen the headspace samples within one hour of collection.

We will allow the headspace to develop in the bag by warming it to at least 40 degrees Fahrenheit (°F) for 10 minutes to one hour, shaking the bag for 15 seconds at the beginning and end of the period to assist volatilization. We will open the bag just enough to allow insertion of the PID probe about one-half the headspace depth, taking care to avoid uptake of water droplets and soil particles. We will record the maximum PID reading obtained, noting any erratic meter response or conditions of elevated headspace moisture. PID results will be presented in the Environmental Summary report on the logs for each boring.

2.3 Soil Sampling Procedures

A Shannon & Wilson QES will collect analytical soil samples from the five geotechnical borings. The QES will collect quality control (QC) samples, as described in Section 4.

Our drilling subcontractor will advance the five soil borings using the hollow stem auger and split-spoon sampling method. Boring locations were selected to target areas that will eventually be the site of the new building and parking lots. We assume four analytical samples will be collected from each boring location; one surface-soil sample at least 6-inches below grade and subsurface samples at 5-foot intervals until the groundwater table is identified. Groundwater is anticipated to be approximately 15-feet below grade or potentially shallower. If the 15-foot borings terminate within the smear zone, the full suite of analyses will be requested. If the 15-foot borings terminate below the water table, the corresponding sample will only be analyzed for PFAS. The 50-foot boring will have one sample collected at the near-surface, vadose zone, and smear zone for the full suite of analyses. An additional sample will be collected from at least 5-feet below the water table and analyzed for PFAS.

The samples will be collected in a manner that is consistent with the procedures identified in the DEC *Field Sampling Guidance* and defined in this project-specific SAP.

Field personnel will wear a new pair of disposable nitrile gloves during collection and handling of each soil sample to prevent cross-contamination. Samples will be collected using a new, stainless-steel spoon or similar tool, after which the soil will be quickly placed into new, laboratory-supplied jars appropriate for the analysis to be performed. After collection, the samples will be placed into a designated sample cooler maintained between 0 degrees Celsius (°C) and 6 °C with ice-substitute. The PFAS samples will be individually bagged, as well as the ice substitute to prevent cross contamination.

2.4 Special Considerations for PFAS Sampling

Because PFAS is found in numerous everyday items, the following special precautions will be taken during sampling activities:

- No use of Teflon®-containing materials (e.g., Teflon® tubing, bailers, tape, sample container lid liners, or plumbing paste).
- No Tyvek® clothing will be worn on-site.
- Clothes treated with stain-, flame-, or rain-resistant coatings will be avoided or go through several washings prior to use on-site.
- No Post-It® notes will be brought on-site.
- No fast-food wrappers, disposable cups, or microwave popcorn will be brought on-site.
- After handling the above items, field personnel will wash their hands thoroughly with soap and water prior to sampling activities.
- No use of foil.
- No use of chemical (blue) ice packs. Ice substitutes used in coolers will be stored in a separate plastic bag to avoid contact with sample containers and minimize the potential for cross contamination.
- Sample containers will be stored in separate Ziplock® bags to minimize the potential for cross contamination.
- Nitrile gloves will be changed between each sample location.
- No preservative, other than chilling is required for PFAS analysis soil samples.
- Label jars using permanent, waterproof ink.

2.5 Decontamination Procedures

All non-disposable sampling equipment introduced into or contacting soil at the site will be decontaminated prior to reuse. We will decontaminate sampling equipment using a three-part process as follows:

- A thorough wash with Alconox detergent;
- Potable water rinse; and
- PFAS-free water rinse.

We will treat the decontamination rinse water through a granular activated carbon filtration system and discharge the treated water to the ground surface at the vegetated area at the northeast corner of the site along Old Airport Road and at least 100 feet away from the surface water body to the northwest.

2.6 Laboratory Analysis

Based on the available information for potential contamination in the area, we will submit the soil samples for analysis of 18 PFAS as listed in Environmental Protection Agency (EPA) Method 537 Modified Method that complies with the Department of Defense/Department of Energy (DoD/DOE) Quality Systems Manual (QSM) Version 5.4 Table B-15. We will also submit soil samples for analysis of GRO by method AK101 and BTEX by method 8021.

We will submit the samples and request a standard turnaround time of approximately 15 business days. Analytical results will be compared to 18 Alaska Administrative Code (AAC) 75.341 *Table B1 Method Two—Migration to Groundwater* and *Table B2 Method Two-Petroleum Hydrocarbon Soil Cleanup Levels*. The current DEC CULs and analytical reporting limits for these site contaminants of potential concern (COPCs) are summarized below in Exhibit 2-1.

