SHANNON & WILSON, INC.
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Transmittal

To: North Slope Borough
CIPM Division
3000 C Street, Suite 104

Attn: Mr. Kevin Prange
Date: March 20, 2014
Project: Nuiqsut Power Plant Trench

Copies To: Keather McLoone, ADEC

We have enclosed the following items:

Copies	Description
3	*Release Investigation Report, Power Plant Trench (ADEC File 370.02.002/370.38.001), Nuiqsut, Alaska*

These are transmitted by:

☐ E-mail ☒ USPS ☐ Courier ☐ Hand-delivered

Comments:

By: Julie Keener, P.E.
Title: Senior Engineer

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March 20, 2014

North Slope Borough
CIPM Division
3000 C Street, Suite 104
Anchorage, Alaska 99503

Attn: Mr. Kevin Prange

RE: FINAL RELEASE INVESTIGATION REPORT, POWER PLANT TRENCH (ADEC FILE 370.02.002/370.38.001), NUIQSUT, ALASKA

Shannon & Wilson, Inc. prepared this final report on our field-screening and soil-sampling activities at the Power Plant trench site in Nuiqsut, Alaska. This report was prepared for the North Slope Borough (NSB), under our term contract 2012-139 for Area-Wide Contaminated Sites Remediation, the scope of service described in our April 5, 2013 proposal, and our July 2013 *Release Investigation Revised Work Plan*.

INTRODUCTION

Contamination was identified in a utility trench between the old Warm Storage Building, Water Tank, and Washeteria in Nuiqsut (Figure 1). On July 30, 2012, the NSB's contractor, SKW Eskimos, Inc. (SKW), encountered petroleum-contaminated soil while excavating a trench to install underground diesel-supply piping. On the following day, we collected soil samples where contamination had been observed in the trench. Our assessment of contamination in 2012 indicated diesel range organic (DRO) concentrations exceeded the most stringent Alaska Department of Environmental Conservation (ADEC) soil-cleanup level (200 milligrams per kilogram [mg/kg]) at six of the seven sampled locations; gasoline range organics (GRO), toluene, ethylbenzene, xylenes, and polynuclear aromatic hydrocarbon (PAH) concentrations in the samples did not exceed ADEC soil-cleanup levels. Benzene was not detected in the samples. Our 2013 efforts focused on determining the source and extent of the contaminated soil.

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SITE DESCRIPTION AND BACKGROUND

Site Description

The village of Nuiqsut is about 30 miles from the Beaufort Sea on the Nechelik Channel of the Colville River delta, and 136 miles southeast of Barrow. Nuiqsut is on the Arctic coastal plain, which is flat and poorly drained in a network of tundra, ponds, and streams. Soils include a thin layer of peat and organic matter overlying frozen marine and alluvial clays, silt, sand, and gravel. Permafrost is estimated to be several hundred feet thick in the area. Shallow groundwater overlying permafrost in the summer and early fall is a result of active-layer thawing and infiltration of snowmelt and rainfall. Water-table depth varies as a function of the depth of thawed ground and precipitation.

The NSB provides Nuiqsut with utilities and public services. The power plant and washeteria are in the northern half of the 9.1-acre Tract A, an NSB-owned property; the school is on the southern half of the tract (Figure 1). There are four 42,000-gallon capacity tanks at the tank farm site northwest of the washeteria. Aboveground and underground fuel piping connects the bulk tanks to the former power plant (see below), washeteria, and current power plant (Figure 1). We understand the Nuiqsut power plant was formerly located in the western portion of the building housing the washeteria, and the Warm Storage Building used to be the power plant shop. Note that the building identified in 2012 as the washeteria (Figure 1) was no longer being used for that purpose in 2013.

Several spills have been reported at the former power plant/new power plant/washeteria site. Fifty gallons of diesel spilled in the old power plant generator room in 1999 because of a seal failure. 120 gallons of diesel spilled in the “utilidor northeast of washeteria” in 1998, and 10 gallons of diesel spilled in 1995 because of a faulty connection.

Residents reported that in the 1980s a relatively large spill of unknown volume occurred at one of the dispensing tanks when the tank was overfilled. Fuel ran under the washeteria and old power plant continuing through culverts toward the schoolyard. The area in front of the school’s current aboveground storage tank (AST; Figure 1) was highly contaminated. Spill response efforts at the time included shoveling contaminated soil from under the washeteria and using absorbent pads to soak up fuel. It was believed that clean fill soil was placed over some of the contaminated areas and under the washeteria. Our 2003 observations at the site confirmed the presence of contamination near the school’s AST. We noted soil staining, dead vegetation, and

surface-water sheen throughout the area to the southwest of the tank farm and near the school building and playground.

Background

In 2012, the underground fuel piping from the old power plant building to the current power plant in Nuiqsut failed; operators reported that when they attempted to operate the fuel oil transfer pump, fuel was not transferred. The NSB contracted to have new underground welded steel piping from the old power plant to fill a new intermediate fuel tank at the current power plant. During excavation to install the new piping, contamination was identified in the trench between the old Warm Storage Building, water tank, and washeteria (Figure 1). On July 30, 2012, the NSB's contractor, SKW Eskimos, Inc. (SKW), encountered petroleum-contaminated soil while excavating a trench to install underground diesel-supply piping. SKW was excavating the trench between the Nuiqsut washeteria and a fuel tank adjacent to the power plant when they noted a hydrocarbon odor emanating from the trench about 25 feet northeast of the former washeteria. The trench was adjacent to diesel-fuel, waste-heat, and water/sewer piping that had previously been abandoned in place between the two buildings (Figure 1).

The NSB requested we provide assistance to estimate the extent of contamination and characterize the excavated soils to allow for evaluation of disposal options. Only the area for installing the fuel piping was being excavated; SKW did not excavate additional soil due to nearby utilities, soil conditions, and equipment limitations. On August 1-2, 2012, we performed a limited assessment of soil in the trench and soil removed from the trench. Groundwater was present in a portion of the trench. We collected soil samples from the base of the trench (at about 3.5 feet below the ground surface [bgs]). We also collected samples from the side-cast soil excavated from the portion of the trench that contained groundwater; we considered the side-cast soil to be representative of soil removed from the trench.

Results of the 2012 assessment indicated DRO concentrations exceeded the most stringent soil-cleanup level (SCL; 200 milligrams per kilogram [mg/kg]) at six of the seven sampled locations, ranging from 218 mg/kg to 3,110 mg/kg. GRO, toluene, ethylbenzene, xylenes, and PAHs were detected in the samples but did not exceed SCLs. Benzene was not detected in the soil samples. The analytical laboratory noted the DRO detected in the samples was "consistent with weathered middle distillate" (i.e., diesel fuel). We concluded diesel-range petroleum-hydrocarbon contamination at a depth of at least 3.5 feet bgs extends from the washeteria about 100 feet along

the trench excavated for the fuel piping. The source and extent of the contaminated soil were not determined or delineated.

Project Objectives and Scope

The primary objective of this project was to assess the extent of petroleum-hydrocarbon contamination in soil at the former fuel-line utility trench area through collection and laboratory analysis of subsurface soil samples.

Our scope of services included the following tasks:

- field screen and collect analytical soil samples to characterize the area of the former trench (delineate affected area and depth);
- analyze soil samples to determine concentrations of petroleum compounds; and
- prepare a report presenting and evaluating field observations and analytical results, including conclusions and recommendations as appropriate.

FIELD ACTIVITIES AND OBSERVATIONS

Following is a summary of our field observations and sampling activities conducted in accordance with Shannon & Wilson's July 2013 *Work Plan*, which was approved by ADEC. Soil-boring locations are shown in Figure 2. A copy of the field notes, including field-screening results, is provided in an attachment to this report; representative photographs of the work progress are also attached.

On September 9-12, 2013, Shandra Miller and Seth Robinson of Shannon & Wilson's Fairbanks office performed the field work near the power plant and washeteria in Nuiqsut. They marked the approximate locations of underground utilities in the area based on drawings and other information provided by NSB personnel and selected boring locations to avoid these utilities. Gordon Brown, NSB Public Works Supervisor, noted that an aboveground fuel tank was formerly located north of the Warm Storage Building.

They advanced 20 soil borings in the study area and collected soil samples at several depths. They field-screened the soil samples, using a photoionization detector (PID) to measure the relative concentration of volatile organic compounds in the soil. They collected samples for

laboratory analysis from at least two depths in the borings, selecting these samples based on observations and field-screening results.

Soil in all borings was silty sand with gravel, inferred to be fill material to construct the site pad. They observed white foam-board insulation in borings SB-12, SB-13, SB-14, and SB-15 (Figure 2) about 10 feet to 40 feet from the water tank and at about 1 foot to 2.5 feet bgs; these borings were not advanced through the insulation. Groundwater was encountered before the borings reached the underlying native tundra; they did not sample below the water table.

They measured elevated PID field-screening results in samples from six borings near the northwest corner of the Warm Storage Building, near two power poles, and observed strong fuel odors near the water table and a petroleum sheen on the groundwater in the borings in this area. They noted sorbent pads beneath the AST north of the Warm Storage Building and a strong petroleum odor at the AST and SB-18 (Figure 2). Near-surface soil (shallower than about 2 feet) in the borings did not exhibit a petroleum odor.

They submitted 20 soil samples and two field-duplicate samples from the soil borings to SGS North America, Inc. (SGS) in Anchorage, Alaska for analysis using chain-of-custody procedures. They submitted the soil samples for analysis of GRO by Alaska Method AK 101, DRO by AK 102, residual range organics (RRO) by AK 103, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021B. The soil sample with the highest PID result and field duplicate sample were also submitted for analysis of PAH by EPA Method 8270D. One soil trip-blank sample accompanied the sample coolers and was submitted for GRO and BTEX analysis by the methods noted above. Sample identification numbers are combinations of the boring number and sample depth (in feet bgs).

QUALITY ASSURANCE AND QUALITY CONTROL SUMMARY

Quality Assurance/Quality Control (QA/QC) procedures assist in producing data of acceptable quality and reliability. We reviewed the analytical results for laboratory QC samples, and also conducted our own QA assessment for this project. We reviewed the chain-of-custody (COC) records and laboratory-receipt forms to check that custody was not breached, sample holding-times were met, and the samples were kept properly chilled (between 0 ºC and 6 ºC) during shipping. Our QA review procedures allowed us to document the accuracy and precision of the analytical data, as well as check the analyses were sufficiently sensitive to detect analytes at levels below regulatory standards.

We reviewed soil analytical results reported by SGS in work order 1134453. The laboratory report and associated ADEC data-review checklist are provided as attachments to this report. Details regarding the results of our QA review are presented in an attachment to this report.

By working in accordance with our proposed scope of services, the samples we collected are considered to be representative of site conditions at the locations and times they were obtained. Based on our QA review, no samples were rejected as unusable due to QC failures, and our completeness goal of obtaining 85 percent useable data was met. In general, the quality of the analytical data for this project does not appear to have been compromised by analytical irregularities and is adequate for the purposes of our assessment.

EVALUATION OF FIELD AND ANALYTICAL RESULTS

PID field-screening results are presented in the field notes (attached). Table 1 summarizes the GRO, DRO, RRO, and BTEX results for the soil samples. Table 2 summarizes detected PAH results. The laboratory report, associated ADEC data-review checklist, and our QA/QC narrative are included in an attachment to this report.

We compared soil-sample analytical results to the most stringent of the SCLs in 18 AAC 75.341, Method One, Table A2 (petroleum hydrocarbons) and Method Two, Table B2 (organic analytes; Arctic zone). The applicable SCLs are presented in Tables 1 and 2.

PID field-screening and DRO analytical results are shown in Figure 2. PID results ranged from 0.3 ppm to 1,011 ppm. In general, PID results greater than 50 ppm correlated with DRO concentrations exceeding the SCL.

GRO contamination was detected in all but one of the analytical samples at concentrations of an estimated 0.545 mg/kg to 229 mg/kg (Table 1). GRO concentrations in the field-duplicate sample from boring SB-09 and the two samples from boring SB-10 exceeded the SCL. Both DRO and RRO were detected in all of the analytical samples (Table 1). DRO concentrations ranged from an estimated 17.2 mg/kg to 8,130 mg/kg. DRO concentrations in one sample from SB-01, one sample from SB-07, a sample and field-duplicate sample from SB-09, two samples from boring SB-10, two samples and field-duplicate sample from SB-11, and a sample from SB-18 exceeded the SCL. RRO concentrations ranged from 47.5 mg/kg to 2,100 mg/kg, and the RRO concentration in the sample from SB-07 exceeded the SCL. The single RRO exceedance was not associated with the higher DRO concentrations found near the Warm Storage Building.

Some or all of the BTEX analytes were detected in soil samples from all borings except SB-05, SB-06, and SB-08 (Table 1, Figure 2). Concentrations of BTEX analytes did not exceed their SCLs.

Two PAH analytes were detected in the two analyzed samples; PAH concentrations did not exceed their SCLs (Table 2).

CONCLUSIONS AND RECOMMENDATIONS

PID results were greater than 50 ppm in borings SB-01, SB-07, SB-09, SB-10, SB-11, and SB-18, which were the borings where DRO and RRO SCLs were exceeded. Samples with PID results less than 50 ppm did not exceed the DRO SCL, except for the sample collected at 3.5 feet to 4.1 feet bgs in SB-18. The soil at this depth was groundwater-saturated; this condition commonly results in lower PID results than those produced by unsaturated soil.

We conclude the soil contamination encountered in the 2012 trench covers an area at least 40 feet in diameter, and likely extends under the Warm Storage Building. Depths of contamination range from about 2 feet to 4 feet bgs. Based on our observations, near-surface soil (shallower than about 2 feet) does not appear contaminated. The soil contamination is associated with diesel-range fuel, likely from surface and/or subsurface releases from the tank farm and associated piping. The depth of contamination suggests either a subsurface release from the nearby underground fuel piping, a release to the ground surface which was subsequently covered with clean fill soil, or a surface or subsurface release which spread on the water table. The failure of the former fuel-transfer piping is further evidence that this is the source of the release. Observations and field and analytical results of groundwater-saturated soil indicate the groundwater in the area of soil contamination is also contaminated with diesel-range petroleum hydrocarbons at concentrations exceeding the ADEC groundwater-cleanup levels.

Despite the presence of DRO contamination exceeding the most stringent soil-cleanup level, ADEC may not necessarily require corrective action at this site. Factors influencing this decision include the extent of contamination and whether there is a complete exposure route from the contaminated media to potential receptors. We recommend expanded delineation to determine the extent of contamination, including the areas underneath the Warm Storage Building and the washeteria, at the fuel piping from the tank farm, and southward to the area affected by the large fuel spill in the 1980s.

LIMITATIONS

This report was prepared for the use of the NSB and its representatives to document soil conditions at the NSB power plant, Nuiqsut, Alaska. This work presents our professional judgment as to the conditions in the area. Information presented here is based on the sampling and analyses we performed. It should not be construed as a definite conclusion about the soil conditions in the area, and it is possible our tests do not represent the highest levels of contamination in the area.

The information included in this report should be considered representative of the time and location at which the sampling occurred. It was not the intent of our investigation to detect the presence of soil contaminants other than those for which laboratory analyses were performed. No conclusions can be drawn on the presence or absence of other contaminants. The observed levels of contamination may be dependent upon changes due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Due to such changes, or other factors beyond our control, our observations and recommendations applicable to this site may need to be revised. If substantial time has elapsed between submission of this report and the start of activities or action based upon it, we recommend this report be reviewed to determine the applicability of the conclusions.

This report was prepared for the exclusive use of our client. All documents prepared by Shannon & Wilson are instruments of service with respect to the project for the sole use of our client. Only our client shall have the right to rely upon such documents. Such documents are not intended or represented to be suitable for reuse by our client or others after the passage of time, on extensions of the project, or on any other project. Any such reuse without written verification or adaptation by Shannon & Wilson, as appropriate for the specific purpose intended, shall be at the user's sole risk.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) signed or sealed by Shannon & Wilson. Text, data, or graphics files in electronic media format are furnished solely for the convenience of our client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

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procedures within 60 days after its receipt, after which, unless notice of any errors are given in writing to Shannon & Wilson, the client shall be deemed to have accepted the data thus transferred. Any errors reported within the 60-day acceptance period shall be corrected by Shannon & Wilson. Shannon & Wilson shall not be responsible for maintaining documents stored in electronic media format after acceptance by the client.

When transferring documents in electronic-media format, Shannon & Wilson does not make any representations as to long-term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used for the document's creation.

We are pleased to continue working with the NSB. If you have any questions regarding this report, please contact us.

Sincerely,

SHANNON & WILSON, INC.

Julie Keener, P.E.
Senior Engineer

Reviewed by:

Jon E. Lindstrom, Ph.D.
Associate Chemist

Attachments:

Figure 1 – Site Map
Figure 2 – Summary of DRO and PID Results
Table 1 – Summary of Soil-Sample Analytical Results (GRO, DRO, RRO, BTEX)
Table 2 – Summary of Soil-Sample Analytical Results (PAHs)
Copy of Field Notes
Selected September 2013 Site Photographs
SGS Analytical Laboratory Report 1134453
ADEC Quality Control Checklist
Quality Assurance/Quality Control Summary

NOTE:
Map adapted from 2006 aerial imagery provided by Google Earth Pro, reproduced with permission granted by Google Earth (TM) Mapping Service.

0 75 150
Feet

LEGEND:
- Approximate location of 2012 sample exceeding DRO soil-cleanup level
- Approximate location of 2012 sample not exceeding DRO soil-cleanup level

N

Power-Plant Trench Assessment
Nuiqsut, Alaska

SITE MAP

March 2014 31-1-11674-001

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Figure 1

Water Tank

SB-15

Depth	PID	DRO
2.0-2.5	1.6	19.4

SB-16

Depth	PID	DRO
2.0-2.5	2.1	—
2.5-3.0	7.2	42.8

New Fuel Line (2012)

SB-07

Depth	PID	DRO
2.0-2.6	0.3	—
3.0-3.5	76.5	**2,420**

SB-14

Old Fuel Line & Other Utilities

SB-05

Depth	PID	DRO
2.0-2.5	7.5	—
3.0-3.5	6.0	25.4

SB-13

SB-06

Depth	PID	DRO
2.0-2.5	1.0	—
3.0-3.5	16.8	25.9

SB-03

Depth	PID	DRO
2.0-2.5	2.2	—
3.0-3.5	12.1	25.1

SB-04

Depth	PID	DRO
2.5-2.9	5.9	83.4
3.0-3.5	13.5	—

SB-12

Approximate Extent of Trench Sampled in 2012

SB-02

Depth	PID	DRO
3.0-3.5	8.6	—
3.5-3.8	29.3	178

Glycol

SB-20

Depth	PID	DRO
2.0-2.5	3.0	—
2.5-3.0	4.1	40.0

Bollard

Power Pole

SB-19

Depth	PID	DRO
2.0-2.5	37.5	—
3.0-3.5	45.7	—
3.5-4.0	8.1	94.9

SB-11

Depth	PID	DRO
2.0-2.5	150	**3,440**
3.0-3.5	213	**1,520**

AST

Bollard

SB-01

Depth	PID	DRO
3.0-3.5	384	**1,030**
3.5-3.9	411	—

Power Pole

SB-17

Depth	PID	DRO
2.0-2.5	1.5	152

SB-18

Depth	PID	DRO
2.0-2.5	153	—
3.0-3.5	59.7	55.6
3.5-4.1	18.2	**267**

SB-10

Depth	PID	DRO
2.0-2.5	1,011	**3,470**
2.5-3.0	610	**8,130**

SB-09

Depth	PID	DRO
2.0-2.5	99.1	—
2.5-3.0	775	**5,080**

Electric

Electric

Warm Storage Building

SB-08

Depth	PID	DRO
2.0-2.5	0.5	—
3.0-3.5	0.7	17.2

Washeteria

LEGEND

- 2013 Boring Locations
- Inferred Location of Underground Utility

Notes:
All locations approximate.
No PID or analytical results were obtained from borings SB-12, SB-13, or SB-14.
Bold type indicates DRO results exceed ADEC soil-cleanup level.

