

**Underground Storage Tank Closure Assessment
Buckner Building
Whittier, Alaska
Facility Identification Number 3614**

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Alaska Department of Environmental Conservation
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TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1
2.0 SITE AND PROJECT DESCRIPTION	1
3.0 FIELD ACTIVITIES	2
3.1 UST Removal Procedures	2
3.2 Soil Sample Collection and Screening	3
3.3 Investigation Derived Waste	4
4.0 LABORATORY ANALYSIS	4
5.0 DISCUSSION OF RESULTS	4
5.1 Soil Samples	4
5.2 Quality Assurance Summary	5
6.0 SUMMARY	6
7.0 CLOSURE/LIMITATIONS	6

LIST OF TABLES

1	Sample Locations and Descriptions
2	Summary of Analytical Results

LIST OF FIGURES

1	Vicinity Map
2	Site Plan
3	Soil Sampling Plan

LIST OF APPENDICES

A	Site Photographs
B	ADEC Forms
C	Field Notes
D	Disposal Documentation
E	Results of Analytical Testing by SGS North America Inc. and ADEC Laboratory Data Review Checklist
F	Important Information About Your Geotechnical/Environmental Report

**UNDERGROUND STORAGE TANK CLOSURE ASSESSMENT
BUCKNER BUILDING
WHITTIER, ALASKA
FACILITY IDENTIFICATION NUMBER 3614**

1.0 INTRODUCTION

This report presents the results of our underground storage tank (UST) closure assessment conducted at the Buckner Building in Whittier, Alaska. One 2,500-gallon UST that was used to store gasoline fuel for an emergency generator was removed from the ground on October 4, 2017.

The UST closure assessment was conducted in material accordance with the Alaska Department of Environmental Conservation (ADEC) 18 Alaska Administrative Code (AAC) 78 UST Regulations (March 23, 2017) and our June 2017 work plan which was approved by Ms. Lisa Griswold of the ADEC, in a letter dated June 13, 2017. The project was conducted under Shannon & Wilson's ADEC Hazardous Substance Spill Prevention and Cleanup Term Contract 18-8036-03. Authorization to proceed with the field activities was received from the ADEC on March 23, 2017 with Notice to Proceed No. 170007855 and Amendments 1 and 2, dated May 31 and August 1, 2017, respectively. Authorization to proceed with the reporting activities was received from the ADEC on September 30, 2017 with Purchase Order 180003844-1.

2.0 SITE AND PROJECT DESCRIPTION

According to the ADEC's registered UST database, the site is assigned Facility Identification Number 3614 and the City of Whittier is the listed tank owner. A vicinity map showing the project site and surrounding area is included as Figure 1 and a site plan is included as Figure 2. The Buckner Building was constructed in seven sections (Sections A through G as shown on Figure 2). The UST was located southeast of Section A between Sections B and C (Photos 1 and 2 in Appendix A).

The UST closure assessment was conducted between August 29 and October 4, 2017 and consisted of monitoring the removal of one 2,500-gallon UST and associated piping, and characterizing the soil at the excavation limits and in a soil stockpile. A Shannon & Wilson representative, who is an ADEC-Qualified Person as defined by 18 AAC 78.995, was present during the tank removal efforts, collected field screening and analytical soil samples, and coordinated with the project laboratory for analytical testing. B.C. Excavating, LLC (BCX) provided a certified UST worker and the equipment and personnel for tank removal, soil excavation, and excavation backfilling activities. NRC Alaska, LLC treated/disposed of water and gasoline which was removed from the tank. SGS North America Inc. (SGS) performed the laboratory testing of analytical soil samples. BCX, NRC, and SGS are located in Anchorage and were subcontracted to Shannon & Wilson.

3.0 FIELD ACTIVITIES

With ADEC approval, an *Intent to Close or Change in Service* form was not submitted prior to initiating the UST removal. A *Post Closure Notice* was submitted after completing the UST removal and closure assessment. The completed *ADEC Site Assessment/Release Investigation Summary Form* and *Post Closure Notice* are included in Appendix B. A copy of the field notes is presented in Appendix C.

3.1 UST Removal Procedures

Prior to removal of the UST, the City of Whittier provided the equipment and personnel to remove concrete and dock debris preventing access to the UST (Photo 1). The material was stockpiled adjacent to Sections B and C (Photo 2).

On August 29, 2017, the UST removal process was initiated by removing stockpiled soil, which included vehicle parts and building debris, from the tank location (Photo 3). The material was placed southwest of the UST, adjacent to the building. Next, overburden was removed from the UST location (Photo 4). The overburden was temporarily stockpiled adjacent to the excavation on a 20-mil liner. An approximately 4-inch diameter fill pipe was encountered approximately 1 foot below ground surface (bgs) (Photo 5). An electronic water/product meter was inserted into the fill pipe. Approximately 5 feet of product was measured in the tank. The excavation was backfilled, pending removal of the product. On September 6, 2017, NRC pumped 1,884 gallons of gasoline and 164 gallons of water from the tank. The gasoline/water was recycled/treated at NRC's Anchorage facility. The disposal receipts are included in Appendix D.

The UST excavation activities resumed on September 20, 2017 (Photo 6). The top of the tank was encountered at approximately 11 feet bgs. Due to the presence of wood cribbing, bedrock, stockpiled soil and concrete, and the building, the excavation sidewalls could not be sloped safely to expose the top of the tank for inerting. Therefore, the excavation was backfilled until a trench box could be mobilized to the site.

A trench box was delivered to the site on October 4, 2017 and the excavation activities resumed. The subject UST was a single-walled, cylindrical, steel vessel with its long axis in a northeast-southwest direction. The UST measured 6.4 feet in diameter and was 10.9 feet long. No holes were observed in the tank. Piping connected to the UST consisted of one 2-inch diameter tank vent pipe, one 4-inch diameter fill pipe, and one 1-inch diameter steel feed line. The vent pipe and feed line were cut off at the UST and removed from the excavation sidewall adjacent to the building. Once tank was uncovered, a trench box was utilized to access and inert the tank (Photo 7). The tank was inerted with dry ice and monitored with an explosimeter by BCX.

An excavator was used to remove the soil from around the tank and remove the UST from the excavation (Photo 8). The excavated material was placed on a 6-mil liner southeast of the

excavation (Photo 9). The excavation measured approximately 17 feet by 25 feet at the surface, with a maximum depth of about 17.5 to 18 feet bgs. The excavation was limited to the northwest by the building and a concrete sidewalk, and to the northeast and southwest by stockpiled soil and concrete debris.

Subsurface materials encountered in the tank excavation generally consisted of sands and gravels. Bedrock was encountered to the southwest and buried wooden cribbing was encountered to the northeast. Groundwater was observed at approximately 17.5 feet bgs.

Approximately 240 cubic yards of soil were generated during removal of the UST. With ADEC approval, this stockpile and soil previously stockpiled adjacent to the structure by others was used to backfill the excavation following sampling (Photo 10).

3.2 Soil Sample Collection and Screening

Following completion of the excavations, headspace screening samples were collected from the limits of the UST excavations to guide analytical sample collection. Seven headspace samples were collected from the excavation sidewalls and base, and 24 headspace samples were collected from the stockpile. Each sample was screened in the field for volatile organic compounds (VOCs) using a Thermo Environmental Instruments OVM 580B PID and an ADEC-approved headspace sampling method. Headspace samples were collected in re-sealable plastic bags by filling them with freshly exposed soil to about one-half capacity and then sealing the top. Headspace samples were allowed to warm to a common temperature of about 50 to 60 degrees Fahrenheit prior to field headspace screening. Field headspace readings were obtained within 1 hour of sample collection. Screening was accomplished by inserting the PID sampling probe into the air space above the soil in the bag and recording the maximum reading.

Three analytical soil samples were collected from the excavation base; and one sample was collected from the excavation sidewalls based on the headspace screening results. For characterization purposes one analytical stockpile soil sample was collected from the location with the highest PID reading. Shannon & Wilson's field representative used clean stainless-steel spoons and new nitrile gloves to transfer freshly exposed soil into laboratory-supplied containers for analysis. The sample containers for volatile analysis were filled first and field-extracted with methanol. At least 25 grams of soil were placed into a pre-weighed, 4-ounce glass jar with a septa lid. A 25-milliliter aliquot of methanol containing laboratory-added surrogates was added to the sample jar to submerge the soil sample. The samples were transported to the laboratory in coolers with ice packs using chain-of-custody procedures. The project sample locations, screening results, and soil classifications are summarized in Table 1. Approximate sample locations are shown on Figure 3.

3.3 Investigation Derived Waste

Investigation-derived waste (IDW) generated during the UST closure assessment included the UST, associated piping, and the tank contents (water/gasoline). The tank and associated piping were delivered to Anchorage Regional Landfill (ARL) in Eagle River, Alaska. The tank contents, including gasoline and water, were treated/disposed by NRC at their Anchorage facility. The disposal receipts are included in Appendix D. BCX cleaned the tank on-site and reported that it was free of sludge. The residual fuel was removed with absorbent pads and burned with BCX's "cyclonic barrel burner".

4.0 LABORATORY ANALYSIS

The project samples were submitted to SGS in a chilled cooler using chain-of-custody procedures. In accordance with our project work plan, the project soil samples were analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101; diesel range organics (DRO) by AK 102; residual range organics (RRO) by AK 103; benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021B; and polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D SIM. For quality control purposes, one field blank and one trip blank were analyzed for GRO/BTEX by AK 101/EPA Method 8021B. The analytical sample results are summarized in Table 2. The laboratory reports are included in Appendix E.

5.0 DISCUSSION OF RESULTS

The reported analyte concentrations are compared to the cleanup levels listed in the Oil and Other Hazardous Substances Pollution Control Regulations (18 AAC 75, Section 341). The soil cleanup criteria are based on the most stringent ADEC Method Two exposure pathway listed in Tables B1 and B2 for the "over 40-inch (precipitation) zone". The summary analytical results and applicable cleanup levels are listed in Table 2.

5.1 Soil Samples

Samples EXB1 and EXB2, collected from the base of the excavation, and duplicate Samples EXSW1/EXSW101, collected from the excavation sidewall, contained concentrations of benzene (maximum of 0.624 milligrams per kilogram [mg/kg]), ethylbenzene (maximum of 2.47 mg/kg), xylenes (maximum of 14.9 mg/kg), and naphthalene (maximum of 0.816 mg/kg) greater than the most stringent ADEC Method Two cleanup levels of 0.022 mg/kg, 0.13 mg/kg, 1.5 mg/kg, and 0.038 mg/kg, respectively. Sample EXSW1 also contained 1-methylnaphthalene at a concentration (0.472 mg/kg) greater than the ADEC Method Two cleanup level of 0.41 mg/kg. The remaining target analytes in the excavation soil samples were either detected at concentrations less than the most stringent ADEC Method Two cleanup levels or were not detected.

Target analytes were either not detected or were detected at concentrations less than the applicable ADEC Method Two cleanup levels in the samples collected from the stockpile.

5.2 Quality Assurance Summary

The project laboratory follows on-going quality assurance/quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQOs). Internal laboratory quality controls for this project included surrogates, method blanks, laboratory control sample/laboratory control sample duplicates (LCS/LCSD), and matrix spike/matrix spike (MS/MSD) duplicates. If a DQO for one of the controls is not met, the laboratory provides a brief explanation in the case narrative of their report.

External quality controls include field records, one trip blank, one field blank, and a field duplicate sample set. Field logs and records were checked for completeness and accuracy. The relative percent difference (RPD) between the project sample and associated duplicate results is a measure of precision affected by matrix heterogeneity, sampling technique, and laboratory analyses. The ADEC recommends an RPD of less than 50 percent for duplicate soil samples. For duplicate sample set EXSW1/EXSW101, GRO, DRO, benzene, toluene, ethylbenzene, xylenes, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene are greater than the ADEC's DQO of 50 percent. Therefore, these results are flagged "E" on Table 2 to indicate that the sample results are estimated due to the RPD failures.

Laboratory-prepared trip and field blanks accompanied the project sample jars from the laboratory to the site during sampling activities and back again to SGS. The trip blank and field blank contained estimated (J-flagged) concentrations of GRO; however, the method blank associated with the samples contained a similar concentration of GRO. In addition, the field blank contained an estimated (J-flagged) concentration of toluene. Toluene was either not detected in the project samples or was detected at concentrations greater than 10 times the field blank detection. Therefore, it is our opinion that there is no adverse impact to data usability.

The laboratory method blank contained estimated (J-flagged) concentrations of GRO (1.33 mg/kg). The trip blank, field blank, and Sample EXB3 contained estimated concentrations of GRO. Therefore, the GRO results are flagged "B" and reported as non-detect at the limit of quantitation (LOQ). GRO was either not detected or was detected at concentrations greater than 10 times the method blank detection in the remaining samples. Therefore, qualification of this data is not required.

Shannon & Wilson conducted a limited data assessment to review the laboratory's compliance with precision, accuracy, sensitivity, and completeness to the data quality objectives. Shannon & Wilson reviewed the SGS data deliverables and completed an ADEC Laboratory Data Review Checklist for the data package, which is included in Appendix E. In our opinion, no non-

conformances that would adversely impact data usability for the objectives of this project were noted.

6.0 SUMMARY

One approximately 2,500-gallon single-walled steel UST and associated piping were removed from the site. During the UST removal activities, approximately 240 cubic yards of soil was excavated and temporarily stockpiled adjacent to the excavation. The stockpiled material was subsequently used to backfill the excavation. Based on confirmation soil samples collected from the excavation limits, petroleum-impacted soil was identified during the UST removal activities. Groundwater was observed in contact with the impacted soil. Therefore, there is a potential that impacted groundwater is also present in the vicinity of the former tank.

7.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings presented within this report are based on the limited sampling and analyses that we conducted. They should not be construed as definite conclusions regarding the project site's soil conditions. It is possible that our subsurface tests missed higher levels, although our intention was to sample areas likely to be impacted and in accordance with the governing UST regulation. As a result, the sampling and analyses performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

Shannon & Wilson has prepared the attachments in Appendix F, "Important Information About Your Geotechnical/Environmental Report," to clarify use and limitations of our report. You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore, has not, and will not, disclose the results of this study, except with your permission or as required by law.

We appreciate the opportunity to be of service. Please contact the undersigned at (907) 561-2120 with any questions or comments concerning the contents of this report.

Sincerely,

SHANNON & WILSON, INC.



Dan P. McMahon
Associate



Matthew S. Henry, P.E.
Vice President

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 3)	Depth (feet)^	Headspace (ppm) ^^	Sample Description
Soil Samples					
<u>Excavation Samples</u>					
* EXSW1	10/4/2017	Center of southwest sidewall	15-15.5	862	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
* EXSW101	10/4/2017	Duplicate of Sample EXSW1	15-15.5	862	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
EXSW2	10/4/2017	Center of northwest sidewall	15-15.5	8.3	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
EXSW3	10/4/2017	Center of northeast sidewall	15-15.5	3.1	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
EXSW4	10/4/2017	Center of southeast sidewall	15-15.5	19.8	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
* EXB1	10/4/2017	Beneath southwest end of tank (fill pipe)	17-17.5	524	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
* EXB2	10/4/2017	Beneath center of tank (feed line)	17-17.5	577	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
* EXB3	10/4/2017	Beneath northeast end of tank (vent pipe)	17-17.5	83	Brown to gray, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
<u>Stockpile Samples</u>					
SS1	10/4/2017	South end of stockpile	1.0-1.5	0.3	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS2	10/4/2017	South end of stockpile	1.0-1.5	1.1	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS3	10/4/2017	Southwest end of stockpile	1.0-1.5	1.1	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS4	10/4/2017	West end of stockpile	1.0-1.5	0.9	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS5	10/4/2017	West end of stockpile	1.0-1.5	1.5	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS6	10/4/2017	Northwest end of stockpile	1.0-1.5	0.9	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS7	10/4/2017	North end of stockpile	1.0-1.5	0.8	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS8	10/4/2017	North end of stockpile	1.0-1.5	0.7	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS9	10/4/2017	North end of stockpile	1.0-1.5	1.0	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS10	10/4/2017	Northeast end of stockpile	1.0-1.5	0.9	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS11	10/4/2017	Northeast end of stockpile	1.0-1.5	1.3	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS12	10/4/2017	East end of stockpile	1.0-1.5	1.1	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS13	10/4/2017	East end of stockpile	1.0-1.5	0.8	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS14	10/4/2017	East end of stockpile	1.0-1.5	0.3	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
SS15	10/4/2017	Southeast end of stockpile	1.0-1.5	0.9	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet
* SS16	10/4/2017	Southeast end of stockpile	1.0-1.5	2.1	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; moist to wet

Notes:

- * = Sample analyzed by the project laboratory (See Table 2)
- ^ = Depth of soil samples were measured from below ground surface or below stockpile surface
- ^^ = Field screening instrument was a Thermo Environmental Instruments 580B photoionization detector (PID).
- ppm = parts per million