Exhibit 2-1: Soil COPCs and Laboratory Reporting Limits

Method	Analyte	Units	Soil Cleanup Level[a]	Laboratory Reporting Limit[b]
Fuel Analytes				
AK101	GRO	mg/kg	300	2.50
SW8021 (BTEX)	Benzene	µg/kg	22	6.25
	Toluene	µg/kg	6,700	12.5
	Ethylbenzene	µg/kg	130	12.5
	Xylenes	µg/kg	1,500	37.5
PFAS Analytes				
DoD/DOE QSM V5.3 Table B-15[c]	PFOS	µg/kg	3.0	0.20
	PFOA	µg/kg	1.7	0.20

Notes:

a. Soil Cleanup Levels obtained from 18 AAC 75.341 Table B1. Method Two - Migration to Groundwater and Table B2. Method Two - Under 40 Inch Zone - Migration to Groundwater.

b. September 2022 RLs from Eurofins Environmental Testing America, Sacramento for PFAS analyses.

c. 18 PFAS analytes will be requested for analytical reports. However, only PFOS and PFOA have a DEC soil cleanup levels and are reported in this table.

AAC = Alaska Administrative Code; BTEX = benzene, toluene, ethylbenzene, xylenes; DOE = Department of Energy; DoD = Department of Defense; GRO = Gasoline Range Organics; µg/kg = microgram per kilogram; mg/kg = milligram per kilogram; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid; QSM = Quality Systems Manual.

2.7 Sample Preservation and Holding Times

Prior to field-sampling efforts, Shannon & Wilson will request sample containers from Eurofins Environmental Testing America (Eurofins) and SGS North America, Inc. (SGS). Sample containers, preservation requirements, and holding times for selected soil analyses are shown in are shown in Exhibit 2-2. Samples will be submitted to the Eurofins laboratory in West Sacramento, California for PFAS analysis and SGS Anchorage, Alaska laboratory for GRO and BTEX analyses. Both laboratories are DEC-certified for the requested analysis.

Exhibit 2-2: Soil Sample Storage, Preservation, and Holding Time Requirements

Analyte	Method	Container	Preservation	Holding Time
PFAS	DoD QSM 5.3 Table B-15	4-oz polypropylene jar	0 °C - 6 °C	14 days to extraction
GRO	AK101	4 oz prewt'd amber (2nd 4 oz unpreserved % solids jar if no other analyses)	MeOH+BFB; Chill recommended	14 days to extraction
BTEX	8021	4 oz prewt'd amber (2nd 4 oz unpreserved % solids jar if no other analyses)	MeOH+BFB;0 °C - 6 °C	14 days to extraction

BFB = 4-bromofluorobenzene; BTEX = benzene, toluene, ethylbenzene, xylenes; DOE = Department of Energy; DoD = Department of Defense; GRO = Gasoline Range Organics; MeOH = methanol; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid; QSM = Quality Systems Manual.

2.8 Sample Custody, Storage, and Shipping

Prior to delivery to the laboratory, soil samples will be in the custody of Shannon & Wilson at all times. During field activities, the field representative will store the samples in a cooler with adequate quantities of ice substitute to maintain samples between 0 °C and 6 °C. At the end of each field day, if not shipped to the laboratory, the field representative will transfer the samples to the designated sample refrigerator in Shannon & Wilson's Fairbanks Office.

The field representative will complete chain-of-custody (COC) records to document sample possession from the point of collection to the time of receipt by the laboratory's sample-control center. Shannon & Wilson will keep a copy of the COC record to allow sample accountability between field and laboratory.

Shannon & Wilson will ship samples to the analytical laboratory with sufficient time to allow the laboratory to extract the sample within the holding time requirements of the test method. The field representative will pack the samples in a hard-plastic cooler with bubble wrap and enough ice substitute to maintain samples between 0 °C and 6 °C during travel. The field representative will pack a temperature blank with the samples in each cooler, carefully tape the cooler shut, and affix dated and signed custody seals across the front of the hinged cooler lid.

2.9 Soil Containerization, Storage, and Disposal

The drilling subcontractor will backfill each boring with bagged pea gravel. The drilling subcontractor will place excess soil cuttings not selected for geotechnical or environmental samples into a 55-gallon drum with a label to identify the waste stream. The soil cuttings will be segregated into drums based on the water content. Soil saturated cuttings or cuttings from within the smear zone will be drummed separately from cuttings resulting from the vadose zone. These soils will be held onsite until analytical results from the sampling event are received and reviewed. Shannon & Wilson will provide recommendations for soil disposal in the environmental report. Shannon & Wilson will coordinate with TBI to determine the party responsible for coordinating with a subcontractor to transport the excess soils to a treatment or disposal facility.