Units:
Depth = feet below ground surface
PID = ppm
DRO = mg/kg

0 10 20
Feet

N

Power-Plant Trench Assessment
Nuiqsut, Alaska

SUMMARY OF DRO AND PID RESULTS

March 2014 31-1-11674-001

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2

TABLE 1. SUMMARY OF SOIL-SAMPLE ANALYTICAL RESULTS (GRO, DRO, RRO, BTEX)
NUIQSUT POWER PLANT TRENCH

Sample Number	GRO	DRO	RRO	Benzene	Toluene	Ethylbenzene	o-Xylene	p- & m-Xylenes
SB-01 (3.0-3.5)	59.8 JH*	**1,030**	265	<0.00612	0.0222	0.152	0.536	0.853
SB-02 (3.5-3.8)	13.7 JH*	178	546	0.0111	0.152	0.387	0.539	1.21
SB-03 (3.0-3.5)	1.29 J	25.1	98.9	<0.00662	<0.0129	<0.0129	<0.0129	0.0137 J
SB-04 (2.5-2.9)	1.16 J	83.4	272	0.00590 J	0.0348	0.0250	0.0152J	0.0540
SB-05 (3.0-3.5)	<1.05	25.4	89.6	<0.00560	<0.0109	<0.0109	<0.0109	<0.0210
SB-06 (3.0-3.5)	0.679 J	25.9		<0.00534	<0.0104	<0.0104	<0.0104	<0.0200
SB-07 (3.0-3.5)	2.25	**2,420**	**2,100**	<0.00636	0.00934 J	0.0258	0.0558	0.0956
SB-08 (3.0-3.5)	1.21 J	17.2 J	55.9	<0.00862	<0.0168	<0.0168	<0.0168	<0.0324
SB-09 (2.5-3.0)	79.1 JH*	**5,080**	216 J	<0.00806	0.00856 J	0.100	1.07	0.507
SD-09 (2.5-3.0) †	**127** JH*	**4,080**	195 J	<0.00826	0.509	0.112	1.17	0.562
SB-10 (2.0-2.5)	**229** JH*	**3,470**	237	<0.0684	0.415	<0.133	1.22	1.43
SB-10 (2.5-3.0)	**156** JH*	**8,130**	515	<0.0112	0.0123 J	0.0536	1.65	1.15
SB-11 (2.0-2.5)	55.2 JH*	**3,360**	1,160	<0.00598	0.0167 J	0.102	0.502	0.448
SD-11 (2.0-2.5) †	65.5 JH*	**3,440**	1,070	<0.0133	0.0254 J	0.118	0.582	0.533
SB-11 (3.0-3.5)	25.7 JH*	**1,520**	445	<0.00790	0.0267	0.0450	0.235	0.234
SB-15 (2.0-2.5)	3.56	19.4 J	96.9	<0.00782	<0.0153	0.139	0.0408	<0.0294
SB-16 (2.5-3.0)	1.32 J	42.8	191	<0.00710	<0.0138	<0.0138	0.00887 J	<0.0266
SB-17 (2.0-2.5)	0.545 J	152 JH*	1,530 JH*	<0.00552	<0.0108	<0.0108	0.00655 J	<0.0206
SB-18 (3.0-3.5)	2.95 J	55.6	47.5	<0.00970	0.0173 J	0.0182 J	0.0625	0.0810
SB-18 (3.5-4.1)	3.28	**267**	114	<0.00944	<0.0184	0.0159 J	0.0575	0.0616
SB-19 (3.5-4.0)	1.77 J	94.9	354 J*	<0.00910	<0.0178	0.0276 J	0.0142 J	0.0504 J
SD-19 (3.5-4.0) †	2.09 J	75.7	206 J*	<0.00922	<0.0180	0.0265 J	0.0147 J	0.0521 J
SB-20 (2.5-3.0)	1.54 J	40.0 JH*	177	0.0195	<0.0176	0.0175 J	0.0153 J	0.0268 J
ADEC SCL	100	200	2,000	17	220	110	63 (Total)	

Notes: All concentrations in units of milligrams per kilogram (mg/kg)
Samples analyzed by Methods AK 101 (GRO), AK 102 (DRO), AK103 (RRO), and EPA 8021B (BTEX).

GRO Gasoline range organics
DRO Diesel range organics
RRO Residual range organics
Bold Concentration greater than ADEC Method One Arctic Zone soil-cleanup level
SCL ADEC Soil-Cleanup Level (18 AAC 75.341 Table A2, Method One and Table B2, Method Two, Arctic Zone)
† Duplicate of preceding sample.
< Analyte not detected above specified laboratory limit of detection (LOD).
J Analyte concentration is an estimate, below the laboratory limit of quantitation (LOQ).
JH* Analyte concentration biased high due to surrogate recovery failure or heavier hydrocarbons contributing to middle distillate range in DRO analysis. Data-validation flag applied by Shannon & Wilson.
J* Analyte concentration considered an estimate due to duplicate-sample imprecision. Data-validation flag applied by Shannon & Wilson.

TABLE 2. SUMMARY OF SOIL-SAMPLE ANALYTICAL RESULTS (PAHs)
NUIQSUT POWER PLANT TRENCH

Sample Number	Phenanthrene	Pyrene
SB-10 (2.0-2.5)	0.186	<0.00332
*SD-10 (2.0-2.5)**	0.161	0.00620
ADEC SCL	27,800	1,900

Notes: Only detected PAH analytes are tabulated. Refer to analytical laboratory report for complete list of analytes.
All concentrations in units of milligrams per kilogram (mg/kg)
Samples analyzed by EPA Method 8270D SIM.
< Analyte not reported above laboratory Limit of Detection (LOD) shown.
* Duplicate of preceding sample.
SCL ADEC soil-cleanup level, 18 AAC 75.134 Table B1 (Arctic Zone).

CONTENTS

PAGE	REFERENCE	DATE

Nuiqsut, Fuel-line trench; 1674

Some clouds, 30's, 9/9/2013

~ 2pm
arrived at Nuiqsut.
Seth Robinson & Shandon Miller

2.30 checked in to hotel
3pm got a truck
3:45pm - onsite where the diesel spill was located.

contacts:
George (NSB P.W. maintenance)
Gordon Brown (NSB supervisor)
Tom ~~Matt~~ Sam (power plant operator)

4pm; delineating underground utilities.

note: Gordon informed us that tank(s) of fuel were once stored at the approx. location that ~~the~~ SIR some previous hits were located. i.e. just north of the warm storage building adjacent to the utility poles. NW corner of the warm storage bldg & he mentioned that the AST was approx.

9/10/13

Rite in the Rain
gallons.

Tom helped us place stakes where he thought the trench was; we marked the stakes with:

SR RTFL / representing "Remembered Trench Fuel Line" at these locations.

Furthermore, we used the metal detector and visual observations to help delimate our interpretation of trench with stakes moved: SR a/10/13

TW: trench width, we assume a 7' wide trench to assist with its dimension, & for safety when drilling

ODPL: old power drop line; used on stakes to mark this line

returned to Inn, Retrieved reports, pics

Day summary:

- marked majority of utilities
- developed contacts
- retrieved most updated USB site utility schematic.
- Got a truck from USBs Gordon
- still waiting on gear shipment
- retrieved gear shipped previously by RDG.

a/10/2013: Shandra Miller & Seth Robinson

partly cloudy, 30-40s

830 - onsite, continued marking utilities via visual observations and schematics offered by the power plant operator Tom.

1030: utilities have been fully marked out with stakes & string. Pictures were taken and swing ties will be collected (schematic drawing in large notebook/fieldbook).

1230: SR sketches of utilities and initial soil borings here been completed & swing tied. working to start drilling borings.

1400: hand augering SB-01, water present in hole. Sheen on groundwater gathering within the hole; pooling. Utilities marked by Rain in the Rain

1530: using Beaver to drill for SB-02; wet at 4.0'; PID collected 3.0-3.5' & 3.5-3.9' slight odor present

1700 ~~SK missed PID~~
SB-04, drilled w/ Beaver.
PID screened at 3.0-3.5' & 5.5-3.9' bgs
PID readings summarized in the other field book

1800 Returned to Inn.

9/10/13 ; SRR & SLM; 1674;
partly sunny,

700 - onsite
830 - continuing augering holes and starting to collect samples
collected SB-01 → SB-07
1130 - Lunch Break
1230 - SLM contacted John Lidstrom about the potential for leaving on Friday, if needed.
1300 - back onsite; collecting survey ties to new additional delineation borings; see other notebook for sketch.
1330 - SLM was informed by Eva via John Lidstrom that our shipped equ is in town.
1400 - stop offsite to look for/pickup our equipment
SLM returned with the equ.
1500 - sampling continued.

Rite in the Rain

2145: all samples collected, ~~off~~ de
at 2145.

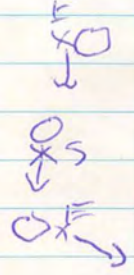
9/12/13

packed samples & gear for shipment/traveling back to fairbanks. Also cleaned up the field site, returning it to how we found it.

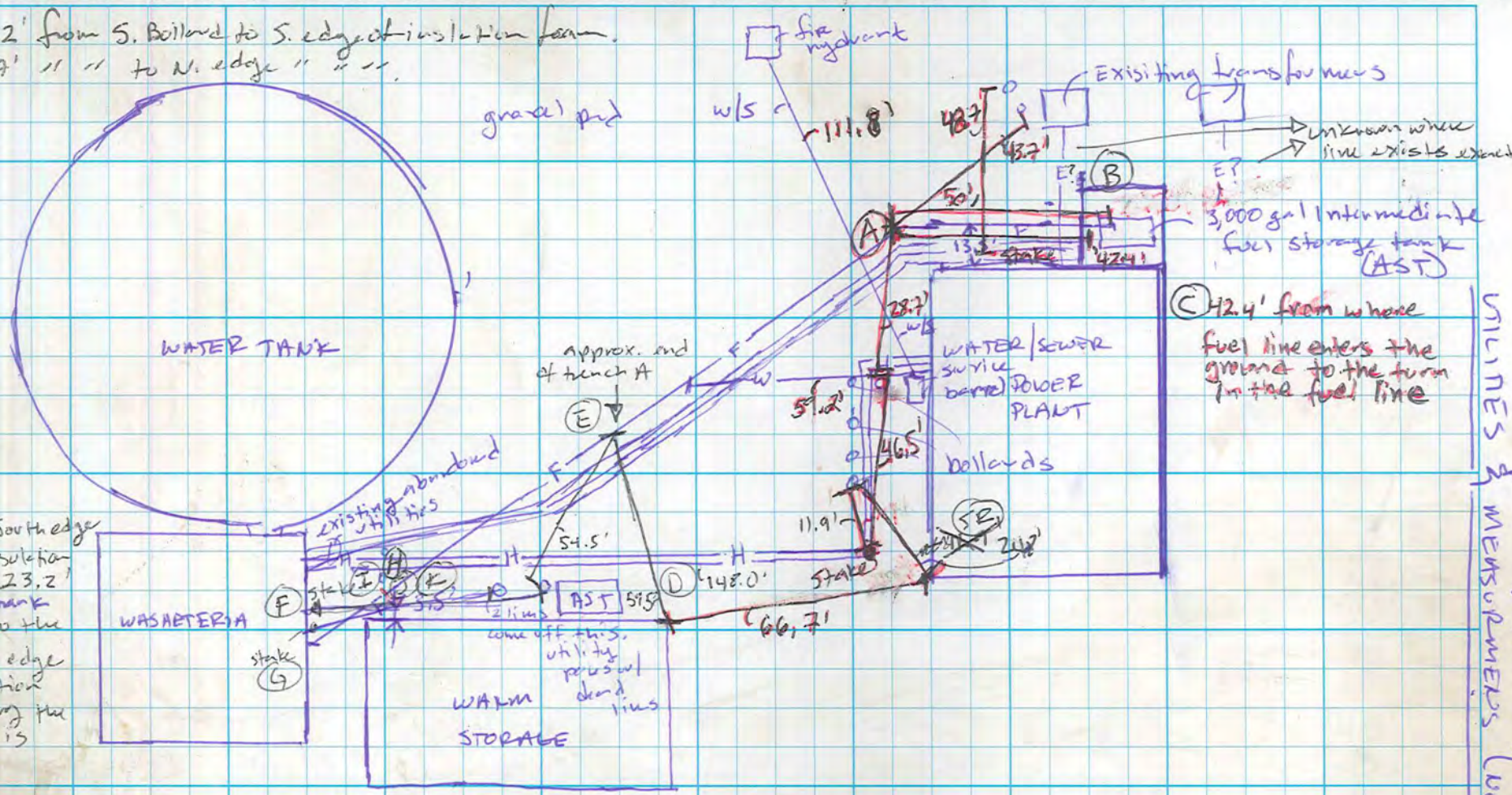
1130, left Prudhoe

Swingstons (phase 3)

SB-20	to	NE corner of Warm Storage	17.5'
	to	SB-04	25.0'
	to	SB-02	24.7'
SB-19	to	SB-04	31.4'
	to	SB-02	16.35'
	to	PPB	9.5'
SB-18	to	PPB	8.1
	to	PPA	13.8'
	to	SB-01	25.6'



(K) 2.2' from S. Bollard to S. edge of insulation foam.
5.7' " " to N. edge " " "



(F) 5.5' mark to South edge of exposed insulation foam is 23.2'
(G) 3.5' mark to the North edge of insulation surrounding the H line is 31.7'

(H) 8.5' b/w Yellow bollards located here.
(I) 18.0' from Southern bollard to the washateria
(J) 14.8' from S. bollard to warm storage.

(F) 55.2'; from stake to eastern utility pole; note: 12.6' to the warm storage bldg.

(G) 44.2'; from stake to western utility pole; note: 12.6' to the warm storage building

10.85' b/w the poles (utility)

(A) fuel line: from NE spot where it changes direction to the 3.5' mark retrieved from the NSB schematics is 183.1'.

(B) fuel line: from NE spot where fuel line changes direction to the point where the fuel line connects to the tank (3000gal); 50'

(I): 148.0' measured from stake to the more eastern above ground conduit by the washateria

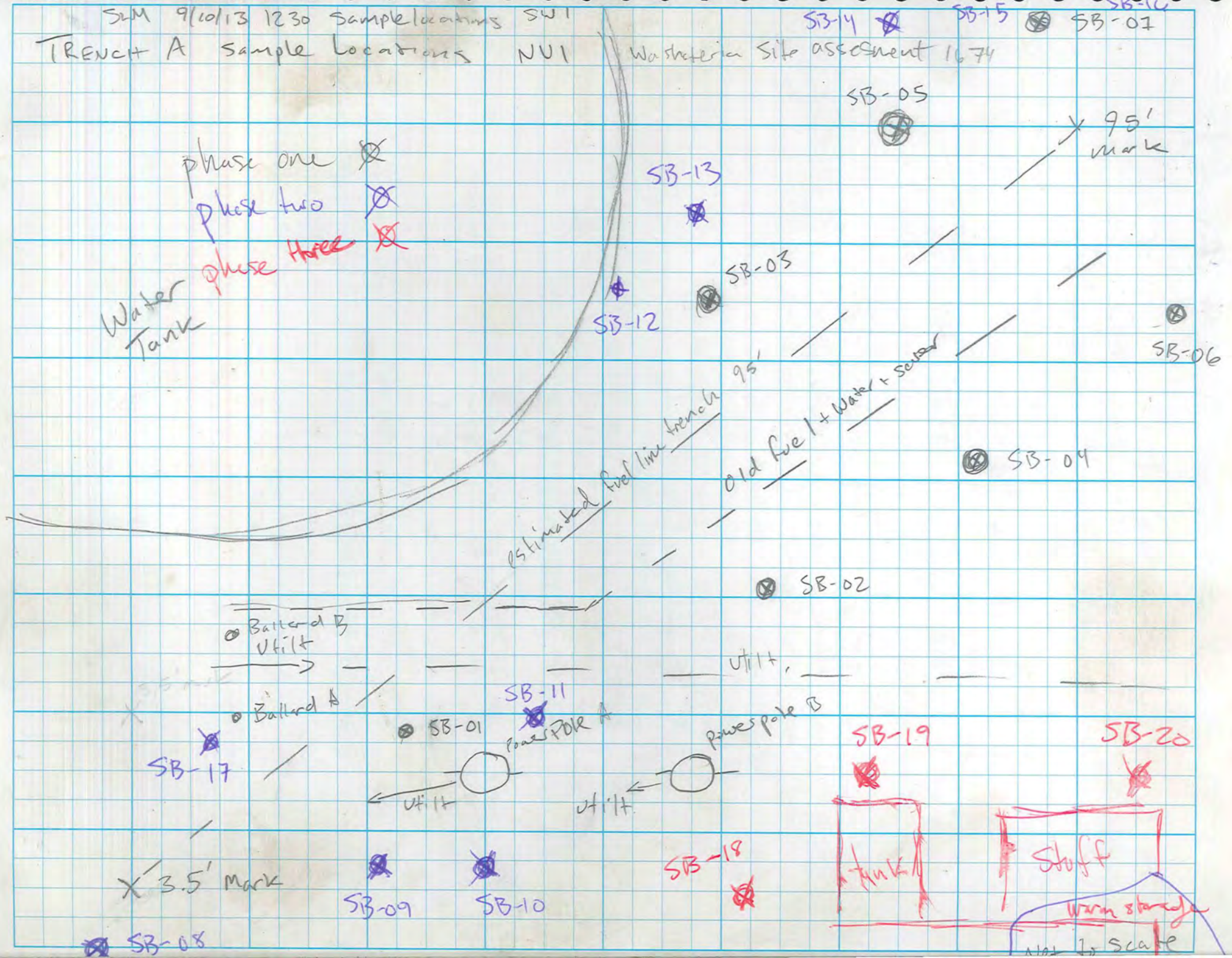
(E): End of trench to the 3.5' mark is 95.2' (Chris Locke report).