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet)^	Headspace (ppm) ^^	Sample Description
Soil Samples (Continued)					
<u>Stockpile Soil Samples (Continued)</u>					
SS17	10/4/2017	South end of stockpile	1.5-1.7	1.1	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
SS18	10/4/2017	Southcentral end of stockpile	1.5-1.7	0.8	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
SS19	10/4/2017	Center of southwest end of stockpile	1.5-1.7	0.2	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
SS20	10/4/2017	Center of west end of stockpile	1.5-1.7	0.3	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
SS21	10/4/2017	Center of southeast end of stockpile	1.5-1.7	0.6	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
SS22	10/4/2017	Center of east end of stockpile	1.5-1.7	0.6	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
SS23	10/4/2017	Center of stockpile	1.5-1.7	0.8	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
SS24	10/4/2017	Northcentral end of stockpile	1.5-1.7	1.1	Brown, <i>Poorly Graded Gravel with Sand (GP)</i> ; wet
Quality Control Samples					
* STB	10/4/2017	Soil Trip Blank	-	-	Ottawa sand with methanol added in the lab
* FB	10/4/2017	Field Blank	-	-	Ottawa sand with methanol added in the field

Notes:

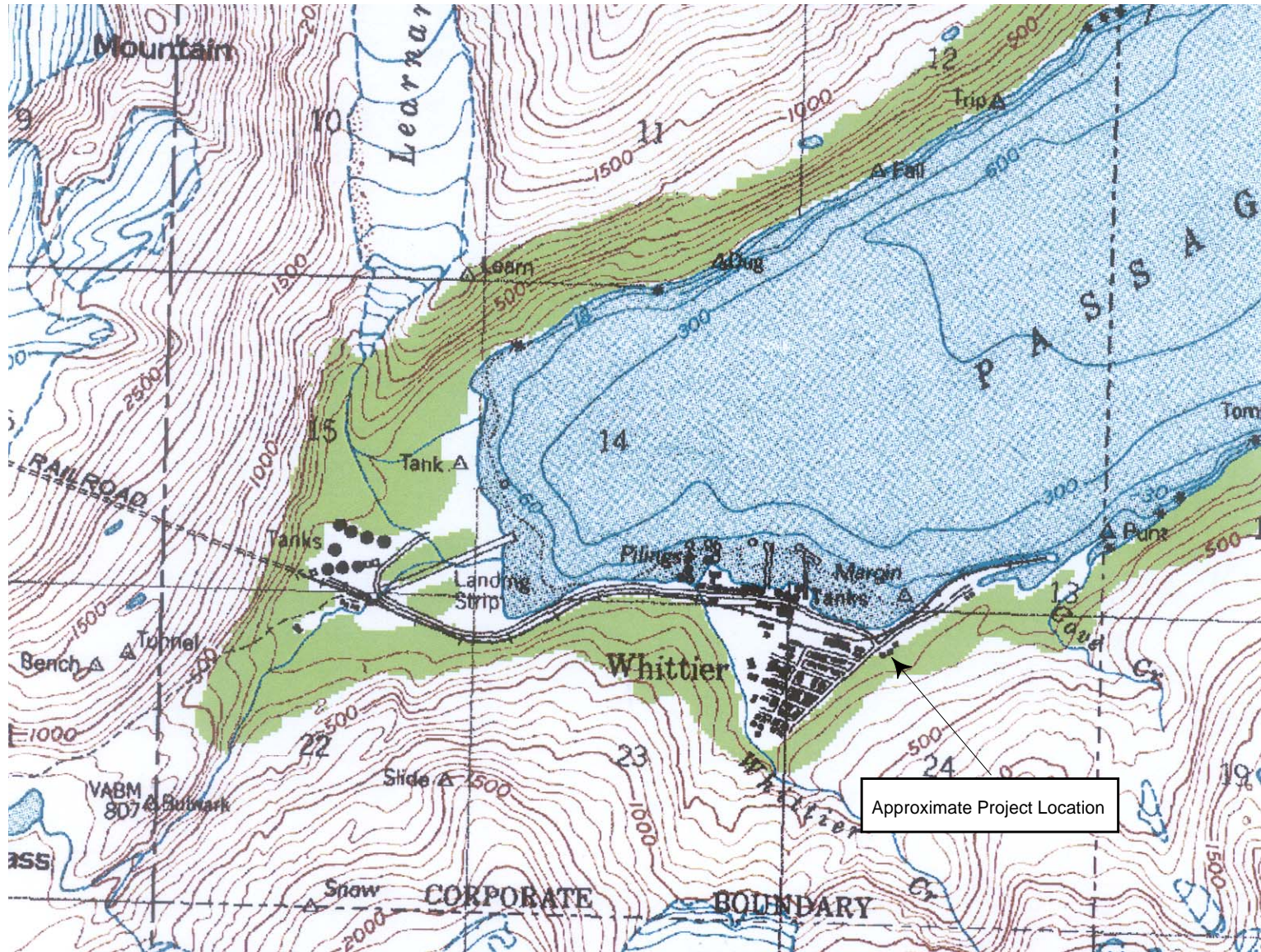
- * = Sample analyzed by the project laboratory (See Table 2)
- ^ = Depth of soil samples were measured from below ground surface or below stockpile surface
- ^^ = Field screening instrument was a Thermo Environmental Instruments 580B photoionization detector (PID).
- ppm = parts per million
- = Measurement not applicable

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

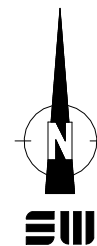
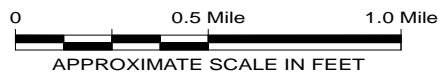
Parameter Tested	Method*	Cleanup Level (mg/kg)**	Sample ID Number^ and Soil Sample Depth in Feet Below Ground Surface (See Table 1 and Figure 2)							
			EXSW1	EXSW101~	EXB1	EXB2	EXB3	SS16	STB	FB
			15-15.5	15-15.5	17-17.5	17-17.5	17-17.5	1.0-1.5	-	-
PID Headspace Reading - ppm	OVM 580B	-	862	862	524	577	83	2.1	-	-
Gasoline Range Organics (GRO) - mg/kg	AK 101	260	234 J+, E	61.7 J+, E	85.8 J+	47.5 J+	<2.09 B	<0.855	<2.54 B	<2.54 B
Diesel Range Organics (DRO) - mg/kg	AK 102	230	100 E	31.3 E	23.7	48.8	13.3 J	15.7 J	-	-
Residual Range Organics (RRO) - mg/kg	AK 103	8,300	37.3	52.2	16.7 J	53.8	102	87.8	-	-
Aromatic Volatile Compounds (BTEX)										
Benzene - mg/kg	EPA 8021B	0.022	0.494 E	0.102 E	0.624	0.209	<0.00520	<0.00428	<0.00635	<0.00635
Toluene - mg/kg	EPA 8021B	6.7	3.31 E	0.663 E	2.7	0.958	<0.0104	<0.00855	<0.0127	0.00865 J
Ethylbenzene - mg/kg	EPA 8021B	0.13	2.47 E	0.575 E	1.02	0.444	<0.0104	<0.00855	<0.0127	<0.0127
Xylenes (total) - mg/kg	EPA 8021B	1.5	14.9 E	3.74 E	5.80	2.37	0.00690 J	<0.0257	<0.0381	<0.0381
Polynuclear Aromatic Hydrocarbons (PAHs)										
1-Methylnaphthalene - mg/kg	EPA 8270D SIM	0.41	0.472 E	0.112 E	0.148	0.0831	<0.0137	<0.0540	-	-
2-Methylnaphthalene - mg/kg	EPA 8270D SIM	1.3	1.08 E	0.201 E	0.296	0.15	<0.0137	<0.0540	-	-
Acenaphthene - mg/kg	EPA 8270D SIM	37	0.0371	0.0469	<0.0143	0.0096 J	<0.0137	<0.0540	-	-
Acenaphthylene - mg/kg	EPA 8270D SIM	18	<0.0137	<0.0136	<0.0143	<0.0143	<0.0137	<0.0540	-	-
Anthracene - mg/kg	EPA 8270D SIM	390	0.0435	0.0590	<0.0143	0.0136 J	0.0146 J	0.0493 J	-	-
Benzo(a)Anthracene - mg/kg	EPA 8270D SIM	0.28	0.0663	0.0884	<0.0143	0.0240 J	0.0267 J	0.0767 J	-	-
Benzo[a]pyrene - mg/kg	EPA 8270D SIM	0.17	0.0621	0.0813	<0.0143	0.0266 J	0.0291	0.0814 J	-	-
Benzo[b]Fluoranthene - mg/kg	EPA 8270D SIM	1.7	0.0731	0.0907	<0.0143	0.0333	0.0387	0.0955 J	-	-
Benzo[g,h,i]perylene - mg/kg	EPA 8270D SIM	1,900	0.0333	0.0412	<0.0143	0.0175 J	0.0199 J	0.0481 J	-	-
Benzo[k]fluoranthene - mg/kg	EPA 8270D SIM	17	0.0272	0.0393	<0.0143	0.0137 J	0.0149 J	0.0393 J	-	-
Chrysene - mg/kg	EPA 8270D SIM	82	0.0751	0.103	<0.0143	0.0312	0.0319	0.118	-	-
Dibenzo[a,h]anthracene - mg/kg	EPA 8270D SIM	0.17	0.0102 J	0.0131 J	<0.0143	<0.0143	<0.0137	<0.0540	-	-
Fluoranthene - mg/kg	EPA 8270D SIM	590	0.129	0.179	<0.0143	0.0424	0.0461	0.141	-	-
Fluorene - mg/kg	EPA 8270D SIM	36	0.0248 J	0.0283	<0.0143	<0.0143	<0.0137	<0.0540	-	-
Indeno[1,2,3-c,d]pyrene - mg/kg	EPA 8270D SIM	1.7	0.0310	0.0396	<0.0143	0.0156 J	0.0181 J	0.0367 J	-	-
Naphthalene - mg/kg	EPA 8270D SIM	0.038	0.816 E	0.108 E	0.168	0.0996	<0.0109	<0.0434	-	-
Phenanthrene - mg/kg	EPA 8270D SIM	39	0.172	0.219	<0.0143	0.0451	0.0399	0.175	-	-
Pyrene - mg/kg	EPA 8270D SIM	87	0.127	0.177	<0.0143	0.0441	0.0469	0.146	-	-


Notes:

- * = See Appendix E for compounds tested, methods, and laboratory reporting limits
- ** = Soil cleanup level is the most stringent Alaska Department of Environmental Conservation (ADEC) Method 2 standard listed in Table B1 or B2, 18 AAC 75 (October 2017), for the "over 40 inches (precipitation) zone"
- ^ = Sample ID number preceded by "17860-" on the chain of custody form
- ~ = Duplicate of Sample EXSW1
- PID = Photoionization detector
- ppm = Parts per million
- mg/kg = Milligrams per kilogram
- <0.0137 = Analyte not detected; laboratory limit of detection of 0.0137 mg/kg
- 1.08** = Analyte detected
- 0.472** = Analyte detected above ADEC cleanup level
- = Not applicable or sample not tested for this analyte
- J** = Estimated concentration less than the limit of quantitation. See the SGS laboratory report for details.
- J+** = Analyte result is potentially biased high due to surrogate failure.
- B** = Analyte concentration potentially affected by trip blank or method blank detections. See the ADEC Laboratory Data Review Checklist (LDRC) in Appendix E for details.
- E** = Result is an estimate due to a primary/field duplicate sample pair relative percent difference (RPD) failure.

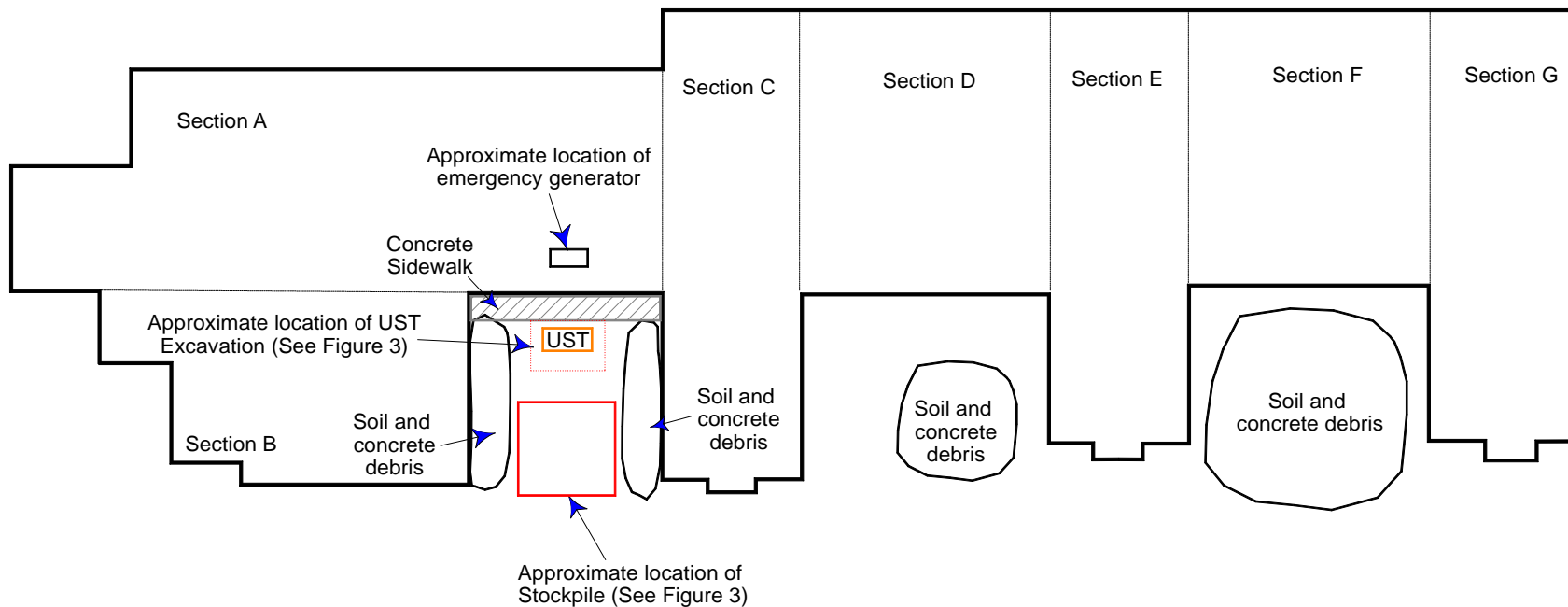


Elevation in Feet
 Contour Interval 100 Feet
 Taken from Seward D-5 SE
 U.S. Geological Survey Quadrangle




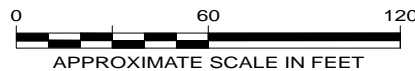
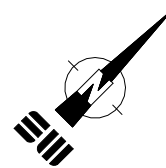
Buckner Building Whittier, Alaska	
VICINITY MAP	
December 2017	32-1-17860-002
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	Fig. 1

Blackstone Road



LEGEND

 Approximate location of 2,500-gallon underground storage tank (UST)



Buckner Building
Whittier, Alaska

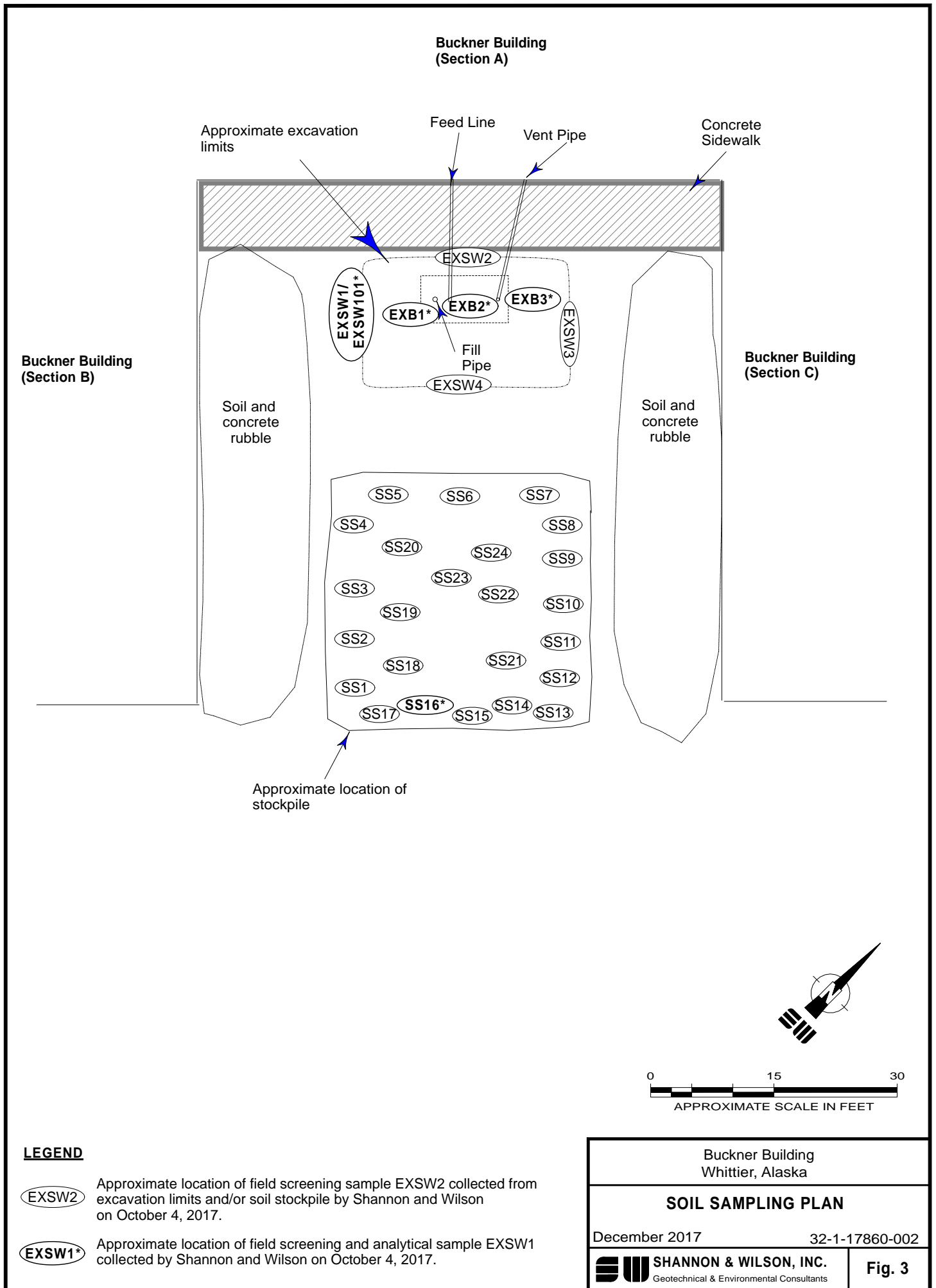
SITE PLAN

December 2017

32-1-17860-002

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

Fig. 2



**Buckner Building
(Section A)**

Approximate excavation
limits

Feed Line

Vent Pipe

Concrete
Sidewalk

**Buckner Building
(Section B)**

Soil and
concrete
rubble

**Buckner Building
(Section C)**

Soil and
concrete
rubble

Approximate location of
stockpile

LEGEND

EXSW2

Approximate location of field screening sample EXSW2 collected from excavation limits and/or soil stockpile by Shannon and Wilson on October 4, 2017.