2.10 Field Notes

Shannon & Wilson staff will document our field activities, procedures, and observations in the Field Activities Daily Log presented in Appendix A. The field representative will sign and date each page on the log. The field representative will write entries in the log in waterproof ink, including at least:

- Name of person performing field sampling;
- Names and affiliations of pertinent field contacts;
- Date and time(s) of sampling;
- Date, time, and location of tests;
- GPS coordinates for locations of boreholes;
- Field observations and comments;

- Unusual/unexpected problems, including observations of leaks, releases, signs of soil contamination, or other unusual items;
- Site photograph notes and sketches;
- Deviations from the work plan; and
- Weather conditions.

2.11 Submittals and Schedule

Shannon & Wilson's field representative will complete a field activity report for each day we are present on site for soil sampling. The report will include field observations, sampling activities and a sample log. We will produce a summary of analytical soil test results in an environmental letter report within 60 days of receipt of the analytical soil samples.

3 QUALITY ASSURANCE PROJECT PLAN

Quality assurance (QA) and QC are important components of an environmental site investigation. QA is the integrated program for measuring the reliability of data. QC is the routine use of specific procedures set forth to meet defined standards for sampling and analysis. This QA/QC plan describes specific procedures to be followed so the sampling, documentation, and laboratory data are effective and do not detract from the quality and reliability of the results.

3.1 Field Instrument Use and Calibration

Equipment and instrument calibration assure accurate and reliable measurements are obtained. The field representative will calibrate the PID daily, or more often as necessary, with a 100-ppm isobutylene standard and adjust it to operate within the manufacturer's specifications. The field representative will record calibration results, instrument maintenance, and error messages in the field notebook and the designated PID logbook kept with the instrument. The field representative will clean the detector lamp and replace the inlet filter regularly, in accordance with the manufacturer's instructions, or as required.

3.2 QC Samples

In addition to the primary project samples, the field representative will collect and submit QA/QC samples including field-duplicate samples for laboratory analysis. The field representative will collect field-duplicate samples at a minimum of 10-percent of samples submitted for laboratory analysis, with a minimum of one field duplicate per day and/or analysis batch. If possible, the field representative will collect soil duplicate samples from

locations suspected to be contaminated. The field representative will assign a separate sample number to duplicates and submit them "blind" to the laboratory. We will use duplicate sample results to test comparability of analytical data. If the detected results exceed a relative standard deviation of more than 50-percent, the sample results will be considered non-homogenous, and the higher result will be used for reporting purposes.

A laboratory-provided trip blank will accompany every cooler with volatile samples. This QC sample will be used to assess potential laboratory cross contamination between samples during collection and transit.

Analytical samples will be collected with non-reusable sampling equipment. We will not perform decontamination of disposable sampling equipment; therefore, we do not need to collect equipment-rinsate blank samples.

3.3 Data Quality Objectives

The QA objective for measurement data is to verify environmental monitoring data are of known and acceptable quality. Due to the heterogeneous nature of soils, exact duplication of soil samples is not possible. In addition, matrix interference in soil samples can adversely affect comparability of duplicate laboratory results. For analytical data, the objective is to meet acceptable QA standards of precision, accuracy, representativeness, comparability, and completeness. These data quality objective (DQO) terms are defined below:

- Precision is a measure of mutual agreement among replicate or duplicate measurements of the same analyte. The laboratory objective for precision is to equal or exceed the precision demonstrated for similar samples and shall be within the established control limits for the methods as published by the EPA. Precision will be measured as the relative percent difference (RPD) between project and duplicate samples. Precision DQOs are listed in Exhibit 3-1.
- Accuracy is a measure of bias in a measurement system. Accuracy will be expressed as the percent recovery of an analyte from a surrogate or matrix spike sample, or a standard reference material. The laboratory objective for accuracy is to equal or exceed accuracy demonstrated for these analytical methods on similar samples and shall be within the established control limits for the methods as published by the EPA. Accuracy DQOs are shown as the upper and lower recovery limits in Exhibit 3-1.
- Representativeness is a quality characteristic attributable to the type and number of samples to be taken so as to be representative of the medium/environment (e.g., soil or water). Representativeness is not associated with a numeric DQO. To meet this DQO, sample locations will be selected in the field to be representative of the soil at that location, within the constraints of sample-location guidelines in the regulations.

- Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Comparability is not associated with a numeric DQO. To meet this DQO, the sampling method employed, methods used for the transfer of samples to the analytical laboratory, and analytical techniques implemented at the laboratory shall be performed in a uniform manner.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. The objective of completeness is to generate an adequate database to successfully achieve the goals of the investigation. The Completeness DQO is 85%.