UTILITIES & MEASUREMENTS (NOT TO SCALE)

9/10/13, Wainwright, fuel line investigation 1674

Swingties for next page (Phase 2)

SB-08	to	NW corner of Warm	12.1'
		3.5' Marker of Trench A	15.5'
		BB	35.5'
SB-09	to	SB-01	13.0'
		PPA	22.5'
		BA	14.6'
SB-10	to	PPA	7.6
		PPB	16.9
		SB-01	12.0'
SB-11	to	SB-01	18.3'
		PPA	5.9'
		PPB	6.9'
SB-12	to	SB-03	11.5'
		SB-02	30.8'
		~~PP A~~ SB-01	~~31.7'~~
SB-13	to	SB-03	12.6'
	to	SB-05	11.4'
		SB-02	32.0'
SB-14	to	SB-05	13.0'
		end of Trench A	23.3'
		SB-03	23.7'
SB-15	to	SB-06	42.8'
		SB-07	12.0'
		SB-05	25.7'
SB-16	to	SB-07	12.4'
"	to	SB-06	31.6'
"	to	end of trench A	17.4'
SB-17	to	BA	3.0'
		BB	11.6'
		SB-01	18.7'


SLM 9/10/13 1230 Sample locations SW1
TRENCH A Sample Locations NW1
Washateria Site assessment 1674
SB-14
SB-15
SB-16
SB-07
SB-05
95' mark
phase one
phase two
phase three
SB-13
SB-03
Water Tank
SB-12
SB-06
95'
old fuel + water + sewer
estimated fuel line trench
SB-04
SB-02
Ballard B Utilt
Ballard A
Utilt.
SB-11
SB-01
Power Pole A
Power pole B
SB-17
SB-19
SB-20
Utilt
Utilt
SB-18
tank
Stuff
warm storage
3.5' Mark
SB-09
SB-10
SB-08
Not to scale

Swing ties from previous page Trench A (Phase 1)

SB-01	to	Warm Storage (WS)	14.0'	
"	to	Power Pole A (PPA)	12.6'	N ×○ ↓
"	to	Ballard A (BA)	17.1'	○× S ↓
SB-02	to	PPB	24.5'	○× W ↓
	to	WS NE corner	39.0	
	~~to~~	~~PPA~~		
	to	BB	57.2	S ×○ ↓
SB-03	to	BB	46.8'	S ×○ ↓
	to	PPA	35.7'	E ×○ ↓
	to	WS NE corner	60.0	
SB-04	to	BB	73.7	S ×○ ↓
	to	PPA	49.2	E ×○ ↓
	to	WS NE corner	41.6	
SB-05	to	BB	60.0	S ×○ ↓
	to	PPA	47.3	E ×○ ↓
	to	WS NE corner	62.0	
SB-06	to	BB	86.9	S ×○ ↓
	to	PPA	62.4	E ×○ ↓
	to	WS NE corner	47.9	
SB-07	to	BB	78.5	S ×○ ↓
	to	PPA	65.5	E ×○ ↓
	to	WS NE corner	71.1	

1225 SB-01; hand augered stacked

0 - 3.5' Sandy gravel (hand dug w/ shovel), poorly graded sand with gravel (SP) 70% f-m sand, 25% f-c sv gravel, 5% fines, moist at ~2.0', very moist at 3.5'; odor present (petro)
3.0 - 3.5 384 ppm
3.5 - 3.9 411 ppm

~~3.5 - 5.0'~~ (SP)

3.5' - ~~5.0~~ 4.0' gravel lessens; olive gray (SP) poorly ~~sorted~~ graded sand with silt (SP-SM) 10% f-m sa-sv gravel, 80% f-m sand, 10% silt, ~~slow dilatancy~~ (SM) rapid dilatancy; odor present, wet at ~~4.0'~~ 3.6' (SP), ~~(SW) 4.0'~~, water visible downhole, gray, sheen visible on water down in the boring

PID samples: SB-01 (3.0-3.5'): ~~5.~~ 384 ppm
SB-01 (3.5-3.9'): 411 ppm
SB-01 (2.0-2.5'): 11.6 ppm

1500; SB-02; ~~(SP)~~ (SP) olive gray to gray, poorly graded sand with silt (SP-SM); moist to wet at ~~3.8'~~ 3.0' bgs, 10% f-m sa-sv gravel, 80% f-m sand, 10% fines; some dilatancy; slight odor
PID samples: SB-02 (3.0-3.5'): 8.6 ppm
SB-02 (3.5-3.8'): 29.3 ppm

1620; SB-04: slight odor, olive brown to olive gray, poorly graded sand with silt and gravel (SW-SM), 20% f-c sa-sv gravel, 70% f-m sand, 10% silt. slower dilatancy, moist to wet
PID samples: SB-04 (~~3.0-3.5'~~ 2.5-3.0'): 5.9 ppm
SB-04 (~~3.5-3.9'~~ SP 3.0-3.5'): 13.5 ppm
wet at approx. 3.0'.

9/11/2013) SRR & SLM, 1674

Analytical Sample IDs	Sample Time	Analysis	Date Sampled
SB-02 (3.5-3.8)	831	GRO, BTEX, DRO, RRO	9/11/13
SB-04 (2.5-2.9)	849	GRO, BTEX, DRO, RRO	
SB-06 (3.0-3.5)	950	GRO, BTEX, DRO, RRO	
SB-01 (3.0-3.5)	1015	GRO, BTEX, DRO, RRO	
SB-07 (3.0-3.5)	1100	GRO, BTEX, DRO, RRO	
SB-05 (3.0-3.5)	1111	GRO, BTEX, DRO, RRO	
SB-03 (3.0-3.5)	1125	GRO, BTEX, DRO, RRO	
SB-09 (2.5-3.0')	1450	GRO, BTEX, DRO, RRO	
SB-10 (2.5-3.0')	1445	GRO, BTEX, DRO, RRO	
SD-09 (2.5-3.0')	1440	GRO, BTEX, DRO, RRO	
X SB-11 (3.0-3.5)	1525	GRO, BTEX, DRO, RRO	

Tomas
6500557
Cargo 450-7280 Jenny

(SR)

SB-17 (2.0-2.5)	~~1415~~ 1615	GRO, BTEX, DRO, RRO	
SB-08 (3.0-3.5)	1620	GRO, BTEX, DRO, RRO	
~~SB-12 (1.5-2.0)~~	~~1641~~	~~GRO, BTEX, DRO, RRO~~	(SR)
SB-15 (2.0-2.5')	1721	GRO, BTEX, DRO, RRO	
SB-16 (~~3.0-3.5~~ 2.5-3.0)	1740	GRO, BTEX, DRO, RRO	
~~SB-11 (2.0-2.5)~~	~~1525~~	~~GRO, BTEX, DRO, RRO~~	(SR)
SB-20 (2.5-3.0)	1950	GRO, BTEX, DRO, RRO	
SB-19 (3.5-4.0)	2013	GRO, BTEX, DRO, RRO	
SD-19 (3.5-4.0)	2023	GRO, BTEX, DRO, RRO	
SB-18 (3.0-3.5)	2020	GRO, BTEX, DRO, RRO	
SB-18 (3.5-4.1)	2025	GRO, BTEX, DRO, RRO	
SB-10 (2.0-2.5)	2036	GRO, BTEX, DRO, RRO, ~~PAH~~	SR
X SB-11 (2.0-2.5)	2045	GRO, BTEX, DRO, RRO	
X SD-11 (2.0-2.5)	2035	GRO, BTEX, DRO, RRO	
SD-10 (2.0-2.5)	2115	PAH	
SB-10 (2.0-2.5)	2125	PAH	

(ppm) ↓

SB-06; drilling began at 945:
PID collected at (2.0-2.5'): 1.0 ppm
(3.0-3.5'): 16.8 ppm
(SP-SM)

olive brown, poorly graded sand with silt and gravel, moist to wet at ~3.6' bgs, 30% R-SR f-m gravel, 60% f-m sand, 10% fines nonplastic.

SB-07; drilling began at 1055, odor present
PID screening: (2.0-2.6): 0.3
(3.0-3.5): 76.5
olive brown, poorly graded sand with silt and gravel (SP-SM), moist to wet at ~3.6' bgs, 40% R-SR f-c gravel, 50% f-m sand, 10% non plastic fines

SB-05; drilling began at 1105
PID screening: (2.0-2.5') 7.5
(3.0-3.5') 6.0
Olive brown, poorly graded sand with silt and gravel (SP-SM), moist to wet at ~3.6' bgs, 30% r-sr f-m gravel, 60% f-m sand, 10% nonplastic fines

SB-03; drilling began at 1120, slight odor
PID screening: (2.0-2.5): 2.2
(3.0-3.5): 12.1
olive brown to brown, poorly graded sand w/ silt and gravel (SP-SM), moist to wet at ~3.6' bgs, 30% r-sr f-m gravel, 60% f-m sand, 10% nonplastic fines

SB-09; hand augering started at 1345
PID screening: (2.0-2.5' bgs): 99.1
~~(3.8-3.3' bgs)~~ (2.5-3.0'): 775
olive brown to brown, silty sand with gravel (SM) moist to wet at 3.0' bgs; 25% r-sr f-m gravel, 60% f-m sand, 15% nonplastic fines, vapid dilatancy, strong odor

SB-10; hand augered commenced at 1410; (SR)
PID readings: (2.0-2.5'): ~~10,010~~ 1611 ppm
(2.5-3.0'): 6160 ppm
olive brown, silty sand with gravel (SM), moist to wet at 3.0' bgs, 25% v-sr f-c gravel, 60% f-m sand, 15% non plastic fines, strong odor, sheen on water gathering in hole

SB-11; hand augered started at 1500;
PID readings: (2.0-2.5'): 150 ppm
(3.0-3.5'): 213 ppm
olive brown, sand with gravel (SP), moist to wet at 3.5' bgs, 40% f-c sa-sr gravel, 55% f-m sand, 5% non plastic fines; odor present

SB-17; hand augered started at 1555
PID readings: (2.0-2.5'): 1.5 ppm
potentially fill dirt from filling the trench.
loose, olive brown, poorly graded sand with gravel (SP), moist, ~~to wet~~ ~~at~~ 25% f-m sa-gr gravel, 70% f-m sand, 5% non plastic fines, hit refusal on a potential obstruction at 2.5 bgs, although a utility wasn't observed, we ceased augering.

SB-08; hand augered started at 1600
PID readings: (2.0-2.5'): 0.5 ppm
(3.0-3.5'): 0.7 ppm
Brown, sand poorly graded, dry to wet at 3.5' bgs, 0% gravel, ~~100%~~ 95% f-m sand, 5% non plastic fines, fill material placed (SR) ~~before~~ between the warm storage bldg & the washteria.

SB-12; ~~New~~ beaver used, drilling commenced at 1635; at ~2.0' bgs we encountered white insolution pieces, chopped up, we are unsure where it is came from, potentially the water storage building. We ceased drilling and didn't collected a PID & analytical sample from 1.5-2.0' bgs (SR) ~~PID reading: (1.5-2.0' bgs):~~
brown, poorly graded sand with gravel (SP) dry to moist, 30% f-m sa-sr gravel, 65% f-m sand, 5% non plastic fines

SB-13; beaver used, drilling commenced at 1649;
we repeated our drilling into a white foam layer existing at ~~2.0'~~ ~1.1' bgs. We abandoned drilling and sampling at this hole.
brown to olive brown, poorly graded sand with gravel (SP), dry to moist, 30% v-sr f-m gravel, 65% f-m sand, 5% non plastic fines.
no PID or analytical samples collected.

SB-14; Beaver, drilling started at 1658, see SB-13 & SB-12, same issue. we observed foam again, but this time used the hand auger after 1.0' bgs to be cautious. hole was abandoned, no PID or analyticals collected. soil description the same as SB-13.

SB-15; used hand auger, starting drilling at ~ 1705.
at 2.0-2.5' auger interval, we encountered some white insolation again. drilling ceased & a PID and Analytical sample were collected.
PID reading: (2.0-2.5' bgs) = 1.6 ppm

olive brown, sand with gravel poorly graded (SP), dry to ~~moist~~ wet (SA)
at 2.5' bgs, 30% f-m sr-r gravel, 65% f-m sand, 5% non plastic fines.

SB-16; beaver used, drilling started at 1730,
PID readings: ~~(2.0-2.5')~~: 2.1 ppm
~~(3.0-3.5')~~ (2.5-3.0'): 7.2 ppm
olive brown, sand with silt and gravel (SP-SM), ~~dry to~~ moist to wet 3.0' bgs, 40% v-sr f-m gravel, 50% f-m sand, 10% non-plastic fines, odor present.

SB-20; hand augering started at 1420.

PID readings: (2.0-2.5): 3.0

(2.5-3.0): 4.1

olive brown, poorly graded sand and gravel (SP), dry to wet at ~3.0' bgs, 30% sa-r f-m gravel, ~~5%~~ (SP) 65% f-m sand, 5% nonplastic fines., some black mottling noted too

SB-19; hand augering started at 1440.

PID readings (2.0-2.5): 37.5

(3.0-3.5): 45.7

(3.5-4.0): 8.1

olive brown poorly graded sand and gravel (SP), dry to wet at (SP) ~~3.0' bgs~~, 4.0bgs, poorly graded sand with gravel (SP), 20% r-sr f-c gravel, 75% f-m sand, 5% nonplastic fines, odor

SB-18; hand augering started at 2017; directly adjacent to AST strong odor; PID readings: (2.0-2.5): 153

(3.0-3.5): 59.7

biased low, bag wasn't ~~saturated~~ completely (3.5-4.1): 18.2

olive brown, poorly graded sand with gravel (SP), dry to wet at approx 4.2' bgs, strong odor, 20% r-sr gravel, 75% f-m sand, 5% nonplastic fines

note: absorbent pads are noticable beneath the AST, ~~as if it may have leaked.~~ (SK)

1) Estimated location of fuel line installed in 2012 (marked with lath and string), facing southwest.

2) Estimated location of fuel line installed in 2012 (marked with lath and string), facing southwest.

3) Portion of study area, facing south.

4) Borings and estimated locations of underground utilities in area, facing west.

4) Locations of borings SB-01, SB-09, SB-10, and SB-18, facing south.

6) Area of contamination, facing west.

5) Inferred location of electric line, facing west.

7) Portion of study area, facing south.

8) Area of contamination, facing south.

SGS

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99709
(907)479-0600

Report Number: **1134453**

Client Project: **1674 Nuiqsut Fuel Line**

Dear Julie Keener,

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 five 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 Jennifer 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.

Stephen C. Ede
Alaska Division Technical Director

Stephen Ede
2013.09.26
16:38:50 -08'00'

Jennifer Dawkins
Project Manager

Date

Print Date: 09/26/2013 4:12:05PM

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1134453**
Project Name/Site: **1674 Nuiqsut Fuel Line**
Project Contact: **Julie Keener**

Refer to sample receipt form for information on sample condition.

SB-01 (3.0-3.5) (1134453001) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-02 (3.5-3.8) (1134453002) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-03 (3.0-3.5) (1134453003) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

SB-04 (2.5-2.9) (1134453004) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-05 (3.0-3.5) (1134453005) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

SB-06 (3.0-3.5) (1134453006) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

SB-07 (3.0-3.5) (1134453007) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-08 (3.0-3.5) (1134453008) PS

AK103 - Unknown hydrocarbon with several peaks is present.

SB-09 (2.5-3.0) (1134453009) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.

SD-09 (2.5-3.0) (1134453010) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.

SB-10 (2.5-3.0) (1134453011) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-10 (2.0-2.5) (1134453012) PS

AK101/8021B - Sample cannot be re-analyzed at lower dilution due to non-target analytes with a peak height greater than 6 times the internal standard.
AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

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

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1134453**
Project Name/Site: **1674 Nuiqsut Fuel Line**
Project Contact: **Julie Keener**

Refer to sample receipt form for information on sample condition.

SB-10 (2.0-2.5) (1134453013) PS

8270D SIM - Surrogate (2-fluorobiphenyl) is outside of QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

SD-10 (2.0-2.5) (1134453014) PS

8270D SIM - Surrogate (2-fluorobiphenyl) is outside of QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

SB-11 (2.0-2.5) (1134453015) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-11 (3.0-3.5) (1134453016) PS

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SD-11 (2.0-2.5) (1134453017) PS

AK101/8021B - Sample cannot be re-analyzed at lower dilution due to non-target analytes with a peak height greater than 6 times the internal standard.
AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-15 (2.0-2.5) (1134453018) PS

AK103 - Unknown hydrocarbon with several peaks is present.

SB-16 (2.5-3.0) (1134453019) PS

AK102/103 - Unknown hydrocarbon with several peaks is present.

SB-17 (2.0-2.5) (1134453020) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - Diesel range organics result is biased high due to heavier hydrocarbons contributing to the middle distillate range.
AK103 - n-Triacontane (surrogate) recovery is outside QC criteria due to sample matrix.

SB-18 (3.0-3.5) (1134453021) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-18 (3.5-4.1) (1134453022) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-19 (3.5-4.0) (1134453023) PS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
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Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1134453**
Project Name/Site: **1674 Nuiqsut Fuel Line**
Project Contact: **Julie Keener**

Refer to sample receipt form for information on sample condition.

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SD-19 (3.5-4.0) (1134453024) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

SB-20 (2.5-3.0) (1134453025) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - Diesel range organics result is biased high due to heavier hydrocarbons contributing to the middle distillate range.

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIMS (PAH)				
1134453013	SB-10 (2.0-2.5)	XMS7599	Chrysene	BLC
1178087	LCS for HBN 1484226 [XXX/29926	XMS7599	Benzo[a]pyrene	BLC
1178087	LCS for HBN 1484226 [XXX/29926	XMS7599	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.

Print Date: 09/26/2013 4:12:06PM

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. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 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	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SB-01 (3.0-3.5)	1134453001	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-02 (3.5-3.8)	1134453002	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-03 (3.0-3.5)	1134453003	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-04 (2.5-2.9)	1134453004	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-05 (3.0-3.5)	1134453005	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-06 (3.0-3.5)	1134453006	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-07 (3.0-3.5)	1134453007	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-08 (3.0-3.5)	1134453008	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-09 (2.5-3.0)	1134453009	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SD-09 (2.5-3.0)	1134453010	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-10 (2.5-3.0)	1134453011	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-10 (2.0-2.5)	1134453012	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-10 (2.0-2.5)	1134453013	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SD-10 (2.0-2.5)	1134453014	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-11 (2.0-2.5)	1134453015	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-11 (3.0-3.5)	1134453016	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SD-11 (2.0-2.5)	1134453017	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-15 (2.0-2.5)	1134453018	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-16 (2.5-3.0)	1134453019	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-17 (2.0-2.5)	1134453020	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-18 (3.0-3.5)	1134453021	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-18 (3.5-4.1)	1134453022	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-19 (3.5-4.0)	1134453023	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SD-19 (3.5-4.0)	1134453024	09/11/2013	09/13/2013	Soil/Solid (dry weight)
SB-20 (2.5-3.0)	1134453025	09/11/2013	09/13/2013	Soil/Solid (dry weight)
Trip Blank	1134453026	09/11/2013	09/13/2013	Soil/Solid (dry weight)

Method	Method Description
8270D SIMS (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: **SB-01 (3.0-3.5)**
Lab Sample ID: 1134453001

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	1030	mg/Kg
	Residual Range Organics	265	mg/Kg
Volatile Fuels	Ethylbenzene	0.152	mg/Kg
	Gasoline Range Organics	59.8	mg/Kg
	o-Xylene	0.536	mg/Kg
	P & M -Xylene	0.853	mg/Kg
	Toluene	0.0222	mg/Kg

Client Sample ID: **SB-02 (3.5-3.8)**
Lab Sample ID: 1134453002

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	178	mg/Kg
	Residual Range Organics	546	mg/Kg
Volatile Fuels	Benzene	0.0111	mg/Kg
	Ethylbenzene	0.387	mg/Kg
	Gasoline Range Organics	13.7	mg/Kg
	o-Xylene	0.539	mg/Kg
	P & M -Xylene	1.21	mg/Kg
	Toluene	0.152	mg/Kg

Client Sample ID: **SB-03 (3.0-3.5)**
Lab Sample ID: 1134453003

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	25.1	mg/Kg
	Residual Range Organics	98.9	mg/Kg
Volatile Fuels	Gasoline Range Organics	1.29J	mg/Kg
	P & M -Xylene	0.0137J	mg/Kg

Client Sample ID: **SB-04 (2.5-2.9)**
Lab Sample ID: 1134453004

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	83.4	mg/Kg
	Residual Range Organics	272	mg/Kg
Volatile Fuels	Benzene	0.00590J	mg/Kg
	Ethylbenzene	0.0250	mg/Kg
	Gasoline Range Organics	1.16J	mg/Kg
	o-Xylene	0.0152J	mg/Kg
	P & M -Xylene	0.0540	mg/Kg
	Toluene	0.0348	mg/Kg

Client Sample ID: **SB-05 (3.0-3.5)**
Lab Sample ID: 1134453005

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	25.4	mg/Kg
	Residual Range Organics	89.6	mg/Kg

Client Sample ID: **SB-06 (3.0-3.5)**
Lab Sample ID: 1134453006

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	25.9	mg/Kg
	Residual Range Organics	111	mg/Kg
Volatile Fuels	Gasoline Range Organics	0.679J	mg/Kg

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Detectable Results Summary

Client Sample ID: **SB-07 (3.0-3.5)**
Lab Sample ID: 1134453007

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	2420	mg/Kg
	Residual Range Organics	2100	mg/Kg
Volatile Fuels	Ethylbenzene	0.0258	mg/Kg
	Gasoline Range Organics	2.25	mg/Kg
	o-Xylene	0.0558	mg/Kg
	P & M -Xylene	0.0956	mg/Kg
	Toluene	0.00934J	mg/Kg

Client Sample ID: **SB-08 (3.0-3.5)**
Lab Sample ID: 1134453008

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	17.2J	mg/Kg
	Residual Range Organics	55.9	mg/Kg
Volatile Fuels	Gasoline Range Organics	1.21J	mg/Kg

Client Sample ID: **SB-09 (2.5-3.0)**
Lab Sample ID: 1134453009

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	5080	mg/Kg
	Residual Range Organics	216J	mg/Kg
Volatile Fuels	Ethylbenzene	0.100	mg/Kg
	Gasoline Range Organics	79.1	mg/Kg
	o-Xylene	1.07	mg/Kg
	P & M -Xylene	0.507	mg/Kg
	Toluene	0.00856J	mg/Kg