EXSW1*

Approximate location of field screening and analytical sample EXSW1 collected by Shannon and Wilson on October 4, 2017.

Buckner Building
Whittier, Alaska

SOIL SAMPLING PLAN

December 2017

32-1-17860-002

SW SHANNON & WILSON, INC.
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Fig. 3

APPENDIX A
SITE PHOTOGRAPHS



Photo 1: Looking at the location of the UST and concrete and dock debris. (October 22, 2014)



Photo 2: Looking northwest at the location of the UST, prior to removal. (July 6, 2017)

Buckner Building
Whittier, Alaska

PHOTOS 1 AND 2

December 2017

32-1-17860-002



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A-1



Photo 3: Moving stockpiled soil overlying the UST. Vehicle and building debris were present in the soil. (August 29, 2017)



Photo 4: Removing overburden from the tank location. (August 29, 2017)

Buckner Building
Whittier, Alaska

PHOTOS 3 AND 4

December 2017

32-1-17860-002



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

A-2

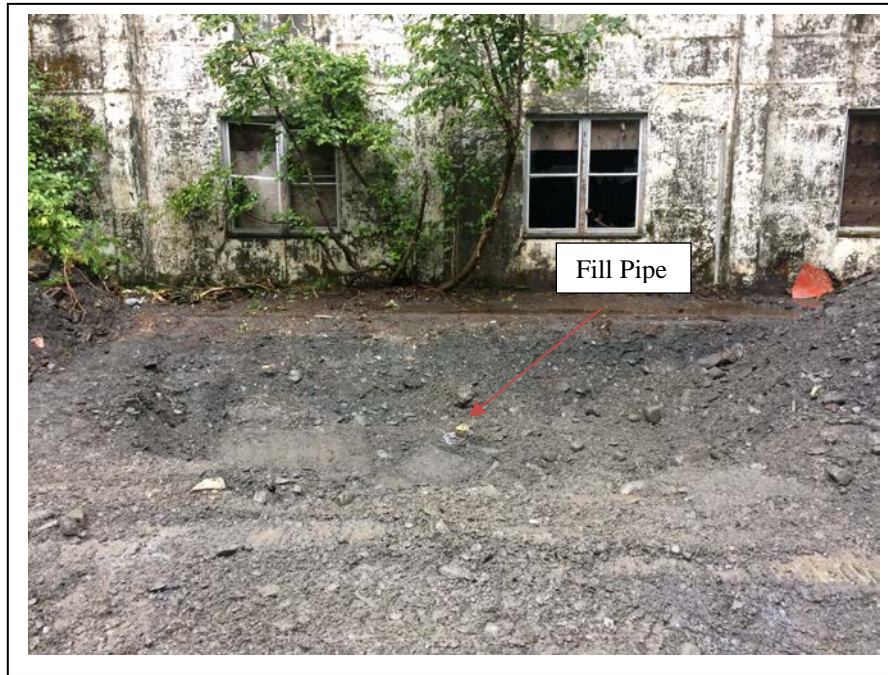


Photo 5: Looking northwest at the overburden excavation. (August 29, 2017)



Photo 6: Looking northeast while uncovering the top of the tank. (September 20, 2017)

Buckner Building
Whittier, Alaska

PHOTOS 5 AND 6

December 2017

32-1-17860-002



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Photo 7: Looking northwest at the trench box placed in excavation to access and inert the tank. (October 4, 2017)



Photo 8: Looking south while removing the UST from the excavation. (October 4, 2017)

Buckner Building
Whittier, Alaska

PHOTOS 7 AND 8

December 2017

32-1-17860-002



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A-4



Photo 9: Looking northwest at the stockpiled material. (October 4, 2017)



Photo 10: Looking northwest following backfilling. (October 4, 2017)

Buckner Building
Whittier, Alaska

PHOTOS 9 AND 10

December 2017

32-1-17860-002



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A-5

APPENDIX B
ADEC FORMS



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

**Department of
Environmental Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, AK 99501
Office: 907-269-7679
Fax: 907-269-7687
www.dec.alaska.gov

Return Receipt Requested
Article No: 7017 1450 0000 8644 6423

December 1, 2017

City of Whittier
Attn: Mark Lynch, City Manager
PO Box 608
Whittier, AK 99693-0608

Subject: **Underground Storage Tank Registration and Closure, ADEC Facility #3614**

The Alaska Department of Environmental Conservation received partial registration for the following underground storage tank (UST) system, found during a brownfield assessment. Permanent closure is required in accordance with Title 18 Alaska Administrative Code (AAC) 78, *Underground Storage Tanks*.

Facility Name: City of Whittier – Buckner Bldg				ADEC Facility #3614
Physical Location or Address: Blackstone Road				City: Whittier
ADEC Tank	Owner Tank	Contents	Volume	Compliance Tag
1	1	Gasoline	2,500 gal	None

Your brownfield assessment consultant, Shannon & Wilson, pulled the UST system but did not submit the *Notice of Intent to Close* (ADEC Form 18-0504) prior to excavation, did not use a licensed UST closure worker, nor submit the *Notice of Post-Closure* (ADEC Form 18-0505) within 30 days of closure (18 AAC 78.085(a), 78.400, 78.085(f)). A site characterization, assessment and release investigation is required (18 AAC 78.085(b) and 78.090). A *Site Assessment and Release Investigation (SARI) Report*, and the *SARI Summary* (ADEC Form 18-0508), was due within 60 days (18 AAC 78.090(d)(5)). A qualified environmental professional (QEP) must conduct the site assessment, release investigation, and reporting (18 AAC 78.088).

You are required to complete the following **no later than December 29, 2017**:

- Submit the *Notice of Post-Closure*, ADEC Form 18-0505 (18 AAC 78.085(f))
- Use a QEP to perform the site characterization, site assessment, release investigation, analysis and reporting, in accordance with 18 AAC 78.085, 78.090 and the UST Procedures Manual
- Submit the *Site Assessment and Release Investigation Report*, including the *SARI Summary Form*, ADEC Form 18-0508 (78.090(d)(5) and 78.100(e)).

Retain this letter and all closure documentation for at least ten years (18 AAC 78.100(f) and 78.276(d)). Contact me at 907-269-7679 or email Cheryl.Paige@alaska.gov if you have questions.

Sincerely,

Cheryl Paige, MS
Environmental Program Specialist

Enclosures: *Notice of Post-Closure*, ADEC Form 18-0505
Notice of Site Assessment and Release Investigation Summary, ADEC Form 18-0508

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
UNDERGROUND STORAGE TANKS - NOTICE OF POST CLOSURE**

- ⇒ An owner or operator of an underground storage tank (UST) system to be permanently closed is required to notify the department in accordance with Title 18 Alaska Administrative Code (AAC) *Underground Storage Tanks*.
- ⇒ "Permanently Closed" means to remove petroleum and sludges from the UST system and either remove, dismantle and recycle/dispose of the tank, piping and ancillary equipment, or fill it with inert solid material.
- ⇒ A UST system located at a contaminated site, or that has had a confirmed release, must be permanently removed from the ground; an in-place closure is not allowed (18 AAC 78.085).
- ⇒ A licensed UST worker, certified in closure, is required to be onsite and physically supervise closure or a change-in-service of a UST system (18 AAC 78.400 and 78.455(a)(2)).
- ⇒ A qualified environmental professional must meet the conditions of 18 AAC 78.088, including conducting or supervising the collection of field data, and the interpretation and reporting of the site characterization and site assessment (18 AAC 78.090(e)) as well as the collection and reporting of release investigation data (18 AAC 78.235(b)).

I. UST OWNER		II. UST FACILITY	
NAME: City of Whittier		FACILITY NAME: City of Whittier- Buckner Building	ADEC FAC # 3614
ADDRESS: P.O Box 608		PHYSICAL LOCATION: Blackstone Road	
CITY: Whittier	STATE/ZIP: AK 99693	CITY: Whittier	FACILITY PHONE: NA
UST CLASS A/B OPERATOR: Mark Lynch - City of Whittier		UST CLASS A/B OPERATOR PHONE /EMAIL 907-472-2327	
III. UST CLOSURE WORKER		IV. QUALIFIED ENVIRONMENTAL PROFESSIONAL	
NAME: Gordon Bartel		NAME: Trevor Crosby	
COMPANY: B.C. Excavation LLC		COMPANY: Shannon & Wilson	
ADDRESS: 2251 Cinnabar Loop, Anchorage 99507		ADDRESS: 5430 Fairbanks St, Suite 3, Anchorage 99518	
CONTACT PHONE: 907-344-4490		CONTACT PHONE: 907-561-2120	
EMAIL ADDRESS: gbartel@bcxllc.net		EMAIL ADDRESS: twc@shanwil.com	

V. TANK AND CLOSURE DETAILS						
USE THE ADEC TANK NUMBER:	TANK #	TANK #	TANK #	TANK #	TANK #	TANK #
DATE OF CLOSURE:	10/4/17					
PRODUCT (gasoline, diesel, used oil, etc.):	Gasoline					
CAPACITY of tank in Gallons:	2,500					
DATE PRODUCT was last stored:	9/6/17					
METHOD OF CLOSURE:	REMOVAL AND DISPOSAL Landfill <input type="checkbox"/> Recycle <input checked="" type="checkbox"/>	Landfill <input type="checkbox"/> Recycle <input type="checkbox"/>	Landfill <input type="checkbox"/> Recycle <input type="checkbox"/>	Landfill <input type="checkbox"/> Recycle <input type="checkbox"/>	Landfill <input type="checkbox"/> Recycle <input type="checkbox"/>	Landfill <input type="checkbox"/> Recycle <input type="checkbox"/>
	INERT-IN-PLACE					
	CHANGE-IN-SERVICE					
CONTAMINATION observed?	Yes					
DATE OF SITE CHARACTERIZATION :	10/4/17					
DATE OF SITE ASSESSMENT:						
DATE OF RELEASE INVESTIGATION:						

V. OWNER CERTIFICATION TANK IS CLOSED IN ACCORDANCE WITH 18 AAC 78

⇒ The Owner/Operator is required to complete and submit the *Notice of Post Closure* within 30 days of the tank being pulled, made inert-in-place, or changed-in-service (18 AAC 78.085(f) and 78.100(d)).

⇒ The Owner/Operator must ensure the *Site Assessment and Release Investigation Report* is complete and submitted within 60 days of closure (18 AAC 78.090(d)(5) and 78.100(e)).

CERTIFIED BY: OWNER OPERATOR DATE: 12/21/17 PHONE: 907-472-2327

PRINT NAME: Mark Lynch SIGNATURE: 

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
UNDERGROUND STORAGE TANKS - CLOSURE CHECKLIST**

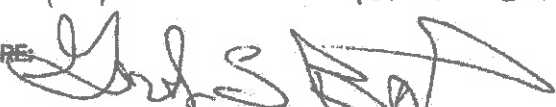
- ⇒ A licensed UST worker who performs or supervises a UST system closure must initial and sign this checklist.
- ⇒ Handwritten initials are required next to the work items which were completed.
- ⇒ The UST worker is required to submit this certification to the department within 30 days of the UST system being removed, made inert or changed-in-service (18 AAC 78.085(f) and 78.100(d)).

VI. UST WORKER CHECKLIST - TANKS ARE CLOSED IN ACCORDANCE WITH 18 AAC 78

I CERTIFY:	I understand that a certified UST worker who fails to submit this portion of the documentation may be subject to license suspension or revocation (18 AAC 78.455(a)(9) and 78.470(a)(3)).
I CERTIFY:	<i>UST SYSTEM REMOVAL</i>
GLB	I was on the job site for all work requiring certification of permanent closure (78.455(a)(2))
GLB	Contents of tank and piping were emptied
GLB	Tank was purged of flammable vapors or the atmosphere was made inert
GLB	UST cleaning and closure procedures were used in accordance with the published Recommended Practices (RP) adopted by reference in 18 AAC 78.085(g) as applicable, e.g., the American Petroleum Institute (API) RP-1604, <i>Closure of Underground Storage Tanks</i>
GLB	Tanks, piping and vent lines were removed, labeled, and properly disposed
GLB	All accessible holes were filled, plugged or capped
I CERTIFY:	<i>UST SYSTEM CLOSURE IN THE GROUND (INERT-IN-PLACE)</i>
	I was on the job site for all work requiring certification of permanent closure (78.455(a)(2))
	Contents of tank and piping were emptied
	Tank was purged of flammable vapors or the atmosphere was made inert
	UST cleaning and closure procedures were used in accordance with the published Recommended Practices (RP) adopted by reference in 18 AAC 78.085(g) as applicable, e.g., the American Petroleum Institute (API) RP-1604, <i>Closure of Underground Storage Tanks</i>
	Tank(s) were filled with solid inert material [type of material: _____]
	Piping and vents were removed, and all accessible holes were filled, plugged or capped
I CERTIFY:	<i>UST SYSTEM CHANGE IN SERVICE (FROM REGULATED TO NON-REGULATED USE)</i>
	I was on the job site for all work requiring certification of permanent closure (78.455(a)(2))
	Contents of tank and piping were emptied
	Tank was purged of flammable vapors or the atmosphere was made inert
	UST cleaning and closure procedures were used in accordance with the published Recommended Practices (RP) adopted by reference in 18 AAC 78.085(g) as applicable, e.g., the American Petroleum Institute (API) RP-1604, <i>Closure of Underground Storage Tanks</i>
	UST system(s) were disconnected from regulated use
	Piping connection with regulated use was removed and fitting hole capped or plugged

VII. UST WORKER CERTIFICATION - TANK(S) ARE CLOSED IN ACCORDANCE WITH 18 AAC 78

ALASKA UST CLOSURE WORKER LICENSE # USTU296 DATE: 10/19/17 PHONE: 907-244-6206

PRINT NAME: Gordon Bartel SIGNATURE: 

Owner/Operator is required to complete and sign page 1 of this *Notice of Post-Closure*. The UST Closure Worker who supervised permanent closure of the UST system(s) must complete and sign page 2 (78.455(a)(9)). Submit the document within 30 days of tank removal, inert-in-place or change-in-service, to the department's UST Office.



APPENDIX B



ADEC Storage Tank Program
Site Assessment & Release Investigation Summary Form

This document summarizes information from site assessments and release investigation reports that are required by Alaska's Underground Storage Tanks Regulations (18 AAC 78). It is intended to ensure minimum requirements are met when submitting full reports to ADEC. It cannot be substituted for comprehensive site assessment or release investigation reports. Site assessments (as defined in AS 46.03.450) are conducted to check for the presence or absence of petroleum contamination. If contamination of soil or groundwater is identified then a release investigation is required. Site assessments and release investigations must be conducted by a qualified impartial third party (as defined in 18 AAC 78) and in accordance with chapter two of the Underground Storage Tanks Procedures Manual (UST Manual).

How to fill out this form

Type or print in ink the requested information and sign in ink the "signature" blocks on page 7. Please attach this form to the comprehensive site assessment or release investigation report (or include it in the report introduction) and submit it to the nearest ADEC field operations office (Juneau, Anchorage, Fairbanks or Soldotna).