According to the manufacturer's information, the measurement accuracy of the MiniRae PID is ±10 percent of a reading or ±2 ppm, whichever is greater, between 0 and 2,000 ppm. The accuracy is ±20 percent of a reading above 2,000 ppm. The precision is one percent of calibration (calibrated with 100 ppm isobutylene).

Numeric Data Quality Objectives for this project are presented in the Exhibit 3-1.

Exhibit 3-1: Soil COPCs and Laboratory Data Quality Objectives

Method	Analyte	Recovery Upper Limit	Recovery Lower Limit	RPD
Fuel Analytes				
AK101	GRO	60	120	20
SW8021 (BTEX)	Benzene	77	121	20
	Toluene	77	121	20
	Ethylbenzene	76	122	20
	Xylenes	78	124	20
PFAS Analytes				
DoD/DOE QSM V5.3 Table B-15[c]	PFOS	68	136	20
	PFOA	69	133	20

BTEX = benzene, toluene, ethylbenzene, xylenes; DOE = Department of Energy; DoD = Department of Defense; GRO = gasoline range organics; PFAS = per- and polyfluoroalkyl substances; PFOA = perfluorooctanoic acid; PFOS = perfluorooctanesulfonic acid; QSM = Quality Systems Manual; RPD = relative percent difference.

3.4 Laboratory Data Deliverables

Shannon & Wilson will request standard Level II Data Deliverables from the analytical laboratory for transmittal with the summary report. Analytical results will be reported down to the laboratory limit of detection. We will also include our own internal QA assessment and submit a copy of the completed DEC laboratory data review checklist.

4 REFERENCES

Alaska Department of Environmental Conservation, June 2021, *18 AAC 75: Oil and Other Hazardous Substances Pollution Control*.

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

Alaska Department of Environmental Conservation, October 2019, *Minimum Quality Assurance Requirements for Sample Handling, Reports, and Laboratory Data.*

1 C-01 CONCEPT SITE PLAN

SCALE 1" = 20'

- 15-foot boring
- 50-foot boring

NOTES

1. THE LAYOUT AS SHOWN DOES NOT MEET THE 20' FRONT YARD SETBACK AS REQUIRED IN LIGHT INDUSTRIAL ZONING. A WAIVER MAY BE REQUIRED.
2. PARKING LINES ARE SHOWN FOR LAYOUT PURPOSES ONLY. PARKING SHALL REMAIN GRAVEL.
3. BOLLARDS, BULL RAILS, OR OTHER BARRIERS MAY BE NEEDED TO PREVENT CARS FROM ENTERING INFILTRATION SWALES.

Design Alaska
Architects · Engineers · Surveyors
601 College Road Fairbanks AK 99701
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AVIS CAR WASH AND MAINTENANCE FACILITY

CONCEPT SITE PLAN

C-01

APPENDIX A: FIELD FORMS

Appendix A

Field Forms

CONTENTS

FIELD ACTIVITIES DAILY LOG

Date _____
Sheet ____ of ____
Project No. _____

Project Name: _____
Field activity subject: _____
Description of daily activities and events: _____

Visitors on site: _____

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

Weather conditions: _____

Important telephone calls: _____

Personnel on site: _____
Signature: Date:

SAMPLE COLLECTION LOG

Project Number: Location: Page of

Date:

Sampler:

Sample Number	Location	Sample Time	Depth Interval (ft) top	Depth Interval (ft) bottom	Matrix Type	Sampling Method	Sample Type	PID Reading	Analyses

Matrix Type		Sampling Method		Sample Type	
AR	Air	B	Bailer/Coliwasa	ES	Environmental sample
GW	Groundwater	D	Drill cuttings	ER	Equipment rinsate
PR	Product	G	Grab sampling	FB	Field blank
SB	Subsurf. soil	H	Hand auger	FD	Field duplicate
SE	Sediment	L	Tube liner	FM	Field measurement
SG	Sludge	P	Pump (liquid)	FR	Field replicate
SS	Surface soil	SS	Split spoon	MD	Matrix spike duplicate
SW	Surface water	T	Shelby tube	MS	Matrix spike duplicate
WR	Water	V	Vacuum (gas)	TB	Trip blank
		W	Wipe sampling		

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Page_____ of_____

Laboratory_____

Attn:_____

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab							Total Number of Containers	Remarks/Matrix

Project Information	Sample Receipt	
Project Number:	Total Number of Containers	
Project Name:	COC Seals/Intact? Y/N/NA	
Contact:	Received Good Cond./Cold	
Ongoing Project? Yes ☐ No ☐	Delivery Method:	
Sampler:	(attach shipping bill, if any)	

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 30000

IMPORTANT INFORMATION

Important Information

About Your Sampling ana Analysis Plan

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining

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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

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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