Client Sample ID: **SD-09 (2.5-3.0)**
Lab Sample ID: 1134453010

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	4080	mg/Kg
	Residual Range Organics	195J	mg/Kg
Volatile Fuels	Ethylbenzene	0.112	mg/Kg
	Gasoline Range Organics	127	mg/Kg
	o-Xylene	1.17	mg/Kg
	P & M -Xylene	0.562	mg/Kg
	Toluene	0.509	mg/Kg

Client Sample ID: **SB-10 (2.5-3.0)**
Lab Sample ID: 1134453011

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	8130	mg/Kg
	Residual Range Organics	515	mg/Kg
Volatile Fuels	Ethylbenzene	0.0536	mg/Kg
	Gasoline Range Organics	156	mg/Kg
	o-Xylene	1.65	mg/Kg
	P & M -Xylene	1.15	mg/Kg
	Toluene	0.0123J	mg/Kg

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Detectable Results Summary

Client Sample ID: **SB-10 (2.0-2.5)**
Lab Sample ID: 1134453012

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	3470	mg/Kg
	Residual Range Organics	237	mg/Kg
Volatile Fuels	Gasoline Range Organics	229	mg/Kg
	o-Xylene	1.22	mg/Kg
	P & M -Xylene	1.43	mg/Kg
	Toluene	0.415	mg/Kg

Client Sample ID: **SB-10 (2.0-2.5)**
Lab Sample ID: 1134453013

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Chrysene	0.00361J	mg/Kg
	Phenanthrene	0.186	mg/Kg
	Pyrene	0.00507J	mg/Kg

Client Sample ID: **SD-10 (2.0-2.5)**
Lab Sample ID: 1134453014

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Phenanthrene	0.161	mg/Kg
	Pyrene	0.00620	mg/Kg

Client Sample ID: **SB-11 (2.0-2.5)**
Lab Sample ID: 1134453015

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	3360	mg/Kg
	Residual Range Organics	1160	mg/Kg
Volatile Fuels	Ethylbenzene	0.102	mg/Kg
	Gasoline Range Organics	55.2	mg/Kg
	o-Xylene	0.502	mg/Kg
	P & M -Xylene	0.448	mg/Kg
	Toluene	0.0167J	mg/Kg

Client Sample ID: **SB-11 (3.0-3.5)**
Lab Sample ID: 1134453016

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	1520	mg/Kg
	Residual Range Organics	445	mg/Kg
Volatile Fuels	Ethylbenzene	0.0450	mg/Kg
	Gasoline Range Organics	25.7	mg/Kg
	o-Xylene	0.235	mg/Kg
	P & M -Xylene	0.234	mg/Kg
	Toluene	0.0267	mg/Kg

Client Sample ID: **SD-11 (2.0-2.5)**
Lab Sample ID: 1134453017

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	3440	mg/Kg
	Residual Range Organics	1070	mg/Kg
Volatile Fuels	Ethylbenzene	0.118	mg/Kg
	Gasoline Range Organics	65.5	mg/Kg
	o-Xylene	0.582	mg/Kg
	P & M -Xylene	0.533	mg/Kg
	Toluene	0.0254J	mg/Kg

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Detectable Results Summary

Client Sample ID: **SB-15 (2.0-2.5)**
Lab Sample ID: 1134453018

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	19.4J	mg/Kg
	Residual Range Organics	96.9	mg/Kg
Volatile Fuels	Ethylbenzene	0.139	mg/Kg
	Gasoline Range Organics	3.56	mg/Kg
	o-Xylene	0.0408	mg/Kg

Client Sample ID: **SB-16 (2.5-3.0)**
Lab Sample ID: 1134453019

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	42.8	mg/Kg
	Residual Range Organics	191	mg/Kg
Volatile Fuels	Gasoline Range Organics	1.32J	mg/Kg
	o-Xylene	0.00887J	mg/Kg

Client Sample ID: **SB-17 (2.0-2.5)**
Lab Sample ID: 1134453020

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	152	mg/Kg
	Residual Range Organics	1530	mg/Kg
Volatile Fuels	Gasoline Range Organics	0.545J	mg/Kg
	o-Xylene	0.00655J	mg/Kg

Client Sample ID: **SB-18 (3.0-3.5)**
Lab Sample ID: 1134453021

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	55.6	mg/Kg
	Residual Range Organics	47.5	mg/Kg
Volatile Fuels	Ethylbenzene	0.0182J	mg/Kg
	Gasoline Range Organics	2.95J	mg/Kg
	o-Xylene	0.0625	mg/Kg
	P & M -Xylene	0.0810	mg/Kg
	Toluene	0.0173J	mg/Kg

Client Sample ID: **SB-18 (3.5-4.1)**
Lab Sample ID: 1134453022

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	267	mg/Kg
	Residual Range Organics	114	mg/Kg
Volatile Fuels	Ethylbenzene	0.0159J	mg/Kg
	Gasoline Range Organics	3.28	mg/Kg
	o-Xylene	0.0575	mg/Kg
	P & M -Xylene	0.0616	mg/Kg

Client Sample ID: **SB-19 (3.5-4.0)**
Lab Sample ID: 1134453023

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	94.9	mg/Kg
	Residual Range Organics	354	mg/Kg
Volatile Fuels	Ethylbenzene	0.0276J	mg/Kg
	Gasoline Range Organics	1.77J	mg/Kg
	o-Xylene	0.0142J	mg/Kg
	P & M -Xylene	0.0504J	mg/Kg

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Detectable Results Summary

Client Sample ID: **SD-19 (3.5-4.0)**
Lab Sample ID: 1134453024

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	75.7	mg/Kg
	Residual Range Organics	206	mg/Kg
Volatile Fuels	Ethylbenzene	0.0265J	mg/Kg
	Gasoline Range Organics	2.09J	mg/Kg
	o-Xylene	0.0147J	mg/Kg
	P & M -Xylene	0.0521J	mg/Kg

Client Sample ID: **SB-20 (2.5-3.0)**
Lab Sample ID: 1134453025

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	40.0	mg/Kg
	Residual Range Organics	177	mg/Kg
Volatile Fuels	Benzene	0.0195	mg/Kg
	Ethylbenzene	0.0175J	mg/Kg
	Gasoline Range Organics	1.54J	mg/Kg
	o-Xylene	0.0153J	mg/Kg
	P & M -Xylene	0.0268J	mg/Kg

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Results of **SB-01 (3.0-3.5)**

Client Sample ID: **SB-01 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453001
Lab Project ID: 1134453

Collection Date: 09/11/13 10:15
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.9

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1030		85.9	26.6	mg/Kg	4		09/19/13 22:06
Surrogates								
5a Androstane	84.6		50-150		%	4		09/19/13 22:06

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 22:06
Container ID: 1134453001-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.386 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	265		85.9	26.6	mg/Kg	4		09/19/13 22:06
Surrogates								
n-Triacontane-d62	130		50-150		%	4		09/19/13 22:06

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 22:06
Container ID: 1134453001-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.386 g
Prep Extract Vol: 1 mL

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Results of **SB-01 (3.0-3.5)**

Client Sample ID: **SB-01 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453001
Lab Project ID: 1134453

Collection Date: 09/11/13 10:15
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.9

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	59.8		1.91	0.574	mg/Kg	1		09/13/13 22:57
Surrogates								
4-Bromofluorobenzene	524	*	50-150		%	1		09/13/13 22:57

Batch Information

Analytical Batch: VFC11623
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/13/13 22:57
Container ID: 1134453001-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 10:15
Prep Initial Wt./Vol.: 92.211 g
Prep Extract Vol: 32.4494 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00612	U	0.00957	0.00306	mg/Kg	1		09/13/13 22:57
Ethylbenzene	0.152		0.0191	0.00597	mg/Kg	1		09/13/13 22:57
o-Xylene	0.536		0.0191	0.00597	mg/Kg	1		09/13/13 22:57
P & M -Xylene	0.853		0.0383	0.0115	mg/Kg	1		09/13/13 22:57
Toluene	0.0222		0.0191	0.00597	mg/Kg	1		09/13/13 22:57
Surrogates								
1,4-Difluorobenzene	91.1		72-119		%	1		09/13/13 22:57

Batch Information

Analytical Batch: VFC11623
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/13/13 22:57
Container ID: 1134453001-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 10:15
Prep Initial Wt./Vol.: 92.211 g
Prep Extract Vol: 32.4494 mL

Results of **SB-02 (3.5-3.8)**

Client Sample ID: **SB-02 (3.5-3.8)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453002
Lab Project ID: 1134453

Collection Date: 09/11/13 08:31
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 90.6

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	178		21.8	6.75	mg/Kg	1		09/19/13 16:55
Surrogates								
5a Androstane	81.9		50-150		%	1		09/19/13 16:55

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 16:55
Container ID: 1134453002-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.419 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	546		21.8	6.75	mg/Kg	1		09/19/13 16:55
Surrogates								
n-Triacontane-d62	106		50-150		%	1		09/19/13 16:55

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 16:55
Container ID: 1134453002-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.419 g
Prep Extract Vol: 1 mL

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Results of **SB-02 (3.5-3.8)**

Client Sample ID: **SB-02 (3.5-3.8)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453002
Lab Project ID: 1134453

Collection Date: 09/11/13 08:31
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 90.6

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	13.7		1.99	0.596	mg/Kg	1		09/13/13 23:34
Surrogates								
4-Bromofluorobenzene	226	*	50-150		%	1		09/13/13 23:34

Batch Information

Analytical Batch: VFC11623
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/13/13 23:34
Container ID: 1134453002-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 08:31
Prep Initial Wt./Vol.: 93.905 g
Prep Extract Vol: 33.816 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0111		0.00994	0.00318	mg/Kg	1		09/13/13 23:34
Ethylbenzene	0.387		0.0199	0.00620	mg/Kg	1		09/13/13 23:34
o-Xylene	0.539		0.0199	0.00620	mg/Kg	1		09/13/13 23:34
P & M -Xylene	1.21		0.0397	0.0119	mg/Kg	1		09/13/13 23:34
Toluene	0.152		0.0199	0.00620	mg/Kg	1		09/13/13 23:34
Surrogates								
1,4-Difluorobenzene	90.6		72-119		%	1		09/13/13 23:34

Batch Information

Analytical Batch: VFC11623
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/13/13 23:34
Container ID: 1134453002-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 08:31
Prep Initial Wt./Vol.: 93.905 g
Prep Extract Vol: 33.816 mL

Results of **SB-03 (3.0-3.5)**

Client Sample ID: **SB-03 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453003
Lab Project ID: 1134453

Collection Date: 09/11/13 11:25
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.0

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	25.1		21.9	6.78	mg/Kg	1		09/19/13 17:16
Surrogates								
5a Androstane	83		50-150		%	1		09/19/13 17:16

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 17:16
Container ID: 1134453003-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.143 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	98.9		21.9	6.78	mg/Kg	1		09/19/13 17:16
Surrogates								
n-Triacontane-d62	89.4		50-150		%	1		09/19/13 17:16

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 17:16
Container ID: 1134453003-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.143 g
Prep Extract Vol: 1 mL

Results of **SB-03 (3.0-3.5)**

Client Sample ID: **SB-03 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453003
Lab Project ID: 1134453

Collection Date: 09/11/13 11:25
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.0

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.29	J	2.07	0.621	mg/Kg	1		09/13/13 23:52
Surrogates								
4-Bromofluorobenzene	103		50-150		%	1		09/13/13 23:52

Batch Information

Analytical Batch: VFC11623
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/13/13 23:52
Container ID: 1134453003-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 11:25
Prep Initial Wt./Vol.: 87.294 g
Prep Extract Vol: 32.8598 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00662	U	0.0103	0.00331	mg/Kg	1		09/13/13 23:52
Ethylbenzene	0.0129	U	0.0207	0.00645	mg/Kg	1		09/13/13 23:52
o-Xylene	0.0129	U	0.0207	0.00645	mg/Kg	1		09/13/13 23:52
P & M -Xylene	0.0137	J	0.0414	0.0124	mg/Kg	1		09/13/13 23:52
Toluene	0.0129	U	0.0207	0.00645	mg/Kg	1		09/13/13 23:52
Surrogates								
1,4-Difluorobenzene	92.3		72-119		%	1		09/13/13 23:52

Batch Information

Analytical Batch: VFC11623
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/13/13 23:52
Container ID: 1134453003-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 11:25
Prep Initial Wt./Vol.: 87.294 g
Prep Extract Vol: 32.8598 mL

Results of **SB-04 (2.5-2.9)**

Client Sample ID: **SB-04 (2.5-2.9)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453004
Lab Project ID: 1134453

Collection Date: 09/11/13 08:49
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 88.9

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	83.4		22.3	6.92	mg/Kg	1		09/19/13 17:37
Surrogates								
5a Androstane	89.4		50-150		%	1		09/19/13 17:37

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 17:37
Container ID: 1134453004-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.243 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	272		22.3	6.92	mg/Kg	1		09/19/13 17:37
Surrogates								
n-Triacontane-d62	101		50-150		%	1		09/19/13 17:37

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 17:37
Container ID: 1134453004-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.243 g
Prep Extract Vol: 1 mL

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Results of **SB-04 (2.5-2.9)**

Client Sample ID: **SB-04 (2.5-2.9)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453004
Lab Project ID: 1134453

Collection Date: 09/11/13 08:49
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 88.9

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.16	J	1.79	0.536	mg/Kg	1		09/14/13 00:10
Surrogates								
4-Bromofluorobenzene	104		50-150		%	1		09/14/13 00:10

Batch Information

Analytical Batch: VFC11623
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 00:10
Container ID: 1134453004-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 08:49
Prep Initial Wt./Vol.: 120.978 g
Prep Extract Vol: 38.4357 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00590	J	0.00894	0.00286	mg/Kg	1		09/14/13 00:10
Ethylbenzene	0.0250		0.0179	0.00558	mg/Kg	1		09/14/13 00:10
o-Xylene	0.0152	J	0.0179	0.00558	mg/Kg	1		09/14/13 00:10
P & M -Xylene	0.0540		0.0357	0.0107	mg/Kg	1		09/14/13 00:10
Toluene	0.0348		0.0179	0.00558	mg/Kg	1		09/14/13 00:10
Surrogates								
1,4-Difluorobenzene	89.6		72-119		%	1		09/14/13 00:10

Batch Information

Analytical Batch: VFC11623
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 00:10
Container ID: 1134453004-B

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 09/11/13 08:49
Prep Initial Wt./Vol.: 120.978 g
Prep Extract Vol: 38.4357 mL

Results of **SB-05 (3.0-3.5)**

Client Sample ID: **SB-05 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453005
Lab Project ID: 1134453

Collection Date: 09/11/13 11:11
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.7

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	25.4		21.6	6.71	mg/Kg	1		09/19/13 17:57
Surrogates								
5a Androstane	95.1		50-150		%	1		09/19/13 17:57

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 17:57
Container ID: 1134453005-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.253 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	89.6		21.6	6.71	mg/Kg	1		09/19/13 17:57
Surrogates								
n-Triacontane-d62	103		50-150		%	1		09/19/13 17:57

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 17:57
Container ID: 1134453005-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.253 g
Prep Extract Vol: 1 mL

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Results of **SB-05 (3.0-3.5)**

Client Sample ID: **SB-05 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453005
Lab Project ID: 1134453

Collection Date: 09/11/13 11:11
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.7

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.05	U	1.75	0.524	mg/Kg	1		09/14/13 14:51
Surrogates								
4-Bromofluorobenzene	112		50-150		%	1		09/14/13 14:51

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 14:51
Container ID: 1134453005-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 11:11
Prep Initial Wt./Vol.: 105.355 g
Prep Extract Vol: 33.7704 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00560	U	0.00874	0.00280	mg/Kg	1		09/14/13 14:51
Ethylbenzene	0.0109	U	0.0175	0.00545	mg/Kg	1		09/14/13 14:51
o-Xylene	0.0109	U	0.0175	0.00545	mg/Kg	1		09/14/13 14:51
P & M -Xylene	0.0210	U	0.0350	0.0105	mg/Kg	1		09/14/13 14:51
Toluene	0.0109	U	0.0175	0.00545	mg/Kg	1		09/14/13 14:51
Surrogates								
1,4-Difluorobenzene	92.7		72-119		%	1		09/14/13 14:51

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 14:51
Container ID: 1134453005-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 11:11
Prep Initial Wt./Vol.: 105.355 g
Prep Extract Vol: 33.7704 mL

Results of **SB-06 (3.0-3.5)**

Client Sample ID: **SB-06 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453006
Lab Project ID: 1134453

Collection Date: 09/11/13 09:50
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 92.5

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	25.9		21.3	6.61	mg/Kg	1		09/19/13 18:18
Surrogates								
5a Androstane	96.3		50-150		%	1		09/19/13 18:18

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 18:18
Container ID: 1134453006-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.431 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	111		21.3	6.61	mg/Kg	1		09/19/13 18:18
Surrogates								
n-Triacontane-d62	103		50-150		%	1		09/19/13 18:18

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 18:18
Container ID: 1134453006-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.431 g
Prep Extract Vol: 1 mL

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Results of **SB-06 (3.0-3.5)**

Client Sample ID: **SB-06 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453006
Lab Project ID: 1134453

Collection Date: 09/11/13 09:50
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 92.5

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.679	J	1.67	0.501	mg/Kg	1		09/14/13 15:10
Surrogates								
4-Bromofluorobenzene	115		50-150		%	1		09/14/13 15:10

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 15:10
Container ID: 1134453006-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 09:50
Prep Initial Wt./Vol.: 106.745 g
Prep Extract Vol: 32.9924 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00534	U	0.00835	0.00267	mg/Kg	1		09/14/13 15:10
Ethylbenzene	0.0104	U	0.0167	0.00521	mg/Kg	1		09/14/13 15:10
o-Xylene	0.0104	U	0.0167	0.00521	mg/Kg	1		09/14/13 15:10
P & M -Xylene	0.0200	U	0.0334	0.0100	mg/Kg	1		09/14/13 15:10
Toluene	0.0104	U	0.0167	0.00521	mg/Kg	1		09/14/13 15:10
Surrogates								
1,4-Difluorobenzene	90.4		72-119		%	1		09/14/13 15:10

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 15:10
Container ID: 1134453006-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 09:50
Prep Initial Wt./Vol.: 106.745 g
Prep Extract Vol: 32.9924 mL

Results of **SB-07 (3.0-3.5)**

Client Sample ID: **SB-07 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453007
Lab Project ID: 1134453

Collection Date: 09/11/13 11:00
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 92.0

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	2420		85.9	26.6	mg/Kg	4		09/19/13 22:26
Surrogates								
5a Androstane	89.1		50-150		%	4		09/19/13 22:26

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 22:26
Container ID: 1134453007-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.374 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	2100		85.9	26.6	mg/Kg	4		09/19/13 22:26
Surrogates								
n-Triacontane-d62	96.5		50-150		%	4		09/19/13 22:26

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 22:26
Container ID: 1134453007-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.374 g
Prep Extract Vol: 1 mL

Results of **SB-07 (3.0-3.5)**

Client Sample ID: **SB-07 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453007
Lab Project ID: 1134453

Collection Date: 09/11/13 11:00
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 92.0

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.25		1.99	0.596	mg/Kg	1		09/14/13 15:28
Surrogates								
4-Bromofluorobenzene	105		50-150		%	1		09/14/13 15:28

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 15:28
Container ID: 1134453007-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 11:00
Prep Initial Wt./Vol.: 87.502 g
Prep Extract Vol: 31.9963 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00636	U	0.00994	0.00318	mg/Kg	1		09/14/13 15:28
Ethylbenzene	0.0258		0.0199	0.00620	mg/Kg	1		09/14/13 15:28
o-Xylene	0.0558		0.0199	0.00620	mg/Kg	1		09/14/13 15:28
P & M -Xylene	0.0956		0.0397	0.0119	mg/Kg	1		09/14/13 15:28
Toluene	0.00934	J	0.0199	0.00620	mg/Kg	1		09/14/13 15:28
Surrogates								
1,4-Difluorobenzene	89.7		72-119		%	1		09/14/13 15:28