1. GENERAL INFORMATION

Purpose of Site assessment/ Release investigation: Closure
(Closure, Change-in-service, Suspected or confirmed release, Compliance check, Other)

Owner of site: City of Whittier 907-472-2327
Name of company/legal entity that owns the site Phone number
P.O Box 608 Whittier, AK 99693
Mailing address City, State, Zip code

Operator of site: Same as Owner
Name of company/legal entity that operates the site Phone number
Mailing address of operator City, State, Zip code

Location of site: Buckner Building NA
Name of site (e.g. John Doe's Service Station) Phone number
Blackstone Road Whittier, AK
Physical address of site (be as specific as possible) City, State, Zip code
NA
Legal description of site Section/township/range
NA 3614
Type of business at site Facility ID # / Tank ID number(s)

Financial Assistance
 Applications filed Site assessment/
 (this site only) tightness test Tank cleanup Tank upgrade Tank closure

Reports on file
with ADEC: Tightness test Closure notice Other _____

2. SYSTEM AND TANK STATUS

Describe the status, size, and contents of the tanks that have been at the site:

Tank ID Number:	Tank No. <u>1</u>	Tank No. <u> </u>	Tank No. <u> </u>	Tank No. <u> </u>	Tank No. <u> </u>
Tank status (check one)					
Currently in use	_____	_____	_____	_____	_____
Temporarily closure	_____	_____	_____	_____	_____
Closed/left in place	_____	_____	_____	_____	_____
Closed/removed	<u> X </u>	_____	_____	_____	_____
Total capacity (gallons)	<u> 2,500 </u>	_____	_____	_____	_____
Contents (diesel, etc)	<u> Gasoline </u>	_____	_____	_____	_____

3. FIRM CONDUCTING SITE ASSESSMENT AND RELEASE INVESTIGATION

<u>Shannon & Wilson, Inc.</u>	<u>907-561-2120</u>
Name of firm	Phone number
<u>5430 Fairbanks Street, Suite 3</u>	<u>Anchorage, AK 99518</u>
Mailing address	City, State, Zip code
<u>Trevor Crosby</u>	<u>Trevor Crosby</u>
Site assessment supervisor(s)	Person(s) collecting samples

4. SITE HISTORY

Based on the best available knowledge, please check the appropriate box below:

Y N

Was soil contamination observed or identified?

Potentially Was groundwater contamination observed or identified?

NA Did inventory control or prior tank repairs indicate a possible release?

Has a tank tightness test been performed on any USTs on the site?

NA Have any of the facility's USTs or piping ever failed a tightness test?

Have there been any previous site assessments performed at this site?

Do previous site assessments indicate any contamination has occurred?

If the answer to any of these questions is yes, please describe (or attach copy of report discussion). Give dates and circumstances, use continuation sheet if necessary:

5. FIELD SCREENING ANALYSIS

Date(s) of field screening: October 4, 2017

Temperature(s) during screening: 45-50 degrees F

Estimated wind speeds: None

Weather (clear, raining, etc): cloudy

Type of field detection instrument used: Photoionization detector

Brand: Thermo Environmental Inst., Inc.

Model: OVM 580B

Date calibrated: October 4, 2017

Number of tests: 31

Range of results: 0.2 to 862 ppm

If an instrument wasn't used, what field detection method was used? NA

Number of tests: NA

Range of results: NA

6. COLLECTION OF SOIL SAMPLES

For site assessments done for USTs remaining in place

Check the appropriate boxes below (if not applicable, leave blank):

- | Y | N | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Were samples taken from borings (or test pits) within 5 feet of the UST? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were samples collected from within 2 feet below the bottom of the UST? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were dispensers connected to the UST system? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were samples taken from borings (or test pits) adjacent to dispensers? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were samples taken from borings (or test pits) adjacent to piping? |

How many borings/pits were made? _____ How many samples were analyzed? _____

For site assessments done at excavation and removal of USTs:

Check the appropriate boxes below (if not applicable, leave blank):

- | Y | N | |
|-------------------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were any areas of obvious contamination identified or observed? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were samples taken from areas of obvious contamination? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were at least two discrete analytical samples taken from excavated pit area? |
| <input type="checkbox"/> | <input type="checkbox"/> | NA Was at least one sample taken from below each dispensing island's piping? |
| <input type="checkbox"/> | <input type="checkbox"/> | NA Was at least one sample taken from the piping trench? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were the samples referenced above collected taken from native soil within two feet below the bottom of the tank pit or dispenser/piping trench? |
| <input type="checkbox"/> | <input type="checkbox"/> | NA If multiple tanks were removed, were at least three samples collected? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were additional samples collected for each 250 square feet of excavated pit over 250 square feet? |

Number of distinct points sampled: 4 Estimated excavation's surface area: 425

For all site assessments

Check the appropriate boxes below:

- | Y | N | |
|-------------------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were field duplicate samples collected and analyzed? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were all samples kept at the appropriate temperature until analysis? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Were all samples extracted & analyzed within recommended holding times? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Did chain-of-custody/transfer logs accompany samples to laboratory? |

7. LABORATORY ANALYSIS OF SOIL SAMPLES

(see Table 1 of UST Procedures Manual or Table G of 18 AAC 78.800(b))

Identify the possible contaminants (gasoline, BTEX, diesel, etc.): See attached report

Please list the analytical methods used to detect these contaminants in the soil samples, the number of samples analyzed by each method, and the range of results for each method:

Possible product	Analytical method	Number of samples	Range of results	Location(s) of sample point(s) w/ highest level of contamination
<u>See attached UST Closure and Cleanup Activities Report</u>				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

8. GROUNDWATER INVESTIGATION

Check the appropriate boxes below:

- Y N
- X ___ Was groundwater encountered during the excavation or drilling work?
- ___ X Were borings drilled/pits dug at least five feet below the USTs bottom?
- X ___ Is groundwater or seasonal high water table known or suspected to exist within five feet of the bottom of the USTs?
- ___ X Were samples taken from borings drilled/test pits dug to this water level?
- ___ NA ___ Were all these samples analyzed within recommended holding times?

How many groundwater/saturated-soil samples were collected & analyzed? 3

How many of these samples were taken from the top 6" of water table? 3

How many field QC samples were analyzed? _____
Trip blanks Duplicates Decon blanks

9. LABORATORY ANALYSIS OF GROUNDWATER SAMPLES

(see Table 1 of UST Procedures Manual or Table G of 18 AAC 78.800(b))

Identify the possible contaminants at the site: _____

Identify the analytical methods used to detect these contaminants in the water samples, the number of samples analyzed by each method, and the range of results for each method:

Analytical method	Number of samples	Range of results (ppm)	Location(s) of sample point with highest level of contamination
_____	_____	_____	_____
_____	No groundwater samples collected		
_____	_____	_____	_____

10. DISPOSAL OF MATERIALS

Check the appropriate boxes below (if not applicable, leave blank):

Y N

 Were tanks cleaned in accordance with API 2015 (Cleaning Petroleum Storage Tanks)?

 Were the tanks and piping removed and disposed in accordance with API 1604 (Removal and disposal of used petroleum Storage tanks)?

Where were the tanks and piping disposed? _____

Where was the tank sludge and rinsewater disposed? _____

11. STOCKPILES

Check the appropriate boxes below:

Y N

 Is any soil stockpiled at the site?

na Are soils stockpiled in accordance with 18 AAC 78.311?

12. RELEASE INVESTIGATION

Check the appropriate box below:

Y N

 Was any petroleum contamination identified during site assessment?

(Answer "yes" if any evidence a release occurred; if no, proceed to item 13)

If contamination was found, what was matrix score for site? _____

(Attach completed matrix score sheet to this form)

When did release occur? unknown When was release confirmed? October 4, 2017

(Date & time)

(Date & time)

When was ADEC notified? October 4, 2017 1st ADEC staff notified: Lisa Griswold

(Date & time)

(Name)

What is status of UST that prompted the investigation? _____ _____ _____ X

In use

Out-of-use, product
still in system

Out-of-use;
system empty

Permanently
closed

Briefly describe (or attach copy of report discussion) the steps taken to prevent further migration of the release and steps taken to monitor and mitigate fire and safety hazards: _____

See attached report

13. SITE SKETCH

Sketch the site in the space below. Alternatively, attach a site map to the back of the form. The sketch (or accompanying narrative) should include the following information:

- locations of all USTs, piping, and dispensers
- distances from tanks to nearby structures
- property line locations
- location and dimensions of excavation(s)
- type of backfill used to surround system
- locations of any known historical releases
- locations of any observed contamination
- location of any boreholes and test pits
- soil types
- field screening locations and readings
- sampling locations, depths, & sample ID numbers
- water wells and monitoring wells (if present)
- depth to groundwater/seasonal high groundwater
- locations of any stockpiled soils
- north arrow
- bar scale (specify feet or meters)

For release investigations, in addition to the above information, show the groundwater gradient; surface drainages (including potential hydraulic connections with groundwater) and utility trenches.

14. QUALITY ASSURANCE

Check the appropriate boxes below:

Y N

X Were there deviations from Chapter 2 of the UST Procedures Manual? (Note that any deviations must be documented in a section of the comprehensive report)

X Is a field quality control summary included in the reports?

X Is a laboratory QC summary included in the report for all samples used to verify cleanup levels have been met?

15. CERTIFICATION

The following certification is to be signed by the assessment firm's principal investigator or Quality Assurance Officer:

I certify that except as specifically noted in this report, all statements and data appearing in this report are in conformance with the provisions of Chapter 2 of the UST Procedures Manual.

TIZENOR CROSSBY
(Print name)
[Signature]
(Signature)

Senior Geologist
(Title)
12/27/2017
(Date)

The following certification is to be signed by the UST owner/operator (or designated representative):

I certify that I have personally examined and am familiar with the information in this and all attached documents and based on my inquiry of the individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

MARK LYNN
(Print name)
[Signature]
(Signature)
100 Kenan St.
(Street Address)

owner
(Specify if owner, operator, representative)
12/29/17
(Date)
Whittier AB 99693
(City, State, Zip)

16. ATTACHMENTS

Please check the boxes showing any comprehensive reports attached to this summary:

X Site Assessment Report (include if no release investigation is needed)

 Release Investigation Report (include if release investigation is needed)

APPENDIX C
FIELD NOTES

FIELD ACTIVITIES DAILY LOG

Date 8/29/2017

Sheet 1 of 1

Project No. 32-1-17860

Project Name: Buckner Building UST Removal.

Field Activity Subject: UST Removal (if present)

Description of daily activities and events:

- 0850 ARRIVE @ Whittier Tunnel (Bear Valley Side) - Hold for open tunnel @ 930.
- 0940 TRUCK ARRIVED @ BUCKNER BUILDING. UNLOCKED GATE. - BXC (LUKE) CALLED. CURRENTLY HOW UP @ RAILROAD CROSSING. NOT SURE IF 930 TUNNEL OPENING IS GOING TO HAPPEN.
- 1053 CAUGHT LUKE (BXC). THEY JUST PASSED THROUGH TUNNEL TO WHITTIER. - STOPPED.
- 1120 STARTED CLEARING OUTFLOW PIPES @ SITE. FOUND CONCRETE SLAB - STORM DRAIN TRENCH?
- 1210 FOUND STEEL PIPE ~ 5" DIAMETER - STRONG FUEL ODOR - MEASURED STEEL PIPE DEPTH WITH INTERFACE PROBE - TOTAL DEPTH 4.5 TO BOTTOM; PRODUCT MEASURED FROM 12.5' AWAY APPROX. 5' COLUMN - GASOLINE ODOR (STRONG).
- 1246 BXC START 30-MIL LINER AT SITE FOR SOILS.
- 1251 STOLE W/ DAN - ADVISED USED RAILCAR TO OBSERVE PRODUCT - FULL RAILCAR OF PRODUCT - ORANGE COLOR. - HOLD PROJECT ACTIVITIES UNTIL DAN CALLS BACK.
- 1320 STOLE W/ DAN - HOLD FOR EXCAVATION - MOBILIZE OFFSITE. OTHER ACTIVITIES (PUMPING TANK, TANK PULL WILL TAKE EXTRA COORDINATION); DO NOT COLLECT PRODUCT - SAMPLE.

CURB/PAVEMENT MOUND @ SITE - Dirt/Organics / detritus materials ABOVE GRADE -
 - SOIL CONTAINED GLASS; NAILS; FUELING BLOCKS / TRANSMISSION; VEHICLE PARTS (WOOD, TALKERS).
 - OUTFLOW PIPES ON EXISTING OUTFLOW PIPES ADJACENT TO BUILDING PIPES -

Visitors on site: NONE

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

- TWO MEASURED GW MONITORING WELLS @ GRASS AND BOMW - NEAR B-SIGH TOWERS
 32-1-17826-002 - BOMW - DRY (NO GW MEASUREMENT) - 20.38 TDW
 BOMW - WATER @ 19.40 bgs may be runoff from SURFACE?

Weather conditions: OVERCAST. HEAVY RAIN. - 50°F.

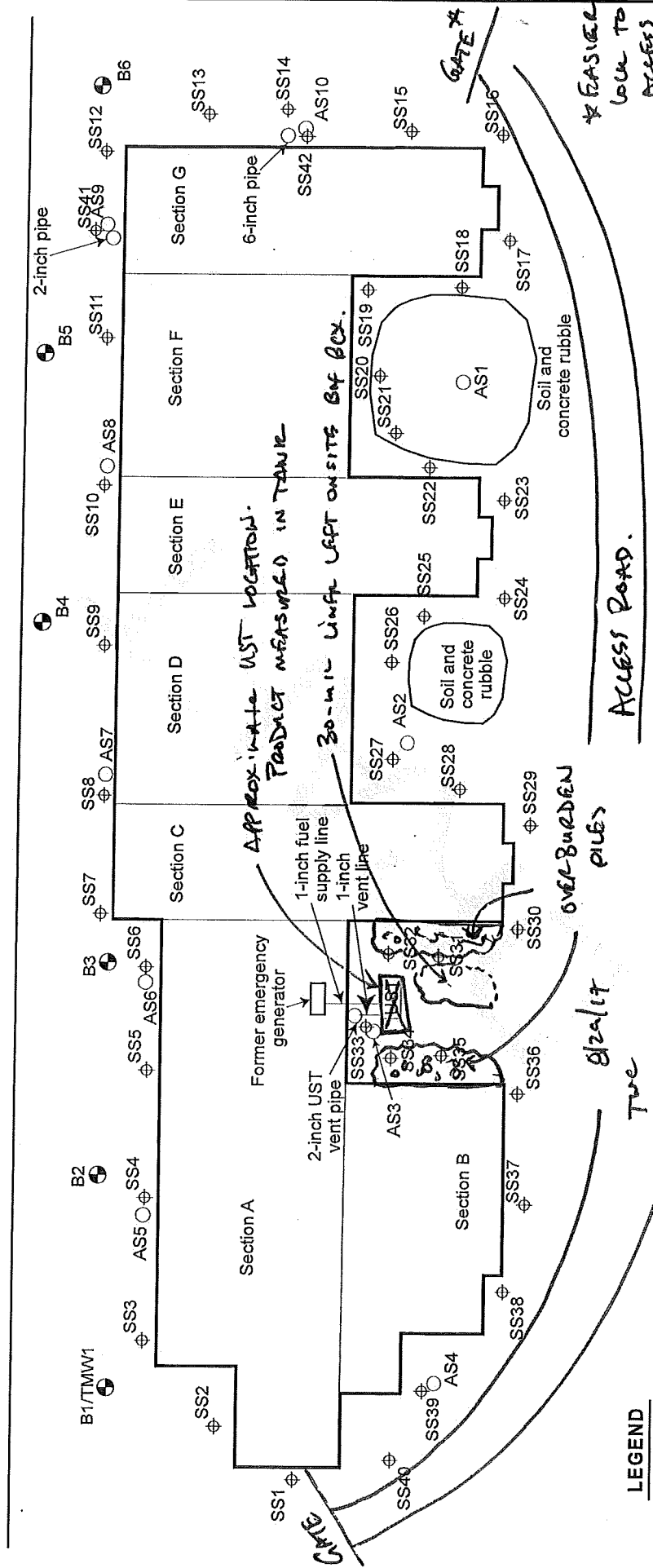
Important telephone calls: DAN - PROJECT UPDATES

Personnel on site: ARON. LUKE (BXC).

Signature: _____

Date: _____

Blackstone Road



LEGEND

[UST] Approximate location of 2,500-gallon underground storage tank (UST)

B1/TMMW1 [Symbol] Approximate location of proposed Boring/Temporary Monitoring Well B1/TMMW1

SS1 [Symbol] Approximate location of Lead Surface Soil Screening Sample SS1

AS1 [Symbol] Approximate location of Asbestos Soil Analytical Sample AS1

Buckner Building
Whittier, Alaska

SITE PLAN

July 2017

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

32-1-17860

Fig. 2

9/6/2017 | 55K

Whittier - Buckner Bldg UST - fuel removal

0730 - Arrival @ Buckner Bldg.

- wait for work crew

- Buckner fence open

- pics of UST site taken

0850 - NRC arrives on site.

- tank deeper than 16'

- fuel is unleaded gasoline

0900 - NRC crew begin pumping fuel from UST

1000 - crew done removing fuel from UST @ buckner bldg.

10:30 - lock gate

- depart whittier

* fuel removed from UST:

2048 gallons removed

FIELD ACTIVITIES DAILY LOG

Date 9/20/17

Sheet 1 of 1

Project No. 32-1-17866

Project Name: Buckner Building

Field activity subject: WST Removal.

Description of daily activities and events:

- 0700 LEAVE Anchorage for 830 Whittier Tunnel.
- 0815 Meet Aaron (BCX) at Whittier Tunnel. - He advised BCX helper may not make 830 tunnel opening.
- 0850 Arrive onsite - BCX start unloading field equip. Aaron mentioned excavator key is in support truck (won't be through until 930 tunnel)
- 0910 BCX located replacement Excavator key @ local maintenance shop. - Tractor calibrated P10 w/ 100 ppm isobutylene.
- 0930 BCX moved overburden pile to "west" rubble pile. 11.5' rise
- 1020 Found "west" end top of WST. Top of WST approximately 13ft² bgs.
 - 1* west sidewall comprised Bedrock from ~4-5' bgs to depth of excavation.
 - 2* steeply bedded; shale-argillite - (low-medium competency - (can be ripped with moderate - heavy excavator effort?))
 - 3* "north" wall adjacent to Building sidewall - near vertical - cannot safe slope unless sidewall is denuded.
- 1025 Called Dan - spoke about depth of tank; sidewall issues; and BCX concerns with excavation safety - not safe to enter ~~at~~ or bert at this current point. ~130yds of "clean" soil removed.
- 1130 Dan spoke with Ericson - he will call Bill about WST - until then remove soil to expose "east" edge of tank.
- 1230 Called Dan - found east edge of tank - tank length ~~11.5'~~ 11.5' - wall cribbing from ~3.0 to 6.5' bgs on east sidewall.
- 1240 Called Bill O'Connell - discussed site condition - cannot safely remove w/out trench box. Plan to hold until trench box option is discussed w/ BCX, Bub - calls - Dan. (cant provide equip until after October - beyond funding date - expires Sept).
- 1330 Dan called - advised that we backfill WST excavation with removed soils and mobilize off site.
- 1510 Excavation Backfill completed. Load exp site - leave on 4:00 tunnel.
- 1730 Back to Anchorage office.