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 15:28
Container ID: 1134453007-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 11:00
Prep Initial Wt./Vol.: 87.502 g
Prep Extract Vol: 31.9963 mL

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Results of **SB-08 (3.0-3.5)**

Client Sample ID: **SB-08 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453008
Lab Project ID: 1134453

Collection Date: 09/11/13 16:20
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 79.9

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	17.2	J	24.9	7.71	mg/Kg	1		09/19/13 18:39
Surrogates								
5a Androstane	96.2		50-150		%	1		09/19/13 18:39

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 18:39
Container ID: 1134453008-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.199 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	55.9		24.9	7.71	mg/Kg	1		09/19/13 18:39
Surrogates								
n-Triacontane-d62	105		50-150		%	1		09/19/13 18:39

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 18:39
Container ID: 1134453008-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.199 g
Prep Extract Vol: 1 mL

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Results of **SB-08 (3.0-3.5)**

Client Sample ID: **SB-08 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453008
Lab Project ID: 1134453

Collection Date: 09/11/13 16:20
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 79.9

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.21	J	2.69	0.808	mg/Kg	1		09/14/13 15:47
Surrogates								
4-Bromofluorobenzene	86.3		50-150		%	1		09/14/13 15:47

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 15:47
Container ID: 1134453008-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 16:20
Prep Initial Wt./Vol.: 108.863 g
Prep Extract Vol: 46.8815 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00862	U	0.0135	0.00431	mg/Kg	1		09/14/13 15:47
Ethylbenzene	0.0168	U	0.0269	0.00841	mg/Kg	1		09/14/13 15:47
o-Xylene	0.0168	U	0.0269	0.00841	mg/Kg	1		09/14/13 15:47
P & M -Xylene	0.0324	U	0.0539	0.0162	mg/Kg	1		09/14/13 15:47
Toluene	0.0168	U	0.0269	0.00841	mg/Kg	1		09/14/13 15:47
Surrogates								
1,4-Difluorobenzene	89.8		72-119		%	1		09/14/13 15:47

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 15:47
Container ID: 1134453008-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 16:20
Prep Initial Wt./Vol.: 108.863 g
Prep Extract Vol: 46.8815 mL

Results of **SB-09 (2.5-3.0)**

Client Sample ID: **SB-09 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453009
Lab Project ID: 1134453

Collection Date: 09/11/13 14:50
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 82.8

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	5080		239	74.1	mg/Kg	10		09/20/13 00:31
Surrogates								
5a Androstane	92.1		50-150		%	10		09/20/13 00:31

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/20/13 00:31
Container ID: 1134453009-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.302 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	216	J	239	74.1	mg/Kg	10		09/20/13 00:31
Surrogates								
n-Triacontane-d62	96.6		50-150		%	10		09/20/13 00:31

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/20/13 00:31
Container ID: 1134453009-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.302 g
Prep Extract Vol: 1 mL

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Results of **SB-09 (2.5-3.0)**

Client Sample ID: **SB-09 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453009
Lab Project ID: 1134453

Collection Date: 09/11/13 14:50
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 82.8

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	79.1		25.2	7.56	mg/Kg	10		09/16/13 14:28
Surrogates								
4-Bromofluorobenzene	362	*	50-150		%	10		09/16/13 14:28

Batch Information

Analytical Batch: VFC11627
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/16/13 14:28
Container ID: 1134453009-B

Prep Batch: VXX25192
Prep Method: SW5035A
Prep Date/Time: 09/11/13 14:50
Prep Initial Wt./Vol.: 101.676 g
Prep Extract Vol: 42.4389 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00806	U	0.0126	0.00403	mg/Kg	1		09/14/13 16:05
Ethylbenzene	0.100		0.0252	0.00786	mg/Kg	1		09/14/13 16:05
o-Xylene	1.07		0.0252	0.00786	mg/Kg	1		09/14/13 16:05
P & M -Xylene	0.507		0.0504	0.0151	mg/Kg	1		09/14/13 16:05
Toluene	0.00856	J	0.0252	0.00786	mg/Kg	1		09/14/13 16:05
Surrogates								
1,4-Difluorobenzene	94.9		72-119		%	1		09/14/13 16:05

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 16:05
Container ID: 1134453009-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 14:50
Prep Initial Wt./Vol.: 101.676 g
Prep Extract Vol: 42.4389 mL

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Results of **SD-09 (2.5-3.0)**

Client Sample ID: **SD-09 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453010
Lab Project ID: 1134453

Collection Date: 09/11/13 14:40
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 84.4

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	4080		235	73.0	mg/Kg	10		09/20/13 00:51
Surrogates								
5a Androstane	91.4		50-150		%	10		09/20/13 00:51

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/20/13 00:51
Container ID: 1134453010-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.204 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	195	J	235	73.0	mg/Kg	10		09/20/13 00:51
Surrogates								
n-Triacontane-d62	97.3		50-150		%	10		09/20/13 00:51

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/20/13 00:51
Container ID: 1134453010-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.204 g
Prep Extract Vol: 1 mL

Results of **SD-09 (2.5-3.0)**

Client Sample ID: **SD-09 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453010
Lab Project ID: 1134453

Collection Date: 09/11/13 14:40
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 84.4

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	127		25.8	7.74	mg/Kg	10		09/16/13 14:47
Surrogates								
4-Bromofluorobenzene	538	*	50-150		%	10		09/16/13 14:47

Batch Information

Analytical Batch: VFC11627
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/16/13 14:47
Container ID: 1134453010-B

Prep Batch: VXX25192
Prep Method: SW5035A
Prep Date/Time: 09/11/13 14:40
Prep Initial Wt./Vol.: 89.501 g
Prep Extract Vol: 38.9772 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00826	U	0.0129	0.00413	mg/Kg	1		09/14/13 16:24
Ethylbenzene	0.112		0.0258	0.00805	mg/Kg	1		09/14/13 16:24
o-Xylene	1.17		0.0258	0.00805	mg/Kg	1		09/14/13 16:24
P & M -Xylene	0.562		0.0516	0.0155	mg/Kg	1		09/14/13 16:24
Toluene	0.509		0.0258	0.00805	mg/Kg	1		09/14/13 16:24
Surrogates								
1,4-Difluorobenzene	91.8		72-119		%	1		09/14/13 16:24

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 16:24
Container ID: 1134453010-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 14:40
Prep Initial Wt./Vol.: 89.501 g
Prep Extract Vol: 38.9772 mL

Results of **SB-10 (2.5-3.0)**

Client Sample ID: **SB-10 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453011
Lab Project ID: 1134453

Collection Date: 09/11/13 14:45
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 78.9

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	8130		504	156	mg/Kg	20		09/20/13 21:08
Surrogates								
5a Androstane	88.8		50-150		%	20		09/20/13 21:08

Batch Information

Analytical Batch: XFC11076
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/20/13 21:08
Container ID: 1134453011-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.193 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	515		101	31.2	mg/Kg	4		09/19/13 22:47
Surrogates								
n-Triacontane-d62	102		50-150		%	4		09/19/13 22:47

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 22:47
Container ID: 1134453011-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.193 g
Prep Extract Vol: 1 mL

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Results of **SB-10 (2.5-3.0)**

Client Sample ID: **SB-10 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453011
Lab Project ID: 1134453

Collection Date: 09/11/13 14:45
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 78.9

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	156		35.0	10.5	mg/Kg	10		09/16/13 15:05
Surrogates								
4-Bromofluorobenzene	445	*	50-150		%	10		09/16/13 15:05

Batch Information

Analytical Batch: VFC11627
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/16/13 15:05
Container ID: 1134453011-B

Prep Batch: VXX25192
Prep Method: SW5035A
Prep Date/Time: 09/11/13 14:45
Prep Initial Wt./Vol.: 73.3 g
Prep Extract Vol: 40.4862 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0112	U	0.0175	0.00560	mg/Kg	1		09/14/13 16:42
Ethylbenzene	0.0536		0.0350	0.0109	mg/Kg	1		09/14/13 16:42
o-Xylene	1.65		0.0350	0.0109	mg/Kg	1		09/14/13 16:42
P & M -Xylene	1.15		0.0700	0.0210	mg/Kg	1		09/14/13 16:42
Toluene	0.0123	J	0.0350	0.0109	mg/Kg	1		09/14/13 16:42
Surrogates								
1,4-Difluorobenzene	94.6		72-119		%	1		09/14/13 16:42

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 16:42
Container ID: 1134453011-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 14:45
Prep Initial Wt./Vol.: 73.3 g
Prep Extract Vol: 40.4862 mL

Results of **SB-10 (2.0-2.5)**

Client Sample ID: **SB-10 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453012
Lab Project ID: 1134453

Collection Date: 09/11/13 20:36
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 90.3

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	3470		217	67.4	mg/Kg	10		09/20/13 16:39
Surrogates								
5a Androstane	88.8		50-150		%	10		09/20/13 16:39

Batch Information

Analytical Batch: XFC11076
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/20/13 16:39
Container ID: 1134453012-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.578 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	237		87.0	27.0	mg/Kg	4		09/19/13 23:08
Surrogates								
n-Triacontane-d62	97.7		50-150		%	4		09/19/13 23:08

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 23:08
Container ID: 1134453012-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.578 g
Prep Extract Vol: 1 mL

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Results of **SB-10 (2.0-2.5)**

Client Sample ID: **SB-10 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453012
Lab Project ID: 1134453

Collection Date: 09/11/13 20:36
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 90.3

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	229		21.4	6.41	mg/Kg	10		09/14/13 17:19
Surrogates								
4-Bromofluorobenzene	931	*	50-150		%	10		09/14/13 17:19

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 17:19
Container ID: 1134453012-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:36
Prep Initial Wt./Vol.: 86.719 g
Prep Extract Vol: 33.4468 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0684	U	0.107	0.0342	mg/Kg	10		09/14/13 17:19
Ethylbenzene	0.133	U	0.214	0.0667	mg/Kg	10		09/14/13 17:19
o-Xylene	1.22		0.214	0.0667	mg/Kg	10		09/14/13 17:19
P & M -Xylene	1.43		0.427	0.128	mg/Kg	10		09/14/13 17:19
Toluene	0.415		0.214	0.0667	mg/Kg	10		09/14/13 17:19
Surrogates								
1,4-Difluorobenzene	90.9		72-119		%	10		09/14/13 17:19

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 17:19
Container ID: 1134453012-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:36
Prep Initial Wt./Vol.: 86.719 g
Prep Extract Vol: 33.4468 mL

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Results of **SB-10 (2.0-2.5)**

Client Sample ID: **SB-10 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453013
Lab Project ID: 1134453

Collection Date: 09/11/13 21:25
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 90.2

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0332	U	0.0552	0.0166	mg/Kg	10		09/19/13 15:52
2-Methylnaphthalene	0.0332	U	0.0552	0.0166	mg/Kg	10		09/19/13 15:52
Acenaphthene	0.0332	U	0.0552	0.0166	mg/Kg	10		09/19/13 15:52
Acenaphthylene	0.0332	U	0.0552	0.0166	mg/Kg	10		09/19/13 15:52
Anthracene	0.0332	U	0.0552	0.0166	mg/Kg	10		09/19/13 15:52
Benzo(a)Anthracene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Benzo[a]pyrene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Benzo[b]Fluoranthene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Benzo[g,h,i]perylene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Benzo[k]fluoranthene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Chrysene	0.00361	J	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Dibenzo[a,h]anthracene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Fluoranthene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Fluorene	0.0332	U	0.0552	0.0166	mg/Kg	10		09/19/13 15:52
Indeno[1,2,3-c,d] pyrene	0.00332	U	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Naphthalene	0.0332	U	0.0552	0.0166	mg/Kg	10		09/19/13 15:52
Phenanthrene	0.186		0.0552	0.0166	mg/Kg	10		09/19/13 15:52
Pyrene	0.00507	J	0.00552	0.00166	mg/Kg	1		09/17/13 23:50
Surrogates								
2-Fluorobiphenyl	148	*	45-105		%	10		09/19/13 15:52
Terphenyl-d14	91.1		30-125		%	1		09/17/13 23:50

Batch Information

Analytical Batch: XMS7599
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 09/17/13 23:50
Container ID: 1134453013-A

Prep Batch: XXX29926
Prep Method: SW3550C
Prep Date/Time: 09/16/13 16:50
Prep Initial Wt./Vol.: 22.598 g
Prep Extract Vol: 1 mL

Analytical Batch: XMS7605
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 09/19/13 15:52
Container ID: 1134453013-A

Prep Batch: XXX29926
Prep Method: SW3550C
Prep Date/Time: 09/16/13 16:50
Prep Initial Wt./Vol.: 22.598 g
Prep Extract Vol: 1 mL

Print Date: 09/26/2013 4:12:08PM

Results of **SD-10 (2.0-2.5)**

Client Sample ID: **SD-10 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453014
Lab Project ID: 1134453

Collection Date: 09/11/13 21:15
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 92.2

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual		LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0324	U		0.0540	0.0162	mg/Kg	10		09/19/13 16:06
2-Methylnaphthalene	0.0324	U		0.0540	0.0162	mg/Kg	10		09/19/13 16:06
Acenaphthene	0.0324	U		0.0540	0.0162	mg/Kg	10		09/19/13 16:06
Acenaphthylene	0.0324	U		0.0540	0.0162	mg/Kg	10		09/19/13 16:06
Anthracene	0.0324	U		0.0540	0.0162	mg/Kg	10		09/19/13 16:06
Benzo(a)Anthracene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Benzo[a]pyrene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Benzo[b]Fluoranthene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Benzo[g,h,i]perylene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Benzo[k]fluoranthene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Chrysene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Dibenzo[a,h]anthracene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Fluoranthene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Fluorene	0.0324	U		0.0540	0.0162	mg/Kg	10		09/19/13 16:06
Indeno[1,2,3-c,d] pyrene	0.00324	U		0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Naphthalene	0.0324	U		0.0540	0.0162	mg/Kg	10		09/19/13 16:06
Phenanthrene	0.161			0.0540	0.0162	mg/Kg	10		09/19/13 16:06
Pyrene	0.00620			0.00540	0.00162	mg/Kg	1		09/18/13 00:05
Surrogates									
2-Fluorobiphenyl	0		*	45-105		%	10		09/19/13 16:06
Terphenyl-d14	91.9			30-125		%	1		09/18/13 00:05

Batch Information

Analytical Batch: XMS7599
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 09/18/13 00:05
Container ID: 1134453014-A

Prep Batch: XXX29926
Prep Method: SW3550C
Prep Date/Time: 09/16/13 16:50
Prep Initial Wt./Vol.: 22.599 g
Prep Extract Vol: 1 mL

Analytical Batch: XMS7605
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 09/19/13 16:06
Container ID: 1134453014-A

Prep Batch: XXX29926
Prep Method: SW3550C
Prep Date/Time: 09/16/13 16:50
Prep Initial Wt./Vol.: 22.599 g
Prep Extract Vol: 1 mL

Print Date: 09/26/2013 4:12:08PM

Results of **SB-11 (2.0-2.5)**

Client Sample ID: **SB-11 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453015
Lab Project ID: 1134453

Collection Date: 09/11/13 20:45
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.3

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	3360		217	67.3	mg/Kg	10		09/20/13 16:59
Surrogates								
5a Androstane	86.1		50-150		%	10		09/20/13 16:59

Batch Information

Analytical Batch: XFC11076
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/20/13 16:59
Container ID: 1134453015-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.274 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	1160		86.8	26.9	mg/Kg	4		09/19/13 23:28
Surrogates								
n-Triacontane-d62	99.7		50-150		%	4		09/19/13 23:28

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 23:28
Container ID: 1134453015-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.274 g
Prep Extract Vol: 1 mL

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Results of **SB-11 (2.0-2.5)**

Client Sample ID: **SB-11 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453015
Lab Project ID: 1134453

Collection Date: 09/11/13 20:45
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.3

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	55.2		1.87	0.561	mg/Kg	1		09/14/13 17:38
Surrogates								
4-Bromofluorobenzene	380	*	50-150		%	1		09/14/13 17:38

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 17:38
Container ID: 1134453015-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:45
Prep Initial Wt./Vol.: 98.159 g
Prep Extract Vol: 33.5359 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00598	U	0.00935	0.00299	mg/Kg	1		09/14/13 17:38
Ethylbenzene	0.102		0.0187	0.00584	mg/Kg	1		09/14/13 17:38
o-Xylene	0.502		0.0187	0.00584	mg/Kg	1		09/14/13 17:38
P & M -Xylene	0.448		0.0374	0.0112	mg/Kg	1		09/14/13 17:38
Toluene	0.0167	J	0.0187	0.00584	mg/Kg	1		09/14/13 17:38
Surrogates								
1,4-Difluorobenzene	92.7		72-119		%	1		09/14/13 17:38

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 17:38
Container ID: 1134453015-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:45
Prep Initial Wt./Vol.: 98.159 g
Prep Extract Vol: 33.5359 mL

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Results of **SB-11 (3.0-3.5)**

Client Sample ID: **SB-11 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453016
Lab Project ID: 1134453

Collection Date: 09/11/13 15:25
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 84.8

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1520		93.6	29.0	mg/Kg	4		09/19/13 23:49
Surrogates								
5a Androstane	90.1		50-150		%	4		09/19/13 23:49

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/19/13 23:49
Container ID: 1134453016-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.248 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	445		93.6	29.0	mg/Kg	4		09/19/13 23:49
Surrogates								
n-Triacontane-d62	97.8		50-150		%	4		09/19/13 23:49

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/19/13 23:49
Container ID: 1134453016-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.248 g
Prep Extract Vol: 1 mL

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Results of **SB-11 (3.0-3.5)**

Client Sample ID: **SB-11 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453016
Lab Project ID: 1134453

Collection Date: 09/11/13 15:25
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 84.8

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	25.7		2.47	0.741	mg/Kg	1		09/14/13 17:56
Surrogates								
4-Bromofluorobenzene	198	*	50-150		%	1		09/14/13 17:56

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 17:56
Container ID: 1134453016-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 15:25
Prep Initial Wt./Vol.: 93.797 g
Prep Extract Vol: 39.2932 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00790	U	0.0124	0.00395	mg/Kg	1		09/14/13 17:56
Ethylbenzene	0.0450		0.0247	0.00771	mg/Kg	1		09/14/13 17:56
o-Xylene	0.235		0.0247	0.00771	mg/Kg	1		09/14/13 17:56
P & M -Xylene	0.234		0.0494	0.0148	mg/Kg	1		09/14/13 17:56
Toluene	0.0267		0.0247	0.00771	mg/Kg	1		09/14/13 17:56
Surrogates								
1,4-Difluorobenzene	90.7		72-119		%	1		09/14/13 17:56

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 17:56
Container ID: 1134453016-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 15:25
Prep Initial Wt./Vol.: 93.797 g
Prep Extract Vol: 39.2932 mL

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Results of **SD-11 (2.0-2.5)**

Client Sample ID: **SD-11 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453017
Lab Project ID: 1134453

Collection Date: 09/11/13 20:35
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.7

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	3440		214	66.4	mg/Kg	10		09/20/13 01:12
Surrogates								
5a Androstane	93		50-150		%	10		09/20/13 01:12

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/20/13 01:12
Container ID: 1134453017-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.549 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	1070		214	66.4	mg/Kg	10		09/20/13 01:12
Surrogates								
n-Triacontane-d62	84.9		50-150		%	10		09/20/13 01:12

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/20/13 01:12
Container ID: 1134453017-A

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 09/18/13 18:25
Prep Initial Wt./Vol.: 30.549 g
Prep Extract Vol: 1 mL

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Results of **SD-11 (2.0-2.5)**

Client Sample ID: **SD-11 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453017
Lab Project ID: 1134453

Collection Date: 09/11/13 20:35
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 91.7

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	65.5		4.17	1.25	mg/Kg	2		09/14/13 18:51
Surrogates								
4-Bromofluorobenzene	383	*	50-150		%	2		09/14/13 18:51

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 18:51
Container ID: 1134453017-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:35
Prep Initial Wt./Vol.: 83.57 g
Prep Extract Vol: 31.9451 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0133	U	0.0208	0.00667	mg/Kg	2		09/14/13 18:51
Ethylbenzene	0.118		0.0417	0.0130	mg/Kg	2		09/14/13 18:51
o-Xylene	0.582		0.0417	0.0130	mg/Kg	2		09/14/13 18:51
P & M -Xylene	0.533		0.0834	0.0250	mg/Kg	2		09/14/13 18:51
Toluene	0.0254	J	0.0417	0.0130	mg/Kg	2		09/14/13 18:51
Surrogates								
1,4-Difluorobenzene	90.9		72-119		%	2		09/14/13 18:51

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 18:51
Container ID: 1134453017-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:35
Prep Initial Wt./Vol.: 83.57 g
Prep Extract Vol: 31.9451 mL

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Results of **SB-15 (2.0-2.5)**

Client Sample ID: **SB-15 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453018
Lab Project ID: 1134453

Collection Date: 09/11/13 17:21
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 84.6

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	19.4	J	23.3	7.21	mg/Kg	1		09/17/13 06:56
Surrogates								
5a Androstane	90.3		50-150		%	1		09/17/13 06:56

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 06:56
Container ID: 1134453018-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.477 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	96.9		23.3	7.21	mg/Kg	1		09/17/13 06:56
Surrogates								
n-Triacontane-d62	99.8		50-150		%	1		09/17/13 06:56

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 06:56
Container ID: 1134453018-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.477 g
Prep Extract Vol: 1 mL

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Results of **SB-15 (2.0-2.5)**

Client Sample ID: **SB-15 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453018
Lab Project ID: 1134453

Collection Date: 09/11/13 17:21
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 84.6

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.56		2.45	0.734	mg/Kg	1		09/14/13 19:10
Surrogates								
4-Bromofluorobenzene	131		50-150		%	1		09/14/13 19:10

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 19:10
Container ID: 1134453018-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 17:21
Prep Initial Wt./Vol.: 96.261 g
Prep Extract Vol: 39.8345 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00782	U	0.0122	0.00391	mg/Kg	1		09/14/13 19:10
Ethylbenzene	0.139		0.0245	0.00763	mg/Kg	1		09/14/13 19:10
o-Xylene	0.0408		0.0245	0.00763	mg/Kg	1		09/14/13 19:10
P & M -Xylene	0.0294	U	0.0489	0.0147	mg/Kg	1		09/14/13 19:10
Toluene	0.0153	U	0.0245	0.00763	mg/Kg	1		09/14/13 19:10
Surrogates								
1,4-Difluorobenzene	91		72-119		%	1		09/14/13 19:10

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 19:10
Container ID: 1134453018-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 17:21
Prep Initial Wt./Vol.: 96.261 g
Prep Extract Vol: 39.8345 mL

Results of **SB-16 (2.5-3.0)**

Client Sample ID: **SB-16 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453019
Lab Project ID: 1134453

Collection Date: 09/11/13 17:40
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 90.3

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	42.8		21.6	6.69	mg/Kg	1		09/17/13 07:16
Surrogates								
5a Androstane	87.3		50-150		%	1		09/17/13 07:16

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 07:16
Container ID: 1134453019-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.78 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	191		21.6	6.69	mg/Kg	1		09/17/13 07:16
Surrogates								
n-Triacontane-d62	98		50-150		%	1		09/17/13 07:16

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 07:16
Container ID: 1134453019-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.78 g
Prep Extract Vol: 1 mL

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Results of **SB-16 (2.5-3.0)**

Client Sample ID: **SB-16 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453019
Lab Project ID: 1134453

Collection Date: 09/11/13 17:40
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 90.3

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.32	J	2.22	0.665	mg/Kg	1		09/14/13 19:29
Surrogates								
4-Bromofluorobenzene	112		50-150		%	1		09/14/13 19:29

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 19:29
Container ID: 1134453019-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 17:40
Prep Initial Wt./Vol.: 82.291 g
Prep Extract Vol: 32.9718 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00710	U	0.0111	0.00355	mg/Kg	1		09/14/13 19:29
Ethylbenzene	0.0138	U	0.0222	0.00692	mg/Kg	1		09/14/13 19:29
o-Xylene	0.00887	J	0.0222	0.00692	mg/Kg	1		09/14/13 19:29
P & M -Xylene	0.0266	U	0.0444	0.0133	mg/Kg	1		09/14/13 19:29
Toluene	0.0138	U	0.0222	0.00692	mg/Kg	1		09/14/13 19:29
Surrogates								
1,4-Difluorobenzene	89.2		72-119		%	1		09/14/13 19:29

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 19:29
Container ID: 1134453019-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 17:40
Prep Initial Wt./Vol.: 82.291 g
Prep Extract Vol: 32.9718 mL

Results of **SB-17 (2.0-2.5)**

Client Sample ID: **SB-17 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453020
Lab Project ID: 1134453

Collection Date: 09/11/13 16:15
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 93.0

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	152		21.3	6.62	mg/Kg	1		09/17/13 07:37
Surrogates								
5a Androstane	84.9		50-150		%	1		09/17/13 07:37

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 07:37
Container ID: 1134453020-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.224 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	1530		85.4	26.5	mg/Kg	4		09/17/13 12:07
Surrogates								
n-Triacontane-d62	173	*	50-150		%	4		09/17/13 12:07

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 12:07
Container ID: 1134453020-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.224 g
Prep Extract Vol: 1 mL

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Results of **SB-17 (2.0-2.5)**

Client Sample ID: **SB-17 (2.0-2.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453020
Lab Project ID: 1134453

Collection Date: 09/11/13 16:15
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 93.0

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.545	J	1.72	0.517	mg/Kg	1		09/14/13 13:38
Surrogates								
4-Bromofluorobenzene	105		50-150		%	1		09/14/13 13:38

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 13:38
Container ID: 1134453020-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 16:15
Prep Initial Wt./Vol.: 99.717 g
Prep Extract Vol: 31.976 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00552	U	0.00862	0.00276	mg/Kg	1		09/14/13 13:38
Ethylbenzene	0.0108	U	0.0172	0.00538	mg/Kg	1		09/14/13 13:38
o-Xylene	0.00655	J	0.0172	0.00538	mg/Kg	1		09/14/13 13:38
P & M -Xylene	0.0206	U	0.0345	0.0103	mg/Kg	1		09/14/13 13:38
Toluene	0.0108	U	0.0172	0.00538	mg/Kg	1		09/14/13 13:38
Surrogates								
1,4-Difluorobenzene	91.7		72-119		%	1		09/14/13 13:38

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 13:38
Container ID: 1134453020-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 16:15
Prep Initial Wt./Vol.: 99.717 g
Prep Extract Vol: 31.976 mL

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Results of **SB-18 (3.0-3.5)**

Client Sample ID: **SB-18 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453021
Lab Project ID: 1134453

Collection Date: 09/11/13 20:20
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 86.2

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	55.6		23.1	7.17	mg/Kg	1		09/17/13 07:58
Surrogates								
5a Androstane	85.7		50-150		%	1		09/17/13 07:58

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 07:58
Container ID: 1134453021-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.09 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	47.5		23.1	7.17	mg/Kg	1		09/17/13 07:58
Surrogates								
n-Triacontane-d62	95.7		50-150		%	1		09/17/13 07:58

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 07:58
Container ID: 1134453021-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.09 g
Prep Extract Vol: 1 mL

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Results of **SB-18 (3.0-3.5)**

Client Sample ID: **SB-18 (3.0-3.5)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453021
Lab Project ID: 1134453

Collection Date: 09/11/13 20:20
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 86.2

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.95	J	3.03	0.910	mg/Kg	1		09/14/13 19:47
Surrogates								
4-Bromofluorobenzene	104		50-150		%	1		09/14/13 19:47

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 19:47
Container ID: 1134453021-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:20
Prep Initial Wt./Vol.: 64.979 g
Prep Extract Vol: 33.9775 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00970	U	0.0152	0.00485	mg/Kg	1		09/14/13 19:47
Ethylbenzene	0.0182	J	0.0303	0.00946	mg/Kg	1		09/14/13 19:47
o-Xylene	0.0625		0.0303	0.00946	mg/Kg	1		09/14/13 19:47
P & M -Xylene	0.0810		0.0607	0.0182	mg/Kg	1		09/14/13 19:47
Toluene	0.0173	J	0.0303	0.00946	mg/Kg	1		09/14/13 19:47
Surrogates								
1,4-Difluorobenzene	88.5		72-119		%	1		09/14/13 19:47

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 19:47
Container ID: 1134453021-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:20
Prep Initial Wt./Vol.: 64.979 g
Prep Extract Vol: 33.9775 mL

Results of **SB-18 (3.5-4.1)**

Client Sample ID: **SB-18 (3.5-4.1)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453022
Lab Project ID: 1134453

Collection Date: 09/11/13 20:25
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 79.6

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	267		25.0	7.75	mg/Kg	1		09/17/13 08:18
Surrogates								
5a Androstane	86.3		50-150		%	1		09/17/13 08:18

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 08:18
Container ID: 1134453022-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.161 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	114		25.0	7.75	mg/Kg	1		09/17/13 08:18
Surrogates								
n-Triacontane-d62	97.5		50-150		%	1		09/17/13 08:18

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 08:18
Container ID: 1134453022-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.161 g
Prep Extract Vol: 1 mL

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Results of **SB-18 (3.5-4.1)**

Client Sample ID: **SB-18 (3.5-4.1)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453022
Lab Project ID: 1134453

Collection Date: 09/11/13 20:25
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 79.6

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.28		2.95	0.884	mg/Kg	1		09/17/13 18:47
Surrogates								
4-Bromofluorobenzene	124		50-150		%	1		09/17/13 18:47

Batch Information

Analytical Batch: VFC11629
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/17/13 18:47
Container ID:

Prep Batch: VXX25199
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:25
Prep Initial Wt./Vol.: 94.136 g
Prep Extract Vol: 44.1836 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00944	U	0.0147	0.00472	mg/Kg	1		09/17/13 18:47
Ethylbenzene	0.0159	J	0.0295	0.00920	mg/Kg	1		09/17/13 18:47
o-Xylene	0.0575		0.0295	0.00920	mg/Kg	1		09/17/13 18:47
P & M -Xylene	0.0616		0.0589	0.0177	mg/Kg	1		09/17/13 18:47
Toluene	0.0184	U	0.0295	0.00920	mg/Kg	1		09/17/13 18:47
Surrogates								
1,4-Difluorobenzene	96.3		72-119		%	1		09/17/13 18:47

Batch Information

Analytical Batch: VFC11629
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/17/13 18:47
Container ID:

Prep Batch: VXX25199
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:25
Prep Initial Wt./Vol.: 94.136 g
Prep Extract Vol: 44.1836 mL

Print Date: 09/26/2013 4:12:08PM

Results of **SB-19 (3.5-4.0)**

Client Sample ID: **SB-19 (3.5-4.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453023
Lab Project ID: 1134453

Collection Date: 09/11/13 20:13
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 83.8

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	94.9		23.7	7.35	mg/Kg	1		09/17/13 08:39
Surrogates								
5a Androstane	83.7		50-150		%	1		09/17/13 08:39

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 08:39
Container ID: 1134453023-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.207 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	354		23.7	7.35	mg/Kg	1		09/17/13 08:39
Surrogates								
n-Triacontane-d62	106		50-150		%	1		09/17/13 08:39

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 08:39
Container ID: 1134453023-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.207 g
Prep Extract Vol: 1 mL

Results of **SB-19 (3.5-4.0)**

Client Sample ID: **SB-19 (3.5-4.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453023
Lab Project ID: 1134453

Collection Date: 09/11/13 20:13
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 83.8

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.77	J	2.85	0.854	mg/Kg	1		09/14/13 20:42
Surrogates								
4-Bromofluorobenzene	110		50-150		%	1		09/14/13 20:42

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 20:42
Container ID: 1134453023-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:13
Prep Initial Wt./Vol.: 79.369 g
Prep Extract Vol: 37.8509 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00910	U	0.0142	0.00455	mg/Kg	1		09/14/13 20:42
Ethylbenzene	0.0276	J	0.0285	0.00888	mg/Kg	1		09/14/13 20:42
o-Xylene	0.0142	J	0.0285	0.00888	mg/Kg	1		09/14/13 20:42
P & M -Xylene	0.0504	J	0.0569	0.0171	mg/Kg	1		09/14/13 20:42
Toluene	0.0178	U	0.0285	0.00888	mg/Kg	1		09/14/13 20:42
Surrogates								
1,4-Difluorobenzene	89.2		72-119		%	1		09/14/13 20:42

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 20:42
Container ID: 1134453023-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:13
Prep Initial Wt./Vol.: 79.369 g
Prep Extract Vol: 37.8509 mL

Results of **SD-19 (3.5-4.0)**

Client Sample ID: **SD-19 (3.5-4.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453024
Lab Project ID: 1134453

Collection Date: 09/11/13 20:03
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 80.5

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	75.7		24.7	7.67	mg/Kg	1		09/17/13 09:00
Surrogates								
5a Androstane	85.5		50-150		%	1		09/17/13 09:00

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 09:00
Container ID: 1134453024-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.128 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	206		24.7	7.67	mg/Kg	1		09/17/13 09:00
Surrogates								
n-Triacontane-d62	99.8		50-150		%	1		09/17/13 09:00

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 09:00
Container ID: 1134453024-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.128 g
Prep Extract Vol: 1 mL

Results of **SD-19 (3.5-4.0)**

Client Sample ID: **SD-19 (3.5-4.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453024
Lab Project ID: 1134453

Collection Date: 09/11/13 20:03
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 80.5

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.09	J	2.88	0.864	mg/Kg	1		09/14/13 21:01
Surrogates								
4-Bromofluorobenzene	118		50-150		%	1		09/14/13 21:01

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 21:01
Container ID: 1134453024-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:03
Prep Initial Wt./Vol.: 93.056 g
Prep Extract Vol: 43.1554 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00922	U	0.0144	0.00461	mg/Kg	1		09/14/13 21:01
Ethylbenzene	0.0265	J	0.0288	0.00899	mg/Kg	1		09/14/13 21:01
o-Xylene	0.0147	J	0.0288	0.00899	mg/Kg	1		09/14/13 21:01
P & M -Xylene	0.0521	J	0.0576	0.0173	mg/Kg	1		09/14/13 21:01
Toluene	0.0180	U	0.0288	0.00899	mg/Kg	1		09/14/13 21:01
Surrogates								
1,4-Difluorobenzene	90.8		72-119		%	1		09/14/13 21:01

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 21:01
Container ID: 1134453024-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 20:03
Prep Initial Wt./Vol.: 93.056 g
Prep Extract Vol: 43.1554 mL

Results of **SB-20 (2.5-3.0)**

Client Sample ID: **SB-20 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453025
Lab Project ID: 1134453

Collection Date: 09/11/13 19:50
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 85.5

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	40.0		23.3	7.22	mg/Kg	1		09/17/13 09:21
Surrogates								
5a Androstane	86.2		50-150		%	1		09/17/13 09:21

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 09/17/13 09:21
Container ID: 1134453025-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.105 g
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	177		23.3	7.22	mg/Kg	1		09/17/13 09:21
Surrogates								
n-Triacontane-d62	98.9		50-150		%	1		09/17/13 09:21

Batch Information

Analytical Batch: XFC11066
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 09/17/13 09:21
Container ID: 1134453025-A

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 09/13/13 19:10
Prep Initial Wt./Vol.: 30.105 g
Prep Extract Vol: 1 mL

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Results of **SB-20 (2.5-3.0)**

Client Sample ID: **SB-20 (2.5-3.0)**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453025
Lab Project ID: 1134453

Collection Date: 09/11/13 19:50
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%): 85.5

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.54	J	2.83	0.848	mg/Kg	1		09/14/13 21:19
Surrogates								
4-Bromofluorobenzene	104		50-150		%	1		09/14/13 21:19

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 21:19
Container ID: 1134453025-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 19:50
Prep Initial Wt./Vol.: 73.812 g
Prep Extract Vol: 35.6799 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.0195		0.0141	0.00452	mg/Kg	1		09/14/13 21:19
Ethylbenzene	0.0175	J	0.0283	0.00882	mg/Kg	1		09/14/13 21:19
o-Xylene	0.0153	J	0.0283	0.00882	mg/Kg	1		09/14/13 21:19
P & M -Xylene	0.0268	J	0.0565	0.0170	mg/Kg	1		09/14/13 21:19
Toluene	0.0176	U	0.0283	0.00882	mg/Kg	1		09/14/13 21:19
Surrogates								
1,4-Difluorobenzene	92.7		72-119		%	1		09/14/13 21:19

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 21:19
Container ID: 1134453025-B

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 19:50
Prep Initial Wt./Vol.: 73.812 g
Prep Extract Vol: 35.6799 mL

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **1674 Nuiqsut Fuel Line**
Lab Sample ID: 1134453026
Lab Project ID: 1134453

Collection Date: 09/11/13 08:31
Received Date: 09/13/13 08:01
Matrix: Soil/Solid (dry weight)
Solids (%):

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.49	U	2.48	0.743	mg/Kg	1		09/14/13 21:56
Surrogates								
4-Bromofluorobenzene	92.6		50-150		%	1		09/14/13 21:56

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/14/13 21:56
Container ID: 1134453026-A

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 08:31
Prep Initial Wt./Vol.: 50.466 g
Prep Extract Vol: 25 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.00792	U	0.0124	0.00396	mg/Kg	1		09/14/13 21:56
Ethylbenzene	0.0155	U	0.0248	0.00773	mg/Kg	1		09/14/13 21:56
o-Xylene	0.0155	U	0.0248	0.00773	mg/Kg	1		09/14/13 21:56
P & M -Xylene	0.0298	U	0.0495	0.0149	mg/Kg	1		09/14/13 21:56
Toluene	0.0155	U	0.0248	0.00773	mg/Kg	1		09/14/13 21:56
Surrogates								
1,4-Difluorobenzene	90.7		72-119		%	1		09/14/13 21:56

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/14/13 21:56
Container ID: 1134453026-A

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 09/11/13 08:31
Prep Initial Wt./Vol.: 50.466 g
Prep Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1483461 [SPT/9145]
Blank Lab ID: 1177334

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453001, 1134453002, 1134453003, 1134453004, 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453013, 1134453014, 1134453015, 1134453016, 1134453017, 1134453018, 1134453019, 1134453020, 1134453021, 1134453022, 1134453023, 1134453024, 1134453025

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT9145
Analytical Method: SM21 2540G
Instrument:
Analyst: RKJ
Analytical Date/Time: 9/13/2013 10:20:00PM

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Duplicate Sample Summary

Original Sample ID: 1138429013
Duplicate Sample ID: 1177335

Analysis Date: 09/13/2013 22:20
Matrix: Soil/Solid (dry weight)

QC for Samples:

1134453001, 1134453002, 1134453003, 1134453004, 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453013, 1134453014, 1134453015, 1134453016, 1134453017, 1134453018, 1134453019. 1134453020. 1134453021. 1134453022. 1134453023. 1134453024. 1134453025

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	79.7	79.5	0.33	15.00

Batch Information

Analytical Batch: SPT9145
Analytical Method: SM21 2540G
Instrument:
Analyst: RKJ

Print Date: 09/26/2013 4:12:13PM

Method Blank

Blank ID: MB for HBN 1484175 [VXX/25187]
Blank Lab ID: 1177785

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453001, 1134453002, 1134453003, 1134453004

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.50U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	94	50-150		%

Batch Information

Analytical Batch: VFC11623
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/13/2013 2:20:00PM

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 9/13/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [VXX25187]
Blank Spike Lab ID: 1177788
Date Analyzed: 09/13/2013 15:15

Spike Duplicate ID: LCSD for HBN 1134453 [VXX25187]
Spike Duplicate Lab ID: 1177789
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453001, 1134453002, 1134453003, 1134453004

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	10.0	11.0	110	10.0	9.52	95	(60-120)	14.20	(< 20)
Surrogates									
4-Bromofluorobenzene	1.25	94.8	95	1.25	90.1	90	(50-150)	5.10	

Batch Information

Analytical Batch: **VFC11623**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX25187**
Prep Method: **SW5035A**
Prep Date/Time: **09/13/2013 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1484175 [VXX/25187]
Blank Lab ID: 1177785

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453001, 1134453002, 1134453003, 1134453004