Visitors on site: None

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

WST not removed.

Weather conditions: 50°-60°F; Clear Skies.

Important telephone calls: Dan - WST removed. ; Bill - WST removed.

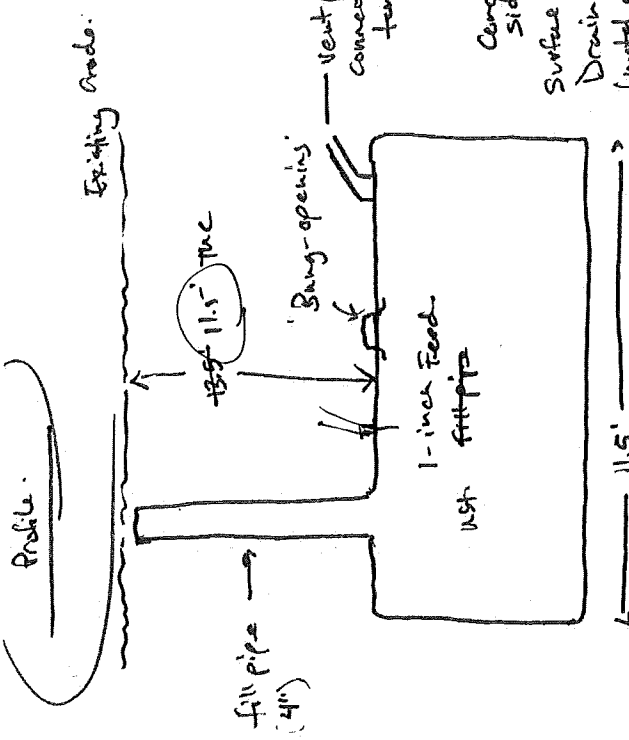
Personnel on site: Traver Crosby.

Signature:

Date: 9/20/17

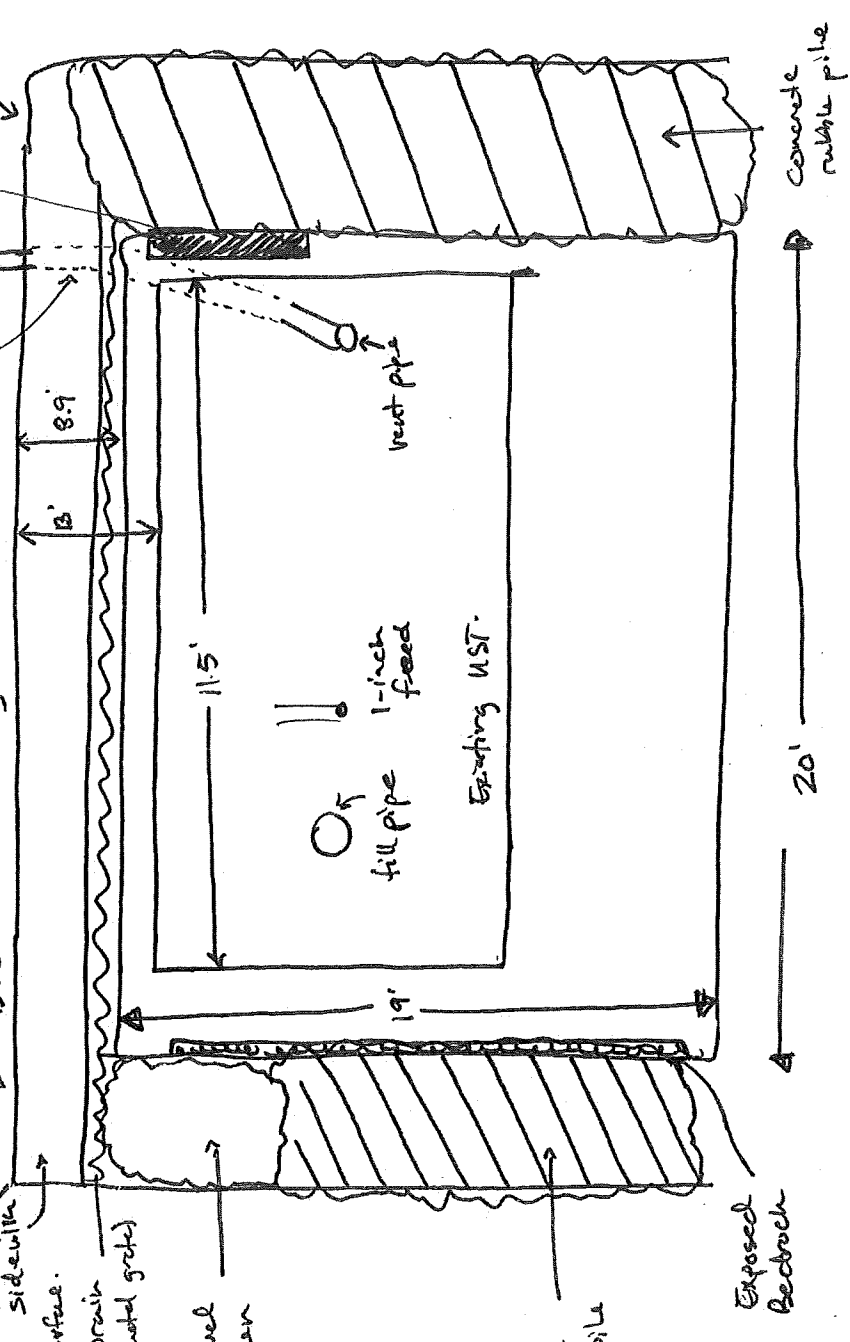
7/12/0114 - Buelener B.
32-1-17860 TUC

Buried wood cribbing
- 3'-4" thick?



UST Excavation

Buelener Building.



Concrete sidewalk surface.
Drain (metal grate)
Box moved overboard pile.
Concrete rubble pile
Exposed Bedrock

Job Number: 32-1-17860

SOIL SAMPLE COLLECTION LOG

SHANNON & WILSON, INC.

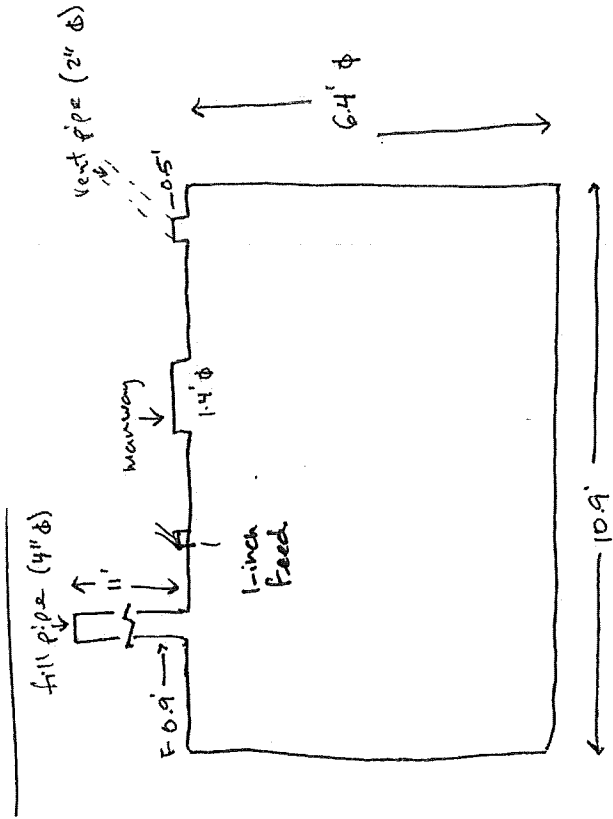
Buchanan Building WST removed 10/4/17 Trevor Cosby

Cell: 710 @ 11 AM 10/17

Sample Number	Date/Time	PID ppm	Depth (Ft.)	Lab Sample (Y/N)	Sample Location	Sample Classification
17860 SS1	1120	8.3	1.0-1.5		Soil stacked @ 10 - see sketch.	Brown, gravel with sand (SP); wet.
SS2	1121	1.1				
SS3	1122	1.1				
SS4	1123	0.9				
* SS5	1124	1.5		Y @ 1205		
SS6	1125	0.9				
SS7	1128	0.8				
SS8	1129	0.7				
SS9	1130	1.0				
SS10	1133	0.9				
* SS11	1135	1.3		Y @ 1245		
SS12	1137	1.1				
SS13	1138	4.08				
SS14	1139	6.3				
SS15	1143	0.9				
* SS16	1144	2.1		Y (duplicate) @ 1310		
SS17	1146	1.1				
SS18	1149	0.8				
SS19	1150	0.2				
SS20	1151	0.3				
SS21	1155	0.6				
SS22	1158	0.6				
SS23	1159	0.8				
* SS24	1200	1.1		Y @ 1320		
EX201	1549	862	15-15.5	Y	Excavation Sidewall	Brown to gray, gravel in sand (SP); moist to wet.
EX202	1555	8.3		Y		
EX203	1559	3.1		Y		
EX204	1628	19.8		Y		
EX201	1607	524	17.0-17.5	Y	Excavation Base - below fill pipe end	
EX202	1614	577		Y	- below center of tank	
EX203	1620	83		Y	- below vent pipe end	

10/4/17 TWC

Ust Sketch - single wall. ~2700 gallons



FIELD ACTIVITIES DAILY LOG

Date 10/14/12

Sheet of

Project No.

Project Name: Whittier UST Removal

Field activity subject:

Description of daily activities and events:

- 0715 Trover leave. change office.
- 0820 Arrive @ Bear Valley tunnel.
- 0845 Arrive on site - take on site. started unloading equipment
- 0905 Bx catch plastic liner @ site for excavated material.
- 1040 top of tank exposed - picked back box to place in excavator
- 1125 started pumping tent residues
- 1120 started spraying shackles
- 1140 stopped pumping tank - 120 gal removed
- 1200 started wire pushing UST - strong vapors
- 1210 called Don. actual line of progress - had to stop spraying - vapors (strong) see a stack on
- 1240 Bx ~~was~~ stopped in the pipe - no signal tank - UST excavated - contact air pipe.
- 1303 stop air pipe - about tank 40% left (10%) good to dry 100

Visitors on site:

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

Weather conditions:

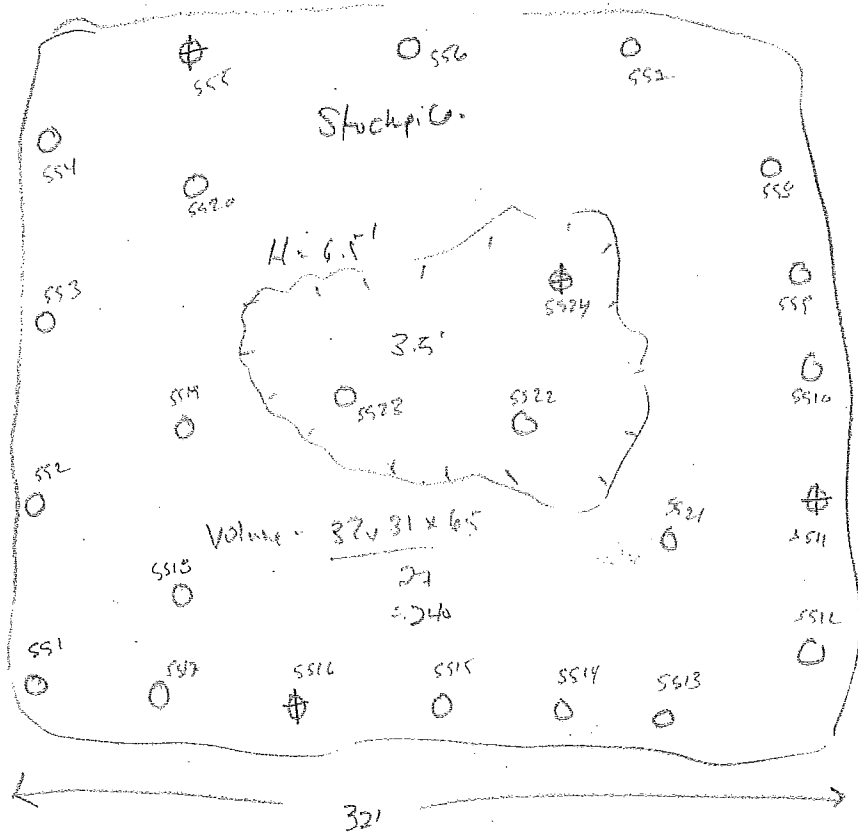
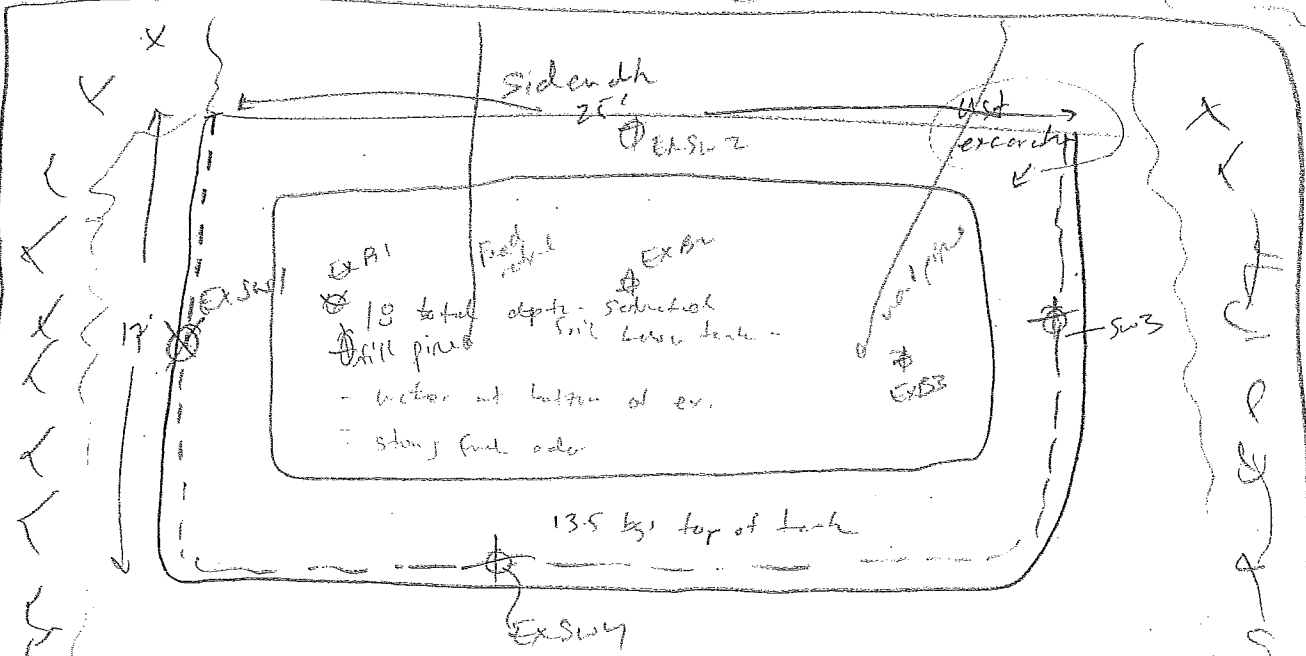
Important telephone calls:

Personnel on site:

Signature:

Date:

Buildings



Public pipe

Buildings

APPENDIX D
DISPOSAL DOCUMENTATION

NON-HAZARDOUS WASTE MANIFEST

7903

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. VSGQ	Manifest Document No. 117564	2. Page 1 of 2
3. Generator's Name and Mailing Address ADEC 555 CORDOVA STREET ANCHORAGE, AK 99501		BUCKNER BUILDING BLACKSTONE STREET WHITTIER, AK 99693		
4. Generator's Phone ()				
5. Transporter 1 Company Name NRC Alaska LLC	6. US EPA ID Number AKR000004184	A. State Transporter's ID		
7. Transporter 2 Company Name ALASKA RAILROAD CORPORATION		8. US EPA ID Number AKD981767403	B. Transporter 1 Phone (907) 258-1558	
9. Designated Facility Name and Site Address NRC ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184	C. State Transporter's ID (907) 265-2300	
		D. Transporter 2 Phone		
		E. State Facility's ID		
		F. Facility's Phone (907) 258-1558		
11. WASTE DESCRIPTION		Containers		13. Total Quantity
		No.	Type	14. Unit Wt./Vol.
HM X UN1203, Gasoline, 3, PGII ERG#128		1	TT	2048 G
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above) EA0201 GASOLINE		H. Handling Codes for Wastes Listed Above D11515		
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name Jacob Kester		Signature 		Date Month Day Year 9 6 17
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name Ben Bromiley		Date Month Day Year 9 6 17
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name OFC. FIDEL RODRIGUEZ		Date Month Day Year 9 6 17
19. Discrepancy Indication Space		Signature 19283 NMS96 17		
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name ERIN JACKSON		Signature 		Date Month Day Year 09 12 17