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.00800U	0.0125	0.00400	mg/Kg
Ethylbenzene	0.0156U	0.0250	0.00780	mg/Kg
o-Xylene	0.0156U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0300U	0.0500	0.0150	mg/Kg
Toluene	0.0156U	0.0250	0.00780	mg/Kg
Surrogates				
1,4-Difluorobenzene	91.1	72-119		%

Batch Information

Analytical Batch: VFC11623
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/13/2013 2:20:00PM

Prep Batch: VXX25187
Prep Method: SW5035A
Prep Date/Time: 9/13/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 09/26/2013 4:12:15PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [VXX25187]
Blank Spike Lab ID: 1177786
Date Analyzed: 09/13/2013 14:39

Spike Duplicate ID: LCSD for HBN 1134453 [VXX25187]
Spike Duplicate Lab ID: 1177787
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453001, 1134453002, 1134453003, 1134453004

Results by **SW8021B**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	1.25	1.09	87	1.25	1.13	90	(75-125)	3.30	(< 20)
Ethylbenzene	1.25	1.20	96	1.25	1.20	96	(75-125)	0.08	(< 20)
o-Xylene	1.25	1.16	93	1.25	1.17	93	(75-125)	0.73	(< 20)
P & M -Xylene	2.50	2.40	96	2.50	2.40	96	(80-125)	0.26	(< 20)
Toluene	1.25	1.23	99	1.25	1.22	98	(70-125)	0.88	(< 20)
Surrogates									
1,4-Difluorobenzene	1.25	90.7	91	1.25	92.9	93	(72-119)	2.40	

Batch Information

Analytical Batch: **VFC11623**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX25187**
Prep Method: **SW5035A**
Prep Date/Time: **09/13/2013 08:00**
Spike Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL

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Matrix Spike Summary

Original Sample ID: 1178773
MS Sample ID: 1177790 MS
MSD Sample ID: 1177791 MSD

Analysis Date: 09/13/2013 15:52
Analysis Date: 09/13/2013 16:11
Analysis Date: 09/13/2013 16:29
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453001, 1134453002, 1134453003, 1134453004

Results by **SW8021B**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	0.00801J	1.48	1.32	89	1.48	1.26	84	75-125	4.90	(< 20)
Ethylbenzene	0.0133J	1.48	1.46	97	1.48	1.41	94	75-125	3.30	(< 20)
o-Xylene	0.0261J	1.48	1.41	93	1.48	1.37	90	75-125	3.30	(< 20)
P & M -Xylene	0.0477J	2.97	2.93	97	2.97	2.82	94	80-125	3.60	(< 20)
Toluene	0.0243J	1.48	1.50	100	1.48	1.46	97	70-125	2.90	(< 20)
Surrogates										
1,4-Difluorobenzene		1.48	1.34	91	1.48	1.33	89	72-119	1.10	

Batch Information

Analytical Batch: VFC11623
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/13/2013 4:11:00PM

Prep Batch: VXX25187
Prep Method: AK101 Extraction 2X Methanol (S)
Prep Date/Time: 9/13/2013 8:00:00AM
Prep Initial Wt./Vol.: 84.30g
Prep Extract Vol: 50.00mL

Print Date: 09/26/2013 4:12:16PM

Method Blank

Blank ID: MB for HBN 1484185 [VXX/25188]
Blank Lab ID: 1177845

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017, 1134453018, 1134453019, 1134453020, 1134453021, 1134453023, 1134453024, 1134453025, 1134453026

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.50U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	88	50-150		%

Batch Information

Analytical Batch: VFC11624
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/14/2013 12:05:00PM

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 9/14/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [VXX25188]
Blank Spike Lab ID: 1177848
Date Analyzed: 09/14/2013 13:01

Spike Duplicate ID: LCSD for HBN 1134453 [VXX25188]
Spike Duplicate Lab ID: 1177849
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017, 1134453018, 1134453019, 1134453020, 1134453021, 1134453023, 1134453024, 1134453025, 1134453026

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	10.0	9.14	91	10.0	8.80	88	(60-120)	3.80	(< 20)
Surrogates									
4-Bromofluorobenzene	1.25	89.1	89	1.25	88.7	89	(50-150)	0.43	

Batch Information

Analytical Batch: **VFC11624**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX25188**
Prep Method: **SW5035A**
Prep Date/Time: **09/14/2013 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1484185 [VXX/25188]
Blank Lab ID: 1177845

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017, 1134453018, 1134453019, 1134453020, 1134453021, 1134453023, 1134453024, 1134453025, 1134453026

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.00800U	0.0125	0.00400	mg/Kg
Ethylbenzene	0.0156U	0.0250	0.00780	mg/Kg
o-Xylene	0.0156U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0300U	0.0500	0.0150	mg/Kg
Toluene	0.0156U	0.0250	0.00780	mg/Kg
Surrogates				
1,4-Difluorobenzene	92.9	72-119		%

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/14/2013 12:05:00PM

Prep Batch: VXX25188
Prep Method: SW5035A
Prep Date/Time: 9/14/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [VXX25188]
Blank Spike Lab ID: 1177846
Date Analyzed: 09/14/2013 12:24

Spike Duplicate ID: LCSD for HBN 1134453 [VXX25188]
Spike Duplicate Lab ID: 1177847
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017, 1134453018, 1134453019, 1134453020, 1134453021, 1134453023, 1134453024, 1134453025, 1134453026

Results by **SW8021B**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	1.25	1.23	99	1.25	1.19	95	(75-125)	3.80	(< 20)
Ethylbenzene	1.25	1.32	106	1.25	1.28	103	(75-125)	3.10	(< 20)
o-Xylene	1.25	1.28	102	1.25	1.24	99	(75-125)	3.40	(< 20)
P & M -Xylene	2.50	2.64	106	2.50	2.56	102	(80-125)	3.00	(< 20)
Toluene	1.25	1.35	108	1.25	1.31	105	(70-125)	3.40	(< 20)
Surrogates									
1,4-Difluorobenzene	1.25	90.4	90	1.25	91.9	92	(72-119)	1.70	

Batch Information

Analytical Batch: **VFC11624**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX25188**
Prep Method: **SW5035A**
Prep Date/Time: **09/14/2013 08:00**
Spike Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL

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Matrix Spike Summary

Original Sample ID: 1134453020
MS Sample ID: 1177850 MS
MSD Sample ID: 1177851 MSD

Analysis Date: 09/14/2013 13:38
Analysis Date: 09/14/2013 13:56
Analysis Date: 09/14/2013 14:14
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017, 1134453018, 1134453019, 1134453020, 1134453021, 1134453023, 1134453024, 1134453025, 1134453026

Results by **SW8021B**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	0.00552U	0.674	0.686	102	0.674	0.644	96	75-125	6.40	(< 20)
Ethylbenzene	0.0108U	0.674	0.710	105	0.674	0.681	101	75-125	4.20	(< 20)
o-Xylene	0.00655J	0.674	0.686	101	0.674	0.660	97	75-125	3.70	(< 20)
P & M -Xylene	0.0206U	1.34	1.42	105	1.34	1.37	101	80-125	4.10	(< 20)
Toluene	0.0108U	0.674	0.731	109	0.674	0.701	104	70-125	4.30	(< 20)
Surrogates										
1,4-Difluorobenzene		0.674	0.627	93	0.674	0.623	92	72-119	0.73	

Batch Information

Analytical Batch: VFC11624
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/14/2013 1:56:00PM

Prep Batch: VXX25188
Prep Method: AK101 Extraction (S)
Prep Date/Time: 9/14/2013 8:00:00AM
Prep Initial Wt./Vol.: 99.72g
Prep Extract Vol: 25.00mL

Print Date: 09/26/2013 4:12:20PM

Method Blank

Blank ID: MB for HBN 1484378 [VXX/25192]
Blank Lab ID: 1178233

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453009, 1134453010, 1134453011

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.50U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	88.9	50-150		%

Batch Information

Analytical Batch: VFC11627
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/16/2013 9:33:00AM

Prep Batch: VXX25192
Prep Method: SW5035A
Prep Date/Time: 9/16/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [VXX25192]
Blank Spike Lab ID: 1178234
Date Analyzed: 09/16/2013 09:51

Spike Duplicate ID: LCSD for HBN 1134453 [VXX25192]
Spike Duplicate Lab ID: 1178235
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453009, 1134453010, 1134453011

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	10.0	10.2	102	10.0	10.0	100	(60-120)	1.60	(< 20)
Surrogates									
4-Bromofluorobenzene	1.25	88.4	88	1.25	92	92	(50-150)	4.00	

Batch Information

Analytical Batch: **VFC11627**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX25192**
Prep Method: **SW5035A**
Prep Date/Time: **09/16/2013 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1484662 [VXX/25199]
Blank Lab ID: 1178850

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453022

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.50U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	95.5	50-150		%

Batch Information

Analytical Batch: VFC11629
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/17/2013 10:47:00AM

Prep Batch: VXX25199
Prep Method: SW5035A
Prep Date/Time: 9/17/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [VXX25199]
Blank Spike Lab ID: 1178853
Date Analyzed: 09/17/2013 11:42

Spike Duplicate ID: LCSD for HBN 1134453 [VXX25199]
Spike Duplicate Lab ID: 1178854
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453022

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	10.0	11.1	111	10.0	10.9	109	(60-120)	1.30	(< 20)
Surrogates									
4-Bromofluorobenzene	1.25	96.6	97	1.25	97.3	97	(50-150)	0.78	

Batch Information

Analytical Batch: **VFC11629**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25199**
Prep Method: **SW5035A**
Prep Date/Time: **09/17/2013 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1484662 [VXX/25199]
Blank Lab ID: 1178850

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453022

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.00800U	0.0125	0.00400	mg/Kg
Ethylbenzene	0.0156U	0.0250	0.00780	mg/Kg
o-Xylene	0.0156U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0300U	0.0500	0.0150	mg/Kg
Toluene	0.0156U	0.0250	0.00780	mg/Kg
Surrogates				
1,4-Difluorobenzene	94.6	72-119		%

Batch Information

Analytical Batch: VFC11629
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/17/2013 10:47:00AM

Prep Batch: VXX25199
Prep Method: SW5035A
Prep Date/Time: 9/17/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [VXX25199]
Blank Spike Lab ID: 1178851
Date Analyzed: 09/17/2013 11:05

Spike Duplicate ID: LCSD for HBN 1134453 [VXX25199]
Spike Duplicate Lab ID: 1178852
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453022

Results by **SW8021B**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	1.25	1.43	115	1.25	1.38	110	(75-125)	4.20	(< 20)
Ethylbenzene	1.25	1.38	111	1.25	1.37	110	(75-125)	1.10	(< 20)
o-Xylene	1.25	1.38	110	1.25	1.33	107	(75-125)	3.30	(< 20)
P & M -Xylene	2.50	2.79	112	2.50	2.72	109	(80-125)	2.50	(< 20)
Toluene	1.25	1.38	111	1.25	1.38	110	(70-125)	0.54	(< 20)
Surrogates									
1,4-Difluorobenzene	1.25	101	101	1.25	98.4	98	(72-119)	2.20	

Batch Information

Analytical Batch: **VFC11629**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25199**
Prep Method: **SW5035A**
Prep Date/Time: **09/17/2013 08:00**
Spike Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL

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Matrix Spike Summary

Original Sample ID: 1138440001
MS Sample ID: 1178855 MS
MSD Sample ID: 1178856 MSD

QC for Samples: 1134453022

Analysis Date: 09/17/2013 12:19
Analysis Date: 09/17/2013 12:37
Analysis Date: 09/17/2013 12:56
Matrix: Soil/Solid (dry weight)

Results by **SW8021B**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	0.00948U	1.29	1.49	116	1.29	1.43	111	75-125	4.20	(< 20)
Ethylbenzene	0.0185U	1.29	1.44	112	1.29	1.42	111	75-125	0.99	(< 20)
o-Xylene	0.0185U	1.29	1.43	111	1.29	1.39	108	75-125	3.00	(< 20)
P & M -Xylene	0.0356U	2.58	2.91	113	2.58	2.83	110	80-125	2.60	(< 20)
Toluene	0.0185U	1.29	1.44	112	1.29	1.43	111	70-125	0.36	(< 20)
Surrogates										
1,4-Difluorobenzene		1.29	1.28	100	1.29	1.25	97	72-119	2.50	

Batch Information

Analytical Batch: VFC11629
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 9/17/2013 12:37:00PM

Prep Batch: VXX25199
Prep Method: AK101 Extraction (S)
Prep Date/Time: 9/17/2013 8:00:00AM
Prep Initial Wt./Vol.: 52.29g
Prep Extract Vol: 25.00mL

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Method Blank

Blank ID: MB for HBN 1483336 [XXX/29901]
Blank Lab ID: 1177321

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453018, 1134453019, 1134453020, 1134453021, 1134453022, 1134453023, 1134453024, 1134453025

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	12.4U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane	88.9	60-120		%

Batch Information

Analytical Batch: XFC11063
Analytical Method: AK102
Instrument: HP 7890A FID SV E R
Analyst: EAB
Analytical Date/Time: 9/15/2013 7:48:00AM

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 9/13/2013 7:10:00PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [XXX29901]
Blank Spike Lab ID: 1177322
Date Analyzed: 09/15/2013 08:09

Spike Duplicate ID: LCSD for HBN 1134453 [XXX29901]
Spike Duplicate Lab ID: 1177323
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453018, 1134453019, 1134453020, 1134453021, 1134453022, 1134453023, 1134453024, 1134453025

Results by **AK102**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	167	169	102	167	170	102	(75-125)	0.60	(< 20)
Surrogates									
5a Androstane	3.33	88.8	89	3.33	89.6	90	(60-120)	0.90	

Batch Information

Analytical Batch: **XFC11063**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E R**
Analyst: **EAB**

Prep Batch: **XXX29901**
Prep Method: **SW3550C**
Prep Date/Time: **09/13/2013 19:10**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1483336 [XXX/29901]
Blank Lab ID: 1177321

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453018, 1134453019, 1134453020, 1134453021, 1134453022, 1134453023, 1134453024, 1134453025

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	12.4U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62	98.5	60-120		%

Batch Information

Analytical Batch: XFC11063
Analytical Method: AK103
Instrument: HP 7890A FID SV E R
Analyst: EAB
Analytical Date/Time: 9/15/2013 7:48:00AM

Prep Batch: XXX29901
Prep Method: SW3550C
Prep Date/Time: 9/13/2013 7:10:00PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [XXX29901]
Blank Spike Lab ID: 1177322
Date Analyzed: 09/15/2013 08:09

Spike Duplicate ID: LCSD for HBN 1134453 [XXX29901]
Spike Duplicate Lab ID: 1177323
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453018, 1134453019, 1134453020, 1134453021, 1134453022, 1134453023, 1134453024, 1134453025

Results by **AK103**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	167	176	106	167	176	106	(60-120)	0.06	(< 20)
Surrogates									
n-Triacontane-d62	3.33	94.7	95	3.33	95.8	96	(60-120)	1.10	

Batch Information

Analytical Batch: **XFC11063**
Analytical Method: **AK103**
Instrument: **HP 7890A FID SV E R**
Analyst: **EAB**

Prep Batch: **XXX29901**
Prep Method: **SW3550C**
Prep Date/Time: **09/13/2013 19:10**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1484226 [XXX/29926]
Blank Lab ID: 1178086

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453013, 1134453014

Results by **8270D SIMS (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.00300U	0.00500	0.00150	mg/Kg
2-Methylnaphthalene	0.00300U	0.00500	0.00150	mg/Kg
Acenaphthene	0.00300U	0.00500	0.00150	mg/Kg
Acenaphthylene	0.00300U	0.00500	0.00150	mg/Kg
Anthracene	0.00300U	0.00500	0.00150	mg/Kg
Benzo(a)Anthracene	0.00300U	0.00500	0.00150	mg/Kg
Benzo[a]pyrene	0.00300U	0.00500	0.00150	mg/Kg
Benzo[b]Fluoranthene	0.00300U	0.00500	0.00150	mg/Kg
Benzo[g,h,i]perylene	0.00300U	0.00500	0.00150	mg/Kg
Benzo[k]fluoranthene	0.00300U	0.00500	0.00150	mg/Kg
Chrysene	0.00300U	0.00500	0.00150	mg/Kg
Dibenzo[a,h]anthracene	0.00300U	0.00500	0.00150	mg/Kg
Fluoranthene	0.00300U	0.00500	0.00150	mg/Kg
Fluorene	0.00300U	0.00500	0.00150	mg/Kg
Indeno[1,2,3-c,d] pyrene	0.00300U	0.00500	0.00150	mg/Kg
Naphthalene	0.00300U	0.00500	0.00150	mg/Kg
Phenanthrene	0.00300U	0.00500	0.00150	mg/Kg
Pyrene	0.00300U	0.00500	0.00150	mg/Kg
Surrogates				
2-Fluorobiphenyl	46.3	45-105		%
Terphenyl-d14	82.1	30-125		%

Batch Information

Analytical Batch: XMS7599
Analytical Method: 8270D SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 9/17/2013 7:28:00PM

Prep Batch: XXX29926
Prep Method: SW3550C
Prep Date/Time: 9/16/2013 4:50:00PM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 1 mL

Print Date: 09/26/2013 4:12:27PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [XXX29926]
Blank Spike Lab ID: 1178087
Date Analyzed: 09/17/2013 19:42

Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453013, 1134453014

Results by **8270D SIMS (PAH)**

	Blank Spike (mg/Kg)			
Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	0.0222	0.0166	75	(44-107)
2-Methylnaphthalene	0.0222	0.0128	58	(45-105)
Acenaphthene	0.0222	0.0147	66	(45-110)
Acenaphthylene	0.0222	0.0145	65	(45-105)
Anthracene	0.0222	0.0132	59	(55-105)
Benzo(a)Anthracene	0.0222	0.0140	63	(50-110)
Benzo[a]pyrene	0.0222	0.0139	63	(50-110)
Benzo[b]Fluoranthene	0.0222	0.0161	72	(45-115)
Benzo[g,h,i]perylene	0.0222	0.0170	77	(40-125)
Benzo[k]fluoranthene	0.0222	0.0213	96	(45-125)
Chrysene	0.0222	0.0193	87	(55-110)
Dibenzo[a,h]anthracene	0.0222	0.0165	74	(40-125)
Fluoranthene	0.0222	0.0204	92	(55-115)
Fluorene	0.0222	0.0155	70	(50-110)
Indeno[1,2,3-c,d] pyrene	0.0222	0.0182	82	(40-120)
Naphthalene	0.0222	0.0142	64	(40-105)
Phenanthrene	0.0222	0.0149	67	(50-110)
Pyrene	0.0222	0.0199	90	(45-125)
Surrogates				
2-Fluorobiphenyl	0.0222	69	69	(45-105)
Terphenyl-d14	0.0222	93	93	(30-125)

Batch Information

Analytical Batch: **XMS7599**
Analytical Method: **8270D SIMS (PAH)**
Instrument: **HP 6890/5973 MS SVQA**
Analyst: **RTS**

Prep Batch: **XXX29926**
Prep Method: **SW3550C**
Prep Date/Time: **09/16/2013 16:50**
Spike Init Wt./Vol.: 0.0222 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/26/2013 4:12:28PM

Matrix Spike Summary

Original Sample ID: 1138421001
MS Sample ID: 1178088 MS
MSD Sample ID: 1178089 MSD

Analysis Date: 09/17/2013 22:24
Analysis Date: 09/17/2013 22:38
Analysis Date: 09/17/2013 22:53
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453013, 1134453014