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

Bulk Tracking Log for Manifest Number 117564

Manifest 117564	Arrived 12-SEP-17	Generator:	BUCKNER BUILDING	TSDf: NRC ALASKA LLC				
Document	Profile	Type	Size	Oil Fuel	Water	Antifreeze	Sludge	Solids
D11515	EA0201	TT	2500	1884	164			
Totals:				1884	164			



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: BUCKNER BUILDING
BLACKSTONE STREET
WHITTIER, AK 99693

DISPOSAL FACILITY: NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: VSGQ
MANIFEST/DOCUMENT #: 117564
DATE OF DISPOSAL/RECYCLE: SEP-12-2017

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	GASOLINE	1	TT	2048	G

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: ENJ

SIGNATURE:  DATE: SEP 12 2017

Project Number:	117564
Project Reference Number:	
Location/Region:	3405 - EAGLE RIVER, AK (ES - Alaska reg)
Project Manager:	ROXANNE PEDERSEN
Billing Personnel:	AMY DURGELOH
Salesperson:	PAUL NIELSEN



Required information for ALL projects to be provided by Project Management
 Required information if applicable to the specific projects
 Information provided by Back-Office

PROJECT START FORM

Customer Information	
Customer Name:	SHANNON & WILSON, INC.
New Customer	FA <input type="checkbox"/> Yes TRU <input checked="" type="checkbox"/> No
Customer Number: <small>(Accounting Use)</small>	16564
Billing Address:	5430 FAIRBANKS STREET, SUITE 3
City:	ANCHORAGE
State:	AK
County:	MOA
Zip:	99518
Billing E-Mail Address:	<u>DXM@shanwil.com</u>
Billing Contact: <small>(First & Last Name Required)</small>	DAN McMAHON
Phone No.:	433-3223
Fax No.:	695-6777

Project Information	
Profit Center:	4215 - Waste Management
Project Name:	VAC TRUCK SERVICES - BUCKNER BLDG
Start Date:	Wednesday, September 06, 2017
Call in Date:	Time Initiated:
Project Site Address:	BUCKNER BUILDING
City:	WHITTIER
State:	AK
County:	
Zip:	
Site Contact: <small>(First & Last Name Required)</small>	DAN McMAHON
Phone No.:	433-3223
Cell Ph No.:	

Billing Information	
Project Billing Type	<input checked="" type="checkbox"/> TRUE & Materials <input type="checkbox"/> FALSE <input type="checkbox"/> TRUE Sum <50K <input type="checkbox"/> FALSE Sum >50K
Customer MSA	<input type="checkbox"/> YES <input type="checkbox"/> NO
Customer MSA / Contract No.:	
Signed Agreement Attached	TRU <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Explanation if "No":	
ESTIMATE:	16860

Prevailing Wage:	F <input type="checkbox"/> Yes <input type="checkbox"/> No	L <input type="checkbox"/> Yes <input type="checkbox"/> No	S <input type="checkbox"/> Yes <input type="checkbox"/> No	FAL <input type="checkbox"/> Davis Bacon
Job Estimate				
Contract Amount	\$			8,956.88
Total Costs	\$			6,269.81
Estimated Profit	\$			2,687.06
Estimated Margin				30.00%
Retention	FALS <input type="checkbox"/> Yes	FALS <input type="checkbox"/> No		% (If Yes)
Bonded	FALS <input type="checkbox"/> Yes	FALS <input type="checkbox"/> No		
Job Approval (use authority matrix)	ROXANNE PEDERSEN			
Est. Project Length				
Subcontractor				
Disposal	FA <input type="checkbox"/> Yes	FA <input type="checkbox"/> No		

Customer P.O. No.:	DAN McMAHON
Customer Reference No.:	
Project Specific Rate Schedule:	ALASKA GENERAL RATES
N.T.E. Agreement?	<input type="checkbox"/> Yes <input type="checkbox"/> No FALSE
Billing Frequency	<input type="checkbox"/> FALSE <input type="checkbox"/> FALSE <input type="checkbox"/> FALSE Monthly <input checked="" type="checkbox"/> TRUE Milestone <input type="checkbox"/> FALSE Other
Sales Taxable	<input type="checkbox"/> FALSE <input checked="" type="checkbox"/> TRUE
	<input type="checkbox"/> Reseller Permit
<small>Invoices will be mailed unless indicated below. Check ALL that apply</small>	
	<input checked="" type="checkbox"/> TRUE Mail <input type="checkbox"/> FALSE
	<input type="checkbox"/> FALSE Bill <input type="checkbox"/> FALSE
	<input type="checkbox"/> FALSE Upload Online

Back Office Information	
Credit Approval:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Payment Terms: (per Collections)	NET
Key Members	
Project Manager:	ROXANNE PEDERSEN
Regional Manager:	
Branch Manager:	
Regional Controller:	RHONDA STRUCHER
Regional Acct'g Manager:	YANA CATER
Billing Personnel:	AMY DURGELOH
Business Development:	PAUL NIELSEN

Comments:

APPENDIX E

RESULTS OF ANALYTICAL TESTING BY

SGS NORTH AMERICA INC.

AND

ADEC LABORATORY DATA REVIEW CHECKLIST



Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street Suite 3
Anchorage, AK 99518
(907)433-3246

Report Number: **1177236**

Client Project: **32-1-17860 Buckner Bldg**

Dear Trevor Crosby,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Print Date: 10/26/2017 3:24:49PM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1177236**
Project Name/Site: **32-1-17860 Buckner Bldg**
Project Contact: **Trevor Crosby**

Refer to sample receipt form for information on sample condition.

17860-EXSW1 (1177236002) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene (929 %) does not meet QC criteria due to matrix interference.

17860-EXB1 (1177236003) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene (354 %) does not meet QC criteria due to matrix interference.

17860-EXB2 (1177236004) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene (267 %) does not meet QC criteria due to matrix interference.

17860-EXSW101 (1177236006) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene (389 %) does not meet QC criteria due to matrix interference.

MB for HBN 1770197 [VXX/31507] (1420063) MB

AK101 -MB for GRO (GRO >1/2LOQ) does not meet QC criteria,however this analyte is non-detect in the associated dod-samples.

1177236003MS (1419200) MS

8270D SIM - PAH MS recoveries for naphthalene (147%), 1-methylnaphthalene (131%), and 2-methylnaphthalene (173%) do not meet QC criteria. See LCS for accuracy requirements.

1177236003MSD (1419201) MSD

8270D SIM - PAH MSD recoveries for naphthalene (130%), 1-methylnaphthalene (123%), and 2-methylnaphthalene (155%) do not meet QC criteria. See LCS for accuracy requirements.

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

Print Date: 10/26/2017 3:24:50PM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
8270D SIM (PAH)				
1177236001	17860-SS16	XMS10505	Benzo[k]fluoranthene	RP
1177236002	17860-EXSW1	XMS10505	Benzo[k]fluoranthene	RP
1177236004	17860-EXB2	XMS10505	Benzo[k]fluoranthene	RP
1177236005	17860-EXB3	XMS10505	Benzo[k]fluoranthene	RP
1177236006	17860-EXSW101	XMS10505	Benzo[k]fluoranthene	RP

Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

Laboratory Qualifiers

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

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are **AK00971 DW Chemistry (Provisionally Certified as of 10/12/2017) & Microbiology (Provisionally Certified as of 9/21/2017) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103)**. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

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

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
17860-SS16	1177236001	10/04/2017	10/10/2017	Soil/Solid (dry weight)
17860-EXSW1	1177236002	10/04/2017	10/10/2017	Soil/Solid (dry weight)
17860-EXB1	1177236003	10/04/2017	10/10/2017	Soil/Solid (dry weight)
17860-EXB2	1177236004	10/04/2017	10/10/2017	Soil/Solid (dry weight)
17860-EXB3	1177236005	10/04/2017	10/10/2017	Soil/Solid (dry weight)
17860-EXSW101	1177236006	10/04/2017	10/10/2017	Soil/Solid (dry weight)
17860-FB	1177236007	10/04/2017	10/10/2017	Solid/Soil (Wet Weight)
17860-STB	1177236008	10/04/2017	10/10/2017	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK101	AK101/8021 Combo. (S)
SW8021B	AK101/8021 Combo. (S)
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
SM21 2540G	Percent Solids SM2540G

Detectable Results Summary

Client Sample ID: **17860-SS16**

Lab Sample ID: 1177236001

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Anthracene	49.3J	ug/Kg
Benzo(a)Anthracene	76.7J	ug/Kg
Benzo[a]pyrene	81.4J	ug/Kg
Benzo[b]Fluoranthene	95.5J	ug/Kg
Benzo[g,h,i]perylene	48.1J	ug/Kg
Benzo[k]fluoranthene	39.3J	ug/Kg
Chrysene	118	ug/Kg
Fluoranthene	141	ug/Kg
Indeno[1,2,3-c,d] pyrene	36.7J	ug/Kg
Phenanthrene	175	ug/Kg
Pyrene	146	ug/Kg
Diesel Range Organics	15.7J	mg/Kg
Residual Range Organics	87.8	mg/Kg

Semivolatile Organic Fuels

Client Sample ID: **17860-EXSW1**

Lab Sample ID: 1177236002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	472	ug/Kg
2-Methylnaphthalene	1080	ug/Kg
Acenaphthene	37.1	ug/Kg
Anthracene	43.5	ug/Kg
Benzo(a)Anthracene	66.3	ug/Kg
Benzo[a]pyrene	62.1	ug/Kg
Benzo[b]Fluoranthene	73.1	ug/Kg
Benzo[g,h,i]perylene	33.3	ug/Kg
Benzo[k]fluoranthene	27.2	ug/Kg
Chrysene	75.1	ug/Kg
Dibenzo[a,h]anthracene	10.2J	ug/Kg
Fluoranthene	129	ug/Kg
Fluorene	24.8J	ug/Kg
Indeno[1,2,3-c,d] pyrene	31.0	ug/Kg
Naphthalene	816	ug/Kg
Phenanthrene	172	ug/Kg
Pyrene	127	ug/Kg
Diesel Range Organics	100	mg/Kg
Residual Range Organics	37.3	mg/Kg
Benzene	494	ug/Kg
Ethylbenzene	2470	ug/Kg
Gasoline Range Organics	234	mg/Kg
o-Xylene	5100	ug/Kg
P & M -Xylene	9840	ug/Kg
Toluene	3310	ug/Kg

Semivolatile Organic Fuels

Volatile Fuels

Detectable Results Summary

Client Sample ID: **17860-EXB1**

Lab Sample ID: 1177236003

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	148	ug/Kg
2-Methylnaphthalene	296	ug/Kg
Naphthalene	168	ug/Kg
Semivolatile Organic Fuels		
Diesel Range Organics	23.7	mg/Kg
Residual Range Organics	16.7J	mg/Kg
Volatile Fuels		
Benzene	624	ug/Kg
Ethylbenzene	1020	ug/Kg
Gasoline Range Organics	85.8	mg/Kg
o-Xylene	1760	ug/Kg
P & M -Xylene	4040	ug/Kg
Toluene	2700	ug/Kg

Client Sample ID: **17860-EXB2**

Lab Sample ID: 1177236004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	83.1	ug/Kg
2-Methylnaphthalene	150	ug/Kg
Acenaphthene	9.60J	ug/Kg
Anthracene	13.6J	ug/Kg
Benzo(a)Anthracene	24.0J	ug/Kg
Benzo[a]pyrene	26.6J	ug/Kg
Benzo[b]Fluoranthene	33.3	ug/Kg
Benzo[g,h,i]perylene	17.5J	ug/Kg
Benzo[k]fluoranthene	13.7J	ug/Kg
Chrysene	31.2	ug/Kg
Fluoranthene	42.4	ug/Kg
Indeno[1,2,3-c,d] pyrene	15.6J	ug/Kg
Naphthalene	99.6	ug/Kg
Phenanthrene	45.1	ug/Kg
Pyrene	44.1	ug/Kg
Semivolatile Organic Fuels		
Diesel Range Organics	48.8	mg/Kg
Residual Range Organics	53.8	mg/Kg
Volatile Fuels		
Benzene	209	ug/Kg
Ethylbenzene	444	ug/Kg
Gasoline Range Organics	47.5	mg/Kg
o-Xylene	811	ug/Kg
P & M -Xylene	1560	ug/Kg
Toluene	958	ug/Kg

Detectable Results Summary

Client Sample ID: **17860-EXB3**

Lab Sample ID: 1177236005

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Anthracene	14.6J	ug/Kg
Benzo(a)Anthracene	26.7J	ug/Kg
Benzo[a]pyrene	29.1	ug/Kg
Benzo[b]Fluoranthene	38.7	ug/Kg
Benzo[g,h,i]perylene	19.9J	ug/Kg
Benzo[k]fluoranthene	14.9J	ug/Kg
Chrysene	31.9	ug/Kg
Fluoranthene	46.1	ug/Kg
Indeno[1,2,3-c,d] pyrene	18.1J	ug/Kg
Phenanthrene	39.9	ug/Kg
Pyrene	46.9	ug/Kg
Diesel Range Organics	13.3J	mg/Kg
Residual Range Organics	102	mg/Kg
Gasoline Range Organics	1.25J	mg/Kg
o-Xylene	6.90J	ug/Kg

Semivolatile Organic Fuels

Volatile Fuels

Client Sample ID: **17860-EXSW101**

Lab Sample ID: 1177236006

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	112	ug/Kg
2-Methylnaphthalene	201	ug/Kg
Acenaphthene	46.9	ug/Kg
Anthracene	59.0	ug/Kg
Benzo(a)Anthracene	88.4	ug/Kg
Benzo[a]pyrene	81.3	ug/Kg
Benzo[b]Fluoranthene	90.7	ug/Kg
Benzo[g,h,i]perylene	41.2	ug/Kg
Benzo[k]fluoranthene	39.3	ug/Kg
Chrysene	103	ug/Kg
Dibenzo[a,h]anthracene	13.1J	ug/Kg
Fluoranthene	179	ug/Kg
Fluorene	28.3	ug/Kg
Indeno[1,2,3-c,d] pyrene	39.6	ug/Kg
Naphthalene	108	ug/Kg
Phenanthrene	219	ug/Kg
Pyrene	177	ug/Kg
Diesel Range Organics	31.3	mg/Kg
Residual Range Organics	52.2	mg/Kg
Benzene	102	ug/Kg
Ethylbenzene	575	ug/Kg
Gasoline Range Organics	61.7	mg/Kg
o-Xylene	1360	ug/Kg
P & M -Xylene	2380	ug/Kg
Toluene	663	ug/Kg

Semivolatile Organic Fuels

Volatile Fuels

Detectable Results Summary

Client Sample ID: **17860-FB**

Lab Sample ID: 1177236007

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	0.904J	mg/Kg
Toluene	8.65J	ug/Kg

Client Sample ID: **17860-STB**

Lab Sample ID: 1177236008

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	1.57J	mg/Kg



Results of 17860-SS16

Client Sample ID: 17860-SS16
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236001
Lab Project ID: 1177236

Collection Date: 10/04/17 11:44
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):90.3
Location:

Results by Polynuclear Aromatics GC/MS

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

Batch Information

Analytical Batch: XMS10505
Analytical Method: 8270D SIM (PAH)
Analyst: NRB
Analytical Date/Time: 10/24/17 18:56
Container ID: 1177236001-A

Prep Batch: XXX38637
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:14
Prep Initial Wt./Vol.: 22.969 g
Prep Extract Vol: 5 mL



Results of 17860-SS16

Client Sample ID: 17860-SS16
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236001
Lab Project ID: 1177236

Collection Date: 10/04/17 11:44
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):90.3
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 15.7 J, 22.1, 6.85, mg/Kg, 1, 10/13/17 19:48

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 85.9, 50-150, %, 1, 10/13/17 19:48

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/13/17 19:48
Container ID: 1177236001-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.056 g
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 87.8, 22.1, 6.85, mg/Kg, 1, 10/13/17 19:48

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 86.3, 50-150, %, 1, 10/13/17 19:48

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/13/17 19:48
Container ID: 1177236001-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.056 g
Prep Extract Vol: 1 mL



Results of 17860-SS16

Client Sample ID: 17860-SS16
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236001
Lab Project ID: 1177236

Collection Date: 10/04/17 11:44
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):90.3
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.855 U, 1.71, 0.513, mg/Kg, 1, 10/14/17 02:07

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 74.4, 50-150, %, 1, 10/14/17 02:07

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/14/17 02:07
Container ID: 1177236001-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 11:44
Prep Initial Wt./Vol.: 118.213 g
Prep Extract Vol: 36.4839 mL

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

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 90.1, 72-119, %, 1, 10/14/17 02:07

Batch Information

Analytical Batch: VFC13942
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/14/17 02:07
Container ID: 1177236001-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 11:44
Prep Initial Wt./Vol.: 118.213 g
Prep Extract Vol: 36.4839 mL



Results of 17860-EXSW1

Client Sample ID: 17860-EXSW1
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236002
Lab Project ID: 1177236

Collection Date: 10/04/17 15:49
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):91.4
Location:

Results by Polynuclear Aromatics GC/MS

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

Batch Information

Analytical Batch: XMS10507
Analytical Method: 8270D SIM (PAH)
Analyst: NRB
Analytical Date/Time: 10/25/17 17:09
Container ID: 1177236002-A

Prep Batch: XXX38637
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:14
Prep Initial Wt./Vol.: 22.569 g
Prep Extract Vol: 5 mL

Analytical Batch: XMS10505
Analytical Method: 8270D SIM (PAH)
Analyst: NRB
Analytical Date/Time: 10/24/17 19:16
Container ID: 1177236002-A

Prep Batch: XXX38637
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:14
Prep Initial Wt./Vol.: 22.569 g
Prep Extract Vol: 5 mL



Results of 17860-EXSW1

Client Sample ID: 17860-EXSW1
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236002
Lab Project ID: 1177236

Collection Date: 10/04/17 15:49
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):91.4
Location:

Results by Semivolatile Organic Fuels

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

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/13/17 19:58
Container ID: 1177236002-A
Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.202 g
Prep Extract Vol: 1 mL

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

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/13/17 19:58
Container ID: 1177236002-A
Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.202 g
Prep Extract Vol: 1 mL



Results of 17860-EXSW1

Client Sample ID: 17860-EXSW1
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236002
Lab Project ID: 1177236

Collection Date: 10/04/17 15:49
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):91.4
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 234, 21.0, 6.30, mg/Kg, 10, 10/14/17 02:26

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 929, *, 50-150, %, 10, 10/14/17 02:26

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/14/17 02:26
Container ID: 1177236002-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 15:49
Prep Initial Wt./Vol.: 84.035 g
Prep Extract Vol: 32.2599 mL

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

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 86.8, 72-119, %, 10, 10/14/17 02:26

Batch Information

Analytical Batch: VFC13942
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/14/17 02:26
Container ID: 1177236002-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 15:49
Prep Initial Wt./Vol.: 84.035 g
Prep Extract Vol: 32.2599 mL



Results of 17860-EXB1

Client Sample ID: 17860-EXB1
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236003
Lab Project ID: 1177236

Collection Date: 10/04/17 16:07
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):86.8
Location:

Results by Polynuclear Aromatics GC/MS

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

Batch Information

Analytical Batch: XMS10505
Analytical Method: 8270D SIM (PAH)
Analyst: NRB
Analytical Date/Time: 10/24/17 17:55
Container ID: 1177236003-A

Prep Batch: XXX38637
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:14
Prep Initial Wt./Vol.: 22.633 g
Prep Extract Vol: 5 mL



Results of 17860-EXB1

Client Sample ID: 17860-EXB1
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236003
Lab Project ID: 1177236

Collection Date: 10/04/17 16:07
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):86.8
Location:

Results by Semivolatile Organic Fuels

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

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/13/17 20:09
Container ID: 1177236003-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.489 g
Prep Extract Vol: 1 mL

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

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/13/17 20:09
Container ID: 1177236003-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.489 g
Prep Extract Vol: 1 mL



Results of 17860-EXB1

Client Sample ID: 17860-EXB1
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236003
Lab Project ID: 1177236

Collection Date: 10/04/17 16:07
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):86.8
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 85.8, 10.4, 3.11, mg/Kg, 5, 10/14/17 03:22

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 354, *, 50-150, %, 5, 10/14/17 03:22

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/14/17 03:22
Container ID: 1177236003-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:07
Prep Initial Wt./Vol.: 109.864 g
Prep Extract Vol: 39.498 mL

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

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 85.3, 72-119, %, 5, 10/14/17 03:22

Batch Information

Analytical Batch: VFC13942
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/14/17 03:22
Container ID: 1177236003-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:07
Prep Initial Wt./Vol.: 109.864 g
Prep Extract Vol: 39.498 mL



Results of 17860-EXB2

Client Sample ID: 17860-EXB2
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236004
Lab Project ID: 1177236

Collection Date: 10/04/17 16:14
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):87.8
Location:

Results by Polynuclear Aromatics GC/MS

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

Batch Information

Analytical Batch: XMS10505
Analytical Method: 8270D SIM (PAH)
Analyst: NRB
Analytical Date/Time: 10/24/17 20:18
Container ID: 1177236004-A

Prep Batch: XXX38637
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:14
Prep Initial Wt./Vol.: 22.507 g
Prep Extract Vol: 5 mL



Results of 17860-EXB2

Client Sample ID: 17860-EXB2
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236004
Lab Project ID: 1177236

Collection Date: 10/04/17 16:14
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):87.8
Location:

Results by Semivolatile Organic Fuels

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

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/13/17 20:19
Container ID: 1177236004-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.229 g
Prep Extract Vol: 1 mL

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

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/13/17 20:19
Container ID: 1177236004-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.229 g
Prep Extract Vol: 1 mL



Results of 17860-EXB2

Client Sample ID: 17860-EXB2
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236004
Lab Project ID: 1177236

Collection Date: 10/04/17 16:14
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):87.8
Location:

Results by Volatile Fuels

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

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/14/17 03:40
Container ID: 1177236004-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:14
Prep Initial Wt./Vol.: 106.656 g
Prep Extract Vol: 38.0368 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and 1,4-Difluorobenzene (surr).

Batch Information

Analytical Batch: VFC13942
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/14/17 03:40
Container ID: 1177236004-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:14
Prep Initial Wt./Vol.: 106.656 g
Prep Extract Vol: 38.0368 mL



Results of 17860-EXB3

Client Sample ID: 17860-EXB3
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236005
Lab Project ID: 1177236

Collection Date: 10/04/17 16:20
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Polynuclear Aromatics GC/MS

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

Batch Information

Analytical Batch: XMS10505
Analytical Method: 8270D SIM (PAH)
Analyst: NRB
Analytical Date/Time: 10/24/17 20:38
Container ID: 1177236005-A

Prep Batch: XXX38637
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:14
Prep Initial Wt./Vol.: 22.648 g
Prep Extract Vol: 5 mL

Results of 17860-EXB3

Client Sample ID: **17860-EXB3**
 Client Project ID: **32-1-17860 Buckner Bldg**
 Lab Sample ID: 1177236005
 Lab Project ID: 1177236

Collection Date: 10/04/17 16:20
 Received Date: 10/10/17 14:29
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.1
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	13.3 J	21.8	6.75	mg/Kg	1		10/13/17 20:29
Surrogates							
5a Androstane (surr)	85.6	50-150		%	1		10/13/17 20:29

Batch Information

Analytical Batch: XFC13883
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/13/17 20:29
 Container ID: 1177236005-A

Prep Batch: XXX38638
 Prep Method: SW3550C
 Prep Date/Time: 10/11/17 10:55
 Prep Initial Wt./Vol.: 30.226 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	102	21.8	6.75	mg/Kg	1		10/13/17 20:29
Surrogates							
n-Triacontane-d62 (surr)	85.2	50-150		%	1		10/13/17 20:29

Batch Information

Analytical Batch: XFC13883
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/13/17 20:29
 Container ID: 1177236005-A

Prep Batch: XXX38638
 Prep Method: SW3550C
 Prep Date/Time: 10/11/17 10:55
 Prep Initial Wt./Vol.: 30.226 g
 Prep Extract Vol: 1 mL



Results of 17860-EXB3

Client Sample ID: 17860-EXB3
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236005
Lab Project ID: 1177236

Collection Date: 10/04/17 16:20
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):91.1
Location:

Results by Volatile Fuels

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

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/14/17 03:59
Container ID: 1177236005-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:20
Prep Initial Wt./Vol.: 85.583 g
Prep Extract Vol: 32.5966 mL

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

Batch Information

Analytical Batch: VFC13942
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/14/17 03:59
Container ID: 1177236005-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:20
Prep Initial Wt./Vol.: 85.583 g
Prep Extract Vol: 32.5966 mL



Results of 17860-EXSW101

Client Sample ID: 17860-EXSW101
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236006
Lab Project ID: 1177236

Collection Date: 10/04/17 16:50
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):90.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various polynuclear aromatic hydrocarbons like 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthene, etc., and a Surrogates section at the bottom.

Batch Information

Analytical Batch: XMS10505
Analytical Method: 8270D SIM (PAH)
Analyst: NRB
Analytical Date/Time: 10/24/17 20:58
Container ID: 1177236006-A

Prep Batch: XXX38637
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:14
Prep Initial Wt./Vol.: 22.928 g
Prep Extract Vol: 5 mL



Results of 17860-EXSW101

Client Sample ID: 17860-EXSW101
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236006
Lab Project ID: 1177236

Collection Date: 10/04/17 16:50
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):90.6
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	31.3	21.9	6.78	mg/Kg	1		10/13/17 20:40
Surrogates							
5a Androstane (surr)	85.3	50-150		%	1		10/13/17 20:40

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/13/17 20:40
Container ID: 1177236006-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.303 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	52.2	21.9	6.78	mg/Kg	1		10/13/17 20:40
Surrogates							
n-Triacontane-d62 (surr)	88.9	50-150		%	1		10/13/17 20:40

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/13/17 20:40
Container ID: 1177236006-A

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/17 10:55
Prep Initial Wt./Vol.: 30.303 g
Prep Extract Vol: 1 mL



Results of 17860-EXSW101

Client Sample ID: 17860-EXSW101
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236006
Lab Project ID: 1177236

Collection Date: 10/04/17 16:50
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):90.6
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 61.7, 1.94, 0.582, mg/Kg, 1, 10/14/17 04:18

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 389, *, 50-150, %, 1, 10/14/17 04:18

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/14/17 04:18
Container ID: 1177236006-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:50
Prep Initial Wt./Vol.: 97.289 g
Prep Extract Vol: 34.1736 mL

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

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 84.1, 72-119, %, 1, 10/14/17 04:18

Batch Information

Analytical Batch: VFC13942
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/14/17 04:18
Container ID: 1177236006-B

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 16:50
Prep Initial Wt./Vol.: 97.289 g
Prep Extract Vol: 34.1736 mL

Results of 17860-FB

Client Sample ID: **17860-FB**
 Client Project ID: **32-1-17860 Buckner Bldg**
 Lab Sample ID: 1177236007
 Lab Project ID: 1177236

Collection Date: 10/04/17 15:45
 Received Date: 10/10/17 14:29
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.904 J	2.54	0.763	mg/Kg	1		10/13/17 22:23

Surrogates

4-Bromofluorobenzene (surr)	75.5	50-150		%	1		10/13/17 22:23
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Batch Information

Analytical Batch: VFC13942
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 10/13/17 22:23
 Container ID: 1177236007-A

Prep Batch: VXX31507
 Prep Method: SW5035A
 Prep Date/Time: 10/04/17 15:45
 Prep Initial Wt./Vol.: 49.147 g
 Prep Extract Vol: 25 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	6.35 U	12.7	4.07	ug/Kg	1		10/13/17 22:23
Ethylbenzene	12.7 U	25.4	7.94	ug/Kg	1		10/13/17 22:23
o-Xylene	12.7 U	25.4	7.94	ug/Kg	1		10/13/17 22:23
P & M -Xylene	25.4 U	50.9	15.3	ug/Kg	1		10/13/17 22:23
Toluene	8.65 J	25.4	7.94	ug/Kg	1		10/13/17 22:23

Surrogates

1,4-Difluorobenzene (surr)	92.3	72-119		%	1		10/13/17 22:23
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Batch Information

Analytical Batch: VFC13942
 Analytical Method: SW8021B
 Analyst: ST
 Analytical Date/Time: 10/13/17 22:23
 Container ID: 1177236007-A

Prep Batch: VXX31507
 Prep Method: SW5035A
 Prep Date/Time: 10/04/17 15:45
 Prep Initial Wt./Vol.: 49.147 g
 Prep Extract Vol: 25 mL



Results of 17860-STB

Client Sample ID: 17860-STB
Client Project ID: 32-1-17860 Buckner Bldg
Lab Sample ID: 1177236008
Lab Project ID: 1177236

Collection Date: 10/04/17 17:00
Received Date: 10/10/17 14:29
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 1.57 J, 2.54, 0.761, mg/Kg, 1, 10/13/17 22:42

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 76.4, 50-150, %, 1, 10/13/17 22:42

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/13/17 22:42
Container ID: 1177236008-A

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 17:00
Prep Initial Wt./Vol.: 49.249 g
Prep Extract Vol: 25 mL

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

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 94.5, 72-119, %, 1, 10/13/17 22:42

Batch Information

Analytical Batch: VFC13942
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 10/13/17 22:42
Container ID: 1177236008-A

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/04/17 17:00
Prep Initial Wt./Vol.: 49.249 g
Prep Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1769943 [SPT/10340]
Blank Lab ID: 1419167

Matrix: Soil/Solid (dry weight)

QC for Samples:
1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10340
Analytical Method: SM21 2540G
Instrument:
Analyst: EWW
Analytical Date/Time: 10/10/2017 5:00:00PM

Print Date: 10/26/2017 3:25:00PM

Duplicate Sample Summary

Original Sample ID: 1178478001

Analysis Date: 10/10/2017 17:00

Duplicate Sample ID: 1419168

Matrix: Soil/Solid (dry weight)

QC for Samples:

1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	93.5	92.6	%	1.00	(< 15)

Batch Information

Analytical Batch: SPT10340

Analytical Method: SM21 2540G

Instrument:

Analyst: EWW

Print Date: 10/26/2017 3:25:00PM

Method Blank

Blank ID: MB for HBN 1770197 [VXX/31507]
Blank Lab ID: 1420063

Matrix: Soil/Solid (dry weight)

QC for Samples:

1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006, 1177236007, 1177236008

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.33J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	87.6	50-150		%

Batch Information

Analytical Batch: VFC13942
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/13/2017 10:04:00PM

Prep Batch: VXX31507
Prep Method: SW5035A
Prep Date/Time: 10/13/2017 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177236 [VXX31507]
 Blank Spike Lab ID: 1420066
 Date Analyzed: 10/13/2017 21:27

Spike Duplicate ID: LCSD for HBN 1177236 [VXX31507]
 Spike Duplicate Lab ID: 1420067
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006, 1177236007, 1177236008

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	10.8	87	12.5	10.4	83	(60-120)	4.40	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	85.8	86	1.25	91.3	91	(50-150)	6.20	
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Batch Information

Analytical Batch: **VFC13942**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX31507**
 Prep Method: **SW5035A**
 Prep Date/Time: **10/13/2017 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1770197 [VXX/31507]
 Blank Lab ID: 1420063

Matrix: Soil/Solid (dry weight)

QC for Samples:

1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006, 1177236007, 1177236008

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	6.25U	12.5	4.00	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg

Surrogates

1,4-Difluorobenzene (surr)	93.8	72-119		%
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Batch Information

Analytical Batch: VFC13942
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST
 Analytical Date/Time: 10/13/2017 10:04:00PM

Prep Batch: VXX31507
 Prep Method: SW5035A
 Prep Date/Time: 10/13/2017 8:00:00AM
 Prep Initial Wt./Vol.: 50 g
 Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177236 [VXX31507]
 Blank Spike Lab ID: 1420064
 Date Analyzed: 10/13/2017 20:50

Spike Duplicate ID: LCSD for HBN 1177236 [VXX31507]
 Spike Duplicate Lab ID: 1420065
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006, 1177236007, 1177236008

Results by SW8021B

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	1250	1310	105	1250	1360	109	(75-125)	3.40	(< 20)
Ethylbenzene	1250	1310	105	1250	1360	109	(75-125)	3.90	(< 20)
o-Xylene	1250	1280	103	1250	1340	107	(75-125)	4.10	(< 20)
P & M -Xylene	2500	2600	104	2500	2710	109	(80-125)	4.20	(< 20)
Toluene	1250	1330	106	1250	1360	109	(70-125)	2.70	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	1250	96.9	97	1250	98	98	(72-119)	1.10	

Batch Information

Analytical Batch: **VFC13942**
 Analytical Method: **SW8021B**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX31507**
 Prep Method: **SW5035A**
 Prep Date/Time: **10/13/2017 08:00**
 Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Matrix Spike Summary

Original Sample ID: 1420068
 MS Sample ID: 1420072 MS
 MSD Sample ID: 1420073 MSD

Analysis Date: 10/13/2017 23:00
 Analysis Date: 10/13/2017 23:19
 Analysis Date: 10/13/2017 23:38
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006, 1177236007, 1177236008

Results by SW8021B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	10.6	679	706	102	679	731	106	75-125	3.50	(< 20)
Ethylbenzene	26.6	679	726	103	679	749	106	75-125	3.10	(< 20)
o-Xylene	34.5	679	713	100	679	734	103	75-125	2.90	(< 20)
P & M -Xylene	76.5	1360	1460	102	1360	1500	105	80-125	3.10	(< 20)
Toluene	118	679	799	100	679	825	104	70-125	3.10	(< 20)
Surrogates										
1,4-Difluorobenzene (surr)		679	621	92	679	645	95	72-119	3.80	

Batch Information

Analytical Batch: VFC13942
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST
 Analytical Date/Time: 10/13/2017 11:19:00PM

Prep Batch: VXX31507
 Prep Method: AK101 Extraction (S)
 Prep Date/Time: 10/13/2017 8:00:00AM
 Prep Initial Wt./Vol.: 92.00g
 Prep Extract Vol: 25.00mL

Method Blank

Blank ID: MB for HBN 1769948 [XXX/38637]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1419198

QC for Samples:

1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	7.50	ug/Kg
2-Methylnaphthalene	12.5U	25.0	7.50	ug/Kg
Acenaphthene	12.5U	25.0	7.50	ug/Kg
Acenaphthylene	12.5U	25.0	7.50	ug/Kg
Anthracene	12.5U	25.0	7.50	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	7.50	ug/Kg
Benzo[a]pyrene	12.5U	25.0	7.50	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	7.50	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	7.50	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	7.50	ug/Kg
Chrysene	12.5U	25.0	7.50	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	7.50	ug/Kg
Fluoranthene	12.5U	25.0	7.50	ug/Kg
Fluorene	12.5U	25.0	7.50	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	7.50	ug/Kg
Naphthalene	10.0U	20.0	6.00	ug/Kg
Phenanthrene	12.5U	25.0	7.50	ug/Kg
Pyrene	12.5U	25.0	7.50	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	82.6	50-150		%
Fluoranthene-d10 (surr)	89.5	50-150		%

Batch Information

Analytical Batch: XMS10505
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NRB
 Analytical Date/Time: 10/24/2017 5:13:00PM

Prep Batch: XXX38637
 Prep Method: SW3550C
 Prep Date/Time: 10/11/2017 10:14:45AM
 Prep Initial Wt./Vol.: 22.5 g
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177236 [XXX38637]

Blank Spike Lab ID: 1419199

Date Analyzed: 10/24/2017 17:33

Matrix: Soil/Solid (dry weight)

QC for Samples: 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by 8270D SIM (PAH)

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1-Methylnaphthalene	111	94.8	85	(43-111)
2-Methylnaphthalene	111	87.1	78	(39-114)
Acenaphthene	111	101	91	(44-111)
Acenaphthylene	111	105	95	(39-116)
Anthracene	111	114	102	(50-114)
Benzo(a)Anthracene	111	111	100	(54-122)
Benzo[a]pyrene	111	104	93	(50-125)
Benzo[b]Fluoranthene	111	112	100	(53-128)
Benzo[g,h,i]perylene	111	114	102	(49-127)
Benzo[k]fluoranthene	111	111	100	(56-123)
Chrysene	111	108	98	(57-118)
Dibenzo[a,h]anthracene	111	114	103	(50-129)
Fluoranthene	111	98.7	89	(55-119)
Fluorene	111	107	96	(47-114)
Indeno[1,2,3-c,d] pyrene	111	116	104	(49-130)
Naphthalene	111	86.1	78	(38-111)
Phenanthrene	111	114	103	(49-113)
Pyrene	111	105	94	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111	77.6	78	(50-150)
Fluoranthene-d10 (surr)	111	82.5	83	(50-150)

Batch Information

Analytical Batch: XMS10505

Analytical Method: 8270D SIM (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: NRB

Prep Batch: XXX38637

Prep Method: SW3550C

Prep Date/Time: 10/11/2017 10:14

Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1177236003
 MS Sample ID: 1419200 MS
 MSD Sample ID: 1419201 MSD

Analysis Date: 10/24/2017 17:55
 Analysis Date: 10/24/2017 18:15
 Analysis Date: 10/24/2017 18:36
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	148	126	313	131 *	128	304	123 *	43-111	2.80	(< 20)
2-Methylnaphthalene	296	126	515	173 *	128	493	155 *	39-114	4.20	(< 20)
Acenaphthene	14.3U	126	109	86	128	110	86	44-111	0.82	(< 20)
Acenaphthylene	14.3U	126	118	94	128	118	92	39-116	0.14	(< 20)
Anthracene	14.3U	126	126	99	128	126	98	50-114	0.12	(< 20)
Benzo(a)Anthracene	14.3U	126	114	90	128	118	92	54-122	2.60	(< 20)
Benzo(a)pyrene	14.3U	126	113	89	128	115	90	50-125	1.90	(< 20)
Benzo[b]Fluoranthene	14.3U	126	115	91	128	116	91	53-128	1.00	(< 20)
Benzo[g,h,i]perylene	14.3U	126	111	88	128	112	88	49-127	1.50	(< 20)
Benzo[k]fluoranthene	14.3U	126	115	91	128	118	92	56-123	2.30	(< 20)
Chrysene	14.3U	126	112	89	128	114	90	57-118	2.00	(< 20)
Dibenzo[a,h]anthracene	14.3U	126	112	89	128	114	89	50-129	1.50	(< 20)
Fluoranthene	14.3U	126	102	81	128	106	83	55-119	3.10	(< 20)
Fluorene	14.3U	126	116	92	128	116	91	47-114	0.33	(< 20)
Indeno[1,2,3-c,d] pyrene	14.3U	126	113	90	128	115	90	49-130	1.60	(< 20)
Naphthalene	168	126	354	147 *	128	334	130 *	38-111	5.60	(< 20)
Phenanthrene	14.3U	126	124	99	128	123	97	49-113	1.00	(< 20)
Pyrene	14.3U	126	108	86	128	112	88	55-117	3.40	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		126	95.0	75	128	96.2	76	50-150	1.20	
Fluoranthene-d10 (surr)		126	95.6	76	128	99.9	78	50-150	4.40	

Batch Information

Analytical Batch: XMS10505
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: NRB
 Analytical Date/Time: 10/24/2017 6:15:00PM

Prep Batch: XXX38637
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 10/11/2017 10:14:45AM
 Prep Initial Wt./Vol.: 22.84g
 Prep Extract Vol: 5.00mL

Method Blank

Blank ID: MB for HBN 1769951 [XXX/38638]
Blank Lab ID: 1419212

Matrix: Soil/Solid (dry weight)

QC for Samples:
1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	84.7	60-120		%

Batch Information

Analytical Batch: XFC13883
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: JMG
Analytical Date/Time: 10/13/2017 7:05:00PM

Prep Batch: XXX38638
Prep Method: SW3550C
Prep Date/Time: 10/11/2017 10:55:04AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177236 [XXX38638]
 Blank Spike Lab ID: 1419213
 Date Analyzed: 10/13/2017 19:16

Spike Duplicate ID: LCSD for HBN 1177236
 [XXX38638]
 Spike Duplicate Lab ID: 1419214
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	167	161	97	167	159	95	(75-125)	1.60	(< 20)
Surrogates									
5a Androstane (surr)	3.33	96.3	96	3.33	95.3	95	(60-120)	1.10	

Batch Information

Analytical Batch: **XFC13883**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX38638**
 Prep Method: **SW3550C**
 Prep Date/Time: **10/11/2017 10:55**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1769951 [XXX/38638]
 Blank Lab ID: 1419212

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	8.41J	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	92	60-120		%

Batch Information

Analytical Batch: XFC13883
 Analytical Method: AK103
 Instrument: Agilent 7890B F
 Analyst: JMG
 Analytical Date/Time: 10/13/2017 7:05:00PM

Prep Batch: XXX38638
 Prep Method: SW3550C
 Prep Date/Time: 10/11/2017 10:55:04AM
 Prep Initial Wt./Vol.: 30 g
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177236 [XXX38638]
 Blank Spike Lab ID: 1419213
 Date Analyzed: 10/13/2017 19:16

Spike Duplicate ID: LCSD for HBN 1177236
 [XXX38638]
 Spike Duplicate Lab ID: 1419214
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177236001, 1177236002, 1177236003, 1177236004, 1177236005, 1177236006

Results by AK103

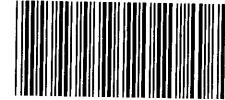
Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	167	162	97	167	162	97	(60-120)	0.01	(< 20)	
Surrogates										
n-Triacontane-d62 (surr)	3.33	92	92	3.33	94.9	95	(60-120)	3.10		

Batch Information

Analytical Batch: **XFC13883**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX38638**
 Prep Method: **SW3550C**
 Prep Date/Time: **10/11/2017 10:55**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

1177236



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory S&S Page 1 of 1
Attn: TDM

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(907) 561-2120

3990 Collins Way, Suite 100
Lake Oswego, OR 97035
(503) 223-6147

1321 Barnock Street, Suite 200
Denver, CO 80204
(303) 825-3800

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

Sample Identity	Lab No.	Time	Date Sampled	Comp. Grab	GP0	L20	PL0	BTEX	PAH	B2-700-SUM	Total Number of Containers	Remarks/Matrix
17860 - SS16	①A-B	11:44	10/4/17	X	X	X	X	X	X		2	
- EX SW1	②A-B	15:49	↓	X	↓	↓	↓	↓	↓			
- EX B1	③A-B	16:07	↓	X	↓	↓	↓	↓	↓			
- EX B2	④A-B	16:14	↓	X	↓	↓	↓	↓	↓			
- EX B3	⑤A-B	16:20	↓	X	↓	↓	↓	↓	↓			
- EX SW101	⑥A-B	16:50	↓	X	X	X		X		2		
- FB	⑦A	15:45	↓	X	↓	↓	↓	↓	↓		1	
- STB	⑧A	17:00	↓	X	↓	↓	↓	↓	↓		1	

Project Information		Sample Receipt		Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Project Number: <u>32-1-17860</u>	Total Number of Containers	COC Seals/Intact? Y/N/NA <u>HD</u>	Received Good Cond./Cold <u>3-7</u>	Signature: <u>[Signature]</u>	Time: <u>1429</u>	Signature: _____	Time: _____	Signature: _____	Time: _____
Project Name: <u>Buckner Bldg.</u>	Contact: <u>TDM, TWC</u>	Delivery Method: <u>020</u>	(attach shipping bill, if any)	Printed Name: <u>TREVOR CROSBY</u>	Date: <u>10/10/17</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____
Ongoing Project? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Sampler: <u>TWC</u>			Company: <u>SW</u>		Company: _____		Company: _____	
Instructions				Received By: 1.		Received By: 2.		Received By: 3.	
Requested Turnaround Time: <u>Standard (10 Day)</u>				Signature: _____	Time: _____	Signature: _____	Time: _____	Signature: _____	Time: <u>1429</u>
Special Instructions: <u>Level II Deliverables</u>				Printed Name: _____	Date: _____	Printed Name: _____	Date: _____	Printed Name: <u>Carl Skipe</u>	Date: <u>10/10</u>
Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - Job File				Company: _____		Company: _____		Company: <u>S&S</u>	



e-Sample Receipt Form

SGS Workorder #:

1177236



1 1 7 7 2 3 6

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	<input checked="" type="checkbox"/> Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	<input type="checkbox"/> N/A	Hand Delivered
COC accompanied samples?	<input checked="" type="checkbox"/> Yes	
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> Yes	Cooler ID: 1 @ 3.7 °C Therm. ID: D20
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
	<input type="checkbox"/>	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="checkbox"/> N/A	
If <0°C, were sample containers ice free?	<input type="checkbox"/> N/A	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	<input checked="" type="checkbox"/> Yes	
Do samples match COC ** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> Yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	<input checked="" type="checkbox"/> Yes	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> N/A ***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input type="checkbox"/> N/A	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/> Yes	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1177236001-A	No Preservative Required	OK			
1177236001-B	Methanol field pres. 4 C	OK			
1177236002-A	No Preservative Required	OK			
1177236002-B	Methanol field pres. 4 C	OK			
1177236003-A	No Preservative Required	OK			
1177236003-B	Methanol field pres. 4 C	OK			
1177236004-A	No Preservative Required	OK			
1177236004-B	Methanol field pres. 4 C	OK			
1177236005-A	No Preservative Required	OK			
1177236005-B	Methanol field pres. 4 C	OK			
1177236006-A	No Preservative Required	OK			
1177236006-B	Methanol field pres. 4 C	OK			
1177236007-A	Methanol field pres. 4 C	OK			
1177236008-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Dan McMahon

Title: Associate

Date: December 2017

CS Report Name: UST Closure, Buckner Building, Whittier, Alaska

Laboratory Report Date: October 27, 2017

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America, Inc.

Laboratory Report Number: 1177236

ADEC File Number: 2114.57.003

ADEC File Number: NA

(NOTE: NA = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No / NA (Please explain.)

Comments:

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

Yes / No / **NA**

Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

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

Yes / No / NA (Please explain.)

Comments:

- b. Correct analyses requested? **Yes** / No / NA (Please explain.)

Comments:

3. Laboratory Sample Receipt Documentation

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

Yes / **No** / NA (Please explain.)

Comments: *The temperature blank had a temperature of 3.7° C.*

- b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes** / No / NA (Please explain.)

Comments:

- c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes** / No / NA (Please explain.)

Comments: *The laboratory did not note any discrepancies.*

- d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? Yes / No / **NA** (Please explain.)

Comments:

- e. Data quality or usability affected? Yes / **No** (Please Explain.)

Comments:

4. Case Narrative

- a. Present and understandable? **Yes** / No / NA (Please explain.)

Comments:

- b. Discrepancies, errors or QC failures noted by the lab? **Yes** / No / NA (Please explain.)

Comments: *The case narrative notes that:*

- *Samples EXSW1, EXB1, EXB2, and EXSW101: AK 101, the surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.*
- *Method blank for GRO (>1/2 LOQ) does not meet QC criteria. GRO is non-detect in associated samples.*
- *For Method EPA 8270D SIM, MS/MSD RPDs for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.*

- c. Were corrective actions documented? Yes / **No** / NA (Please explain.)

Comments:

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

Comments: *See above.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No / NA (Please explain.)

Comments:

- b. All applicable holding times met? **Yes** / No / NA (Please explain.)

Comments:

- c. All soils reported on a dry-weight basis? **Yes** / No / NA (Please explain.)

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes** / No / NA (Please explain.)

Comments:

- e. Data quality or usability affected? (Please explain.)

Comments:

6. QC Samples

a. Method Blank

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

Yes / No / NA (Please explain.)

Comments:

- ii. All method blank results less than LOQ? **Yes** / No / NA (Please explain.)

Comments: *Although less than the LOQ, an estimated (J-flagged) concentration of GRO (1.33 mg/kg) was detected in the method blank.*

- iii. If above LOQ, what samples are affected?

Comments: *Each of the soil samples, the trip blank, and the field blank.*

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

Yes / No / NA (please explain)

Comments: *Sample EXB3, the trip blank, and the field blank contained estimated (J-flagged) concentrations of GRO. Therefore, the results are flagged "B" and reported as non-detect at the limit of quantitation (LOQ). Samples EXSW1, EXSW101, EXB1, and EXB2 are not considered affected because the reported sample concentrations are greater than 10x the reported method blank concentration.*

- v. Data quality or usability affected? (Please explain.)

Comments: *See above.*

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

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) **Yes** / No / NA

(Please explain.)

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? Yes / No / **NA** (Please explain.)

Comments: *Metals/inorganics were not analyzed.*

- iii. Accuracy – All percent recoveries (%R) reported *and* within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) **Yes / No / NA (Please explain.)**

Comments: *The LCS recoveries for 2-butanone and dichlorodifluoromethane do not meet QC criteria. These analytes were not detected or were not detected above the LOQ in the associated samples.*

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / NA (Please explain.)**

Comments:

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

Comments:

- vi. Do the affected samples(s) have data flags? **Yes / No / NA**

Comments:

If so, are the data flags clearly defined? **Yes / No / NA**

Comments: *See above.*

- vii. Data quality or usability affected? Explain. **NA**

Comments: *Data quality/usability are unaffected; see above.*

c. Surrogates - Organics Only

- i. Are surrogate recoveries reported for organic analyses, field, QC, and laboratory samples? **Yes / No / NA (Please explain.)**

Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes / No / NA (Please explain.)**

Comments:

- *In Samples EXSW1, EXSW101, EXB1, and EXB2, AK 101, the surrogate recoveries for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.*

- iii. Do the sample results with failed surrogate recoveries have data flags? **Yes / No / NA (Please explain.)**

Comments: *Concentrations of analytes associated with the GRO surrogate failures are considered biased high and flagged “J+” on Table 2 of the report.*

If so, are the data flags clearly defined? **Yes** / No / NA
Comments: *See above.*

- iv. Data quality or usability affected? Explain.
Comments: *Potentially affected samples are potentially biased high. See above.*

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

- i. One trip blank reported per matrix, analysis and cooler? **Yes** / No / NA (Please explain.)
Comments: *One soil trip blank (STB) and one field blank (FB) were submitted with the samples.*
- ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? Yes / **No** / NA (Please explain if NA or no.)
Comments: *Only one cooler was used to transport the project samples.*
- iii. All results less than LOQ? **Yes** / No / NA (Please explain.)
Comments:
- iv. If above LOQ, what samples are affected? **NA**
Comments:
- v. Data quality or usability affected? Explain.
Comments: *Data quality/usability are unaffected; see above.*

e. Field Duplicate

- i. One field duplicate submitted per matrix, analysis and 10 project samples? **Yes** / No / NA (Please explain.)
Comments:
- ii. Were the field duplicates submitted blind to the lab? **Yes** / No / NA (Please explain.)
Comments:
- iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) Yes / **No** / NA (Please explain.)
Comments: *The GRO, DRO, benzene, toluene, ethylbenzene, xylenes, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene RPDs are greater than 50% for duplicate samples EXSW1/EXSW101.*
- iv. Data quality or usability affected? Explain. **NA**
Comments: *The affected results are flagged “E” to indicate that the sample results are estimated due to the RPD failures.*

- f. Decontamination or Equipment Blank** (if not applicable, a comment stating why must be entered below)

Yes / **No** / NA (Please explain.)

Comments: *A decontamination or equipment blank was not included in our ADEC-approved work plan.*

- i.** All results less than LOQ? Yes / No / **NA** (Please explain.)

Comments:

- ii.** If results are above LOQ, what samples are affected? **NA**

Comments:

- iii.** Data quality or usability affected? Explain. **NA**

Comments:

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

- a.** Are they defined and appropriate? **Yes** / No / NA

Comments: *Laboratory-specific flags are defined on Page 4 of the SGS report.*

APPENDIX F

**IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL/ENVIRONMENTAL REPORT**

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