Results by **8270D SIMS (PAH)**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.00686	0.0251	0.0237	67	0.0253	0.0194	50	44-107	19.90	(< 30)
2-Methylnaphthalene	0.00723	0.0251	0.0218	58	0.0253	0.0189	46	45-105	14.20	(< 30)
Acenaphthene	0.00342U	0.0251	0.0182	72	0.0253	0.0151	59	45-110	18.80	(< 30)
Acenaphthylene	0.00342U	0.0251	0.0186	74	0.0253	0.0159	63	45-105	15.70	(< 30)
Anthracene	0.00342U	0.0251	0.0174	69	0.0253	0.0156	62	55-105	10.50	(< 30)
Benzo(a)Anthracene	0.00342U	0.0251	0.0191	76	0.0253	0.0180	71	50-110	5.60	(< 30)
Benzo[a]pyrene	0.00342U	0.0251	0.0183	73	0.0253	0.0180	71	50-110	0.97	(< 30)
Benzo[b]Fluoranthene	0.00342U	0.0251	0.0195	77	0.0253	0.0187	74	45-115	3.80	(< 30)
Benzo[g,h,i]perylene	0.00342U	0.0251	0.0192	76	0.0253	0.0189	75	40-125	1.10	(< 30)
Benzo[k]fluoranthene	0.00342U	0.0251	0.0219	87	0.0253	0.0204	81	45-125	6.80	(< 30)
Chrysene	0.00342U	0.0251	0.0197	78	0.0253	0.0202	80	55-110	2.10	(< 30)
Dibenzo[a,h]anthracene	0.00342U	0.0251	0.0191	76	0.0253	0.0178	70	40-125	6.70	(< 30)
Fluoranthene	0.00342U	0.0251	0.0225	89	0.0253	0.0212	84	55-115	5.50	(< 30)
Fluorene	0.00342U	0.0251	0.0189	76	0.0253	0.0168	66	50-110	12.40	(< 30)
Indeno[1,2,3-c,d] pyrene	0.00342U	0.0251	0.0191	76	0.0253	0.0194	77	40-120	1.50	(< 30)
Naphthalene	0.00555J	0.0251	0.0192	54	0.0253	0.0169	45	40-105	12.90	(< 30)
Phenanthrene	0.00342U	0.0251	0.0184	73	0.0253	0.0168	66	50-110	8.90	(< 30)
Pyrene	0.00342U	0.0251	0.0219	87	0.0253	0.0209	82	45-125	4.60	(< 30)
Surrogates										
2-Fluorobiphenyl		0.0251	0.0171	68	0.0253	0.0140	55	45-105	19.80	
Terphenyl-d14		0.0251	0.0235	94	0.0253	0.0225	89	30-125	4.70	

Batch Information

Analytical Batch: XMS7599
Analytical Method: 8270D SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 9/17/2013 10:38:00PM

Prep Batch: XXX29926
Prep Method: Sonication Extraction Soil 8270 PAH SIM
Prep Date/Time: 9/16/2013 4:50:00PM
Prep Initial Wt./Vol.: 22.69g
Prep Extract Vol: 1.00mL

Print Date: 09/26/2013 4:12:28PM

Method Blank

Blank ID: MB for HBN 1484694 [XXX/29947]
Blank Lab ID: 1178995

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453001, 1134453002, 1134453003, 1134453004, 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	12.4U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane	85.3	60-120		%

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK102
Instrument: HP 7890A FID SV E F
Analyst: EAB
Analytical Date/Time: 9/19/2013 3:53:00PM

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 9/18/2013 6:25:00PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [XXX29947]
Blank Spike Lab ID: 1178996
Date Analyzed: 09/19/2013 16:14

Spike Duplicate ID: LCSD for HBN 1134453 [XXX29947]
Spike Duplicate Lab ID: 1178997
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453001, 1134453002, 1134453003, 1134453004, 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017

Results by **AK102**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	167	142	85	167	144	86	(75-125)	1.20	(< 20)
Surrogates									
5a Androstane	3.33	77.7	78	3.33	78.7	79	(60-120)	1.20	

Batch Information

Analytical Batch: **XFC11075**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E F**
Analyst: **EAB**

Prep Batch: **XXX29947**
Prep Method: **SW3550C**
Prep Date/Time: **09/18/2013 18:25**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1484694 [XXX/29947]
Blank Lab ID: 1178995

Matrix: Soil/Solid (dry weight)

QC for Samples:
1134453001, 1134453002, 1134453003, 1134453004, 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	12.4U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62	90.9	60-120		%

Batch Information

Analytical Batch: XFC11075
Analytical Method: AK103
Instrument: HP 7890A FID SV E F
Analyst: EAB
Analytical Date/Time: 9/19/2013 3:53:00PM

Prep Batch: XXX29947
Prep Method: SW3550C
Prep Date/Time: 9/18/2013 6:25:00PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1134453 [XXX29947]
Blank Spike Lab ID: 1178996
Date Analyzed: 09/19/2013 16:14

Spike Duplicate ID: LCSD for HBN 1134453 [XXX29947]
Spike Duplicate Lab ID: 1178997
Matrix: Soil/Solid (dry weight)

QC for Samples: 1134453001, 1134453002, 1134453003, 1134453004, 1134453005, 1134453006, 1134453007, 1134453008, 1134453009, 1134453010, 1134453011, 1134453012, 1134453015, 1134453016, 1134453017

Results by **AK103**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	167	139	84	167	140	84	(60-120)	0.62	(< 20)
Surrogates									
n-Triacontane-d62	3.33	82	82	3.33	82.9	83	(60-120)	1.10	

Batch Information

Analytical Batch: **XFC11075**
Analytical Method: **AK103**
Instrument: **HP 7890A FID SV E F**
Analyst: **EAB**

Prep Batch: **XXX29947**
Prep Method: **SW3550C**
Prep Date/Time: **09/18/2013 18:25**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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1134453

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

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Laboratory SGS

Attn:

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	BTEX 8021B	DRO AK102	RRO	AK103	GRO AK101	PAH	8270 SIM	Total Number of Containers	Remarks/Matrix
SB-01(3.0-3.5)	1 A+B	1015	9/11/13		X	X	X	X	X				2	soil
SB-02(3.5-3.8)	2 A+B	831											2	
SB-03(3.0-3.5)	3 A+B	1125											2	
SB-04(2.5-2.9	4 A+B	849											2	
SB-05(3.0-3.5)	5 A+B	1111											2	
SB-06(3.0-3.5)	6 A+B	950											2	
SB-07(3.0-3.5)	7 A+B	1100											2	
SB-08(3.0-3.5)	8 A+B	1620											2	
SB-09(2.5-3.0)	9 A+B	1450											2	
SD-09(2.5-3.0)	10 A+B	1440	↓		↓	↓	↓	↓	↓				2	↓

Project Information	Sample Receipt
Project Number: 1674	Total Number of Containers
Project Name: Wrigley fuel line	COC Seals/Intact? Y/N/NA
Contact: JAK	Received Good Cond./Cold
Ongoing Project? Yes ☑ No ☐	Delivery Method:
Sampler: SPR, SLM	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: Standard tat.
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1034	Signature: Time:	Signature: Time:
Printed Name: Date: 9/12/13 S L Robinson	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 8:01
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: 9/13/13 Stephanie Charley
Company:	Company:	Company: SGS

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

F-19-91/UR

Temp: 6.0/240
Custody Seal Intact: 2F

No. 31682

1134453

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUS

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

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

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

Laboratory SGS

Attn:

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	BTEX 8021B	DRO AK102	RRO AK103	GRO AK101	PAH 8270 SIM	Total Number of Containers	Remarks/Matrix
SB-10(2.5-3.0)	(11) A+B	1445	9/11/13		X						2	Soil
SB-10(2.0-2.5)	(12) A+B	2036									2	Soil
SB-10 (2.0-2.5)	(13) A (SL)	~~2035~~ 2125								X	1	PAH ONLY!!
SD-10(2.0-2.5)	(14) A (SL)	~~2045~~ 2115								X	2	Soil, PAH ONLY!!
SB-11(2.0-2.5)	(15) A+B	2045									2	
SB-11(3.0-3.5)	(16) A+B	1525									2	
SD-11 (2.0-2.5)	(17) A+B	2035									2	
SB-15(2.0-2.5)	(18) A+B	1721									2	
SB-16(2.5-3.0)	(19) A+B	1740									2	
SB-17(2.0-2.5	(20) A+B	1615									2	

Project Information	Sample Receipt
Project Number: 1674	Total Number of Containers
Project Name: Migrant Well Line	COC Seals/Intact? Y/N/NA
Contact: JAK	Received Good Cond./Cold
Ongoing Project? Yes ☑ No ☐	Delivery Method:
Sampler: SRR, SLH	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: Standard
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1034	Signature: Time:	Signature: Time:
Printed Name: SLH Robinson Date: 9/12/13	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 8:01
Printed Name: Date:	Printed Name: Date:	Printed Name: Stephanie Charley Date: 9/13/13
Company:	Company:	Company: SGS

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

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F-19-91/UR

No. 31680

1134453

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUS

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

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

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

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

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

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

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

Laboratory SGS

Attn:

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	BTEX 8021 VB	DRO AK102	GRO AK102	GRO AK101	PAH 8270 SIM		Total Number of Containers	Remarks/Matrix
SB-18(3.0-3.5)	21 A+B	2020	9/11/13		X	X	X	X	X			2	Soil
SB-18(3.5-4.1	22 A+B	2025	↓		↓	↓	↓	↓	↓			↓	↓
SB-19(3.5-4.0)	23 A+B	2013	↓		↓	↓	↓	↓	↓			↓	↓
SD-19 (3.5-4.0)	24 A+B	2003	↓		↓	↓	↓	↓	↓			↓	↓
SB-20(2.5-3.0)	25 A+B	1950	↓		↓	↓	↓	↓	↓			↓	↓
TRIP BLANK	26 A	—	—			X	X						

Project Information		Sample Receipt	
Project Number:	1674	Total Number of Containers	
Project Name:	Nuigsut Well Inv	COC Seals/Intact? Y/N/NA	
Contact:	JAK	Received Good Cond./Cold	
Ongoing Project?	Yes ☑ No ☐	Delivery Method:	
Sampler:	SLR, SLM	(attach shipping bill, if any)	

Instructions
Requested Turnaround Time: standard
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1034	Signature: Time:	Signature: Time:
Printed Name: Seth Robinson Date: 9/12/13	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: Time: 8:01
Printed Name: Date:	Printed Name: Date:	Printed Name: Stephanie Charley Date: 9/12/13
Company:	Company:	Company: SGS

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

F-19-91/UR

No. 31681

SGS

1134453

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	(Yes) No N/A (Yes) No N/A	2F
Temperature blank compliant* (i.e., 0-6°C after CF)? * *Note: Exemption permitted for chilled samples collected less than 8 hours ago.* Cooler ID: 1 @ 6.0 w/ Therm.ID: 240 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ *Note: If non-compliant, use form FS-0029 to document affected samples/analyses.* If samples are received without 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." **If temperature(s) <0°C, were all sample containers ice free?**	(Yes) No N/A Yes No (N/A)	
Delivery method (specify all that apply): Client USPS (Alert Courier) C&D Delivery AK Air Lynden Carlile (ERA) PenAir FedEx UPS NAC Other: → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Note ABN/ tracking # (See Attached or N/A) (Yes) No N/A	
→ For samples received with payment, note amount ($) and cash / check / CC **(circle one)** or note: (N/A)		
→ For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed.	SRF Initiated by SLC N/A	
Were samples received within hold time? *Note: Refer to form F-083 "Sample Guide" for hold time information.* Do samples **match COC*** (i.e., sample IDs, dates/times collected)? * *Note: Exemption permitted if times differ <1hr; in that case, use times on COC.* Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap (Separate plastic bags) Vermiculite (Other: Box)	(Yes) No N/A	
Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	Yes No (N/A) (Yes) No N/A	
Were **proper containers** (type/mass/volume/preservative*) used? * *Note: Exemption permitted for waters to be analyzed for metals.* Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A (Yes) No N/A	
For **special handling** (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No (N/A) Yes No (N/A)	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A)	
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: SLC 9/13/13 PM = N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

AIRPORT OF DEPARTURE SCC | 09/12/13 | 10:17 | 095917 | 808 6502645 | Frgt

SHIPPER'S NAME, ADDRESS & PHONE
SHANNON AND WILSON Shannon (
2355 Hill Road,
NUIQSUT AK 99789 9074790600

SHIPPER'S ACCOUNT NUMBER
S8171

NOT NEGOTIABLE
AIR WAYBILL
(AIR CONSIGNMENT NOTE)

Era ALASKA
4700 Old International Airport Road
Anchorage, Alaska 99502

It is agreed that the goods described herein ar... (except as noted) for carriage SUBJECT TO THE COMPANIES TARIFFS. THE SHIPPER CONCERNING CARRIERS' LIMITATION OF liability by declaring a higher value for carriag...

1134453

Received in Good Condition _____
Place _____
TO EXPEDITE MOVEMENT, SHIPMENT MAY BE D... RULE UNLESS SHIPPER GIVES OTHER INSTRUCTION HEREON

CONSIGNEE'S NAME, ADDRESS & PHONE
SGS ENVIRONMENT SGS ENVIRON
200 W. POTTER DR.
ANCHORAGE AK 99518 9075622343

CONSIGNEE'S ACCOUNT NUMBER

ISSUING CARRIER'S AGENT NAME, CITY & PHONE

ALSO NOTIFY NAME & ADDRESS

AGENT'S IATA CODE

ACCOUNT NO.

ACCOUNTING INFORMATION 6764943
Acc#: S8171 Shannon & Wilson, Inc Fairbanks

AIRPORT OF DEPARTURE: Deadhorse

Declared Value: $ 0.00

Insured Amount: $ 0.00

ROUTING AND DESTINATION

TO	BY FIRST CARRIER	TO	BY	TO	BY

COMMENTS
RCD 09/12/13 FROM NUI MT SCC

AIRPORT OF DESTINATION: Anchorage

FOR CARRIER USE ONLY
FLIGHT/DATE 0
FLIGHT/DATE

No. Of Pieces Rcp	Gross Weight	kg lb	Rate Class	Commodity Item No.	Chargeable Weight	Rate/Charge	Total	Nature and Quantity of Goods
1	54	lb	M		54	$1.84	$99.36	1 WHITE/BLUE COOLER HAZMAT UN1993 24 0.11
1	54						$99.36	

PREPAID	WEIGHT CHARGE	COLLECT
	$99.36	

VALUATION CHARGE: $0.00

FEDERAL EXCISE TAX: $6.21

TOTAL OTHER CHARGES DUE AGENT: $0.00

TOTAL OTHER CHARGES DUE CARRIER: $25.00

TOTAL PREPAID	TOTAL COLLECT
$130.57	

OTHER CHARGES AND DESCRIPTION

AMOUNT	DESCRIPTION
$25.00	Hazmat Charge

HAZMAT: No

Shipper certifies that the particulars on the face hereof are correct, agrees to the CONDITIONS AS LISTED IN THE COMPANIES TARIFFS, accepts that carrier's liability is limited as stated in the companies tariffs and accepts such value unless a higher value for carriage is declared on the face hereof subject to an additional charge and that insofar as any part of the consignment contains restricted articles, such part is described by name and is in proper condition for carriage by air according to applicable national governmental regulations, and for international shipments, the current International Air Transport Association's Restricted Articles Regulations.

X

STATION NUMBERS
ANCHORAGE - (907) 243-2761
ANIAK - (907) 675-4572
BARROW - (907) 852-5300
BETHEL -(907) 543-3825
DEADHORSE - (907) 659-9222
FAIRBANKS - (907) 450-7250
GALENA -(907) 656-1875
KOTZEBUE - (907) 442-3020
NOME - (907) 443-7595
ST. MARYS - (907) 438-2247
UNALAKLEET - (907) 624-3595

Printed at 13:54:09 on 9/12/2013 at SCC-1 10.10.0.3

Consignee Copy

Alert Expeditors Inc.
DBA/Petroleum Courier Service
Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

#340150

Date 9 13 13

From Shannon & Wilson

To SAS

Collect ❐	Prepay ❐ Account ❐	Advance Charges ❐
Job #	PO#	

1 cooler

650 2645

ERA

1134453

Shipped Signature

Total Charge

Received By: SC 9-13-13

Laboratory Data Review Checklist

Completed by: Jon Lindstrom

Title: Chemist Date: October 16, 2013

CS Report Name: NSB Nuiqsut Power Plant Report Date: September 26, 2013

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America, Inc. Laboratory Report Number: 1134453

ADEC File Number: 370.38.001 ADEC RecKey Number: Hazard ID 25937

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 (Please explain.) Comments:

      All analyses were performed by SGS North America, Inc. in Anchorage, Alaska.

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 (4° ± 2° C)?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

      Temperature blanks were measured within the acceptable temperature range of 0 °C to 6 °C (specified in the EPA publication SW-846 and approved by ADEC) upon receipt at the SGS sample-receiving office in Fairbanks, and their Anchorage laboratory.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
☒Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
☒Yes ☐ No ☐NA (Please explain.) Comments:

Samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
☐Yes ☐ No ☒NA (Please explain.) Comments:

There were no discrepancies to note.

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

Data quality was unaffected; see above.

4. Case Narrative
a. Present and understandable?
☒Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
☒Yes ☐ No ☐NA (Please explain.) Comments:

The AK101 surrogate recovery did not meet QC criteria (biased high) due to matrix interference for samples SB-01 (3.0-3.5), SB-02 (3.5-3.8), SB-09 (2.5-3.0), SD-09 (2.5-3.0), SB-10 (2.5-3.0), SB-10 (2.0-2.5), SB-11 (2.0-2.5), SB-11 (3.0-3.5), and SD-11 (2.0-2.5). The GRO results for these samples are considered to be biased high.

The AK103 surrogate recovery was above QC criteria due to the sample matrix in sample SB-17 (2.0-2.5). The RRO result is considered to be biased high.

The DRO result is biased high due to heavier hydrocarbons contributing to the middle distillate range in samples SB-17 (2.0-2.5) and SB-20 (2.5-3.0).

The PAH surrogate 2-fluorobiphenyl was outside of QC criteria due to sample dilution in samples SB-10 (2.0-2.5) and SD-10 (2.0-2.5). The associated sample results were unaffected. Sample results are unaffected by surrogate failures due to dilution.

c. Were all corrective actions documented?
☐Yes ☐ No ☒NA (Please explain.) Comments:

No corrective actions were needed.

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

The GRO, DRO, and RRO results for the samples noted above are considered to be biased high.

5. Samples 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 PQLs less than the Cleanup Level or the minimum required detection level for the project?
☒Yes ☐ No ☐NA (Please explain.) Comments:

LODs (reporting value) were below the ADEC-established cleanup levels.

e. Data quality or usability affected?
Comments:

No.

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 PQL?
☒Yes ☐ No ☐NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

None; see above.

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

☐Yes ☐ No ☒NA (Please explain.) Comments:

There were no analytes detected above the LOQ in method blanks.

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

Comments:

No; 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:

There were no samples submitted for metals/inorganics analysis.

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:

iv. Precision – All relative percent differences (RPD) 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?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No ☒NA (Please explain.) Comments:

There were no LCS/LCSD recovery or RPD failures.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

There were no LCS/LCSD recovery or RPD failures.

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:

The AK101 surrogate recovery did not meet QC criteria (biased high) due to matrix interference for samples SB-01 (3.0-3.5), SB-02 (3.5-3.8), SB-09 (2.5-3.0), SD-09 (2.5-3.0), SB-10 (2.5-3.0), SB-10 (2.0-2.5), SB-11 (2.0-2.5), SB-11 (3.0-3.5), and SD-11 (2.0-2.5). The GRO results for these samples are considered to be biased high.

The AK103 surrogate recovery was above QC criteria due to the sample matrix in sample SB-17 (2.0-2.5). The RRO result is considered to be biased high.

The DRO result is biased high due to heavier hydrocarbons contributing to the middle distillate range in samples SB-17 (2.0-2.5) and SB-20 (2.5-3.0).

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☒Yes ☐ No ☐NA (Please explain.) Comments:

The affected GRO, DRO, and RRO sample results are flagged "JH*" to indicate the reported concentrations are biased high.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

The GRO, DRO, and RRO data are usable as qualified.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
☒Yes ☐ No ☐NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
☒Yes ☐ No ☐NA (Please explain.) Comments:

iii. All results less than PQL?
☒Yes ☐ No ☐NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

There were no analytes detected in the trip blank.

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

There were no analytes detected in the trip blank.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
☒Yes ☐ No ☐NA (Please explain.) Comments:

ii. Submitted blind to lab?
☒Yes ☐ No ☐NA (Please explain.) Comments:

Field-duplicate sets SB-09 (2.5-3.0) / SD-09 (2.5-3.0); SB-10 (2.0-2.5) / SD-10 (2.0-2.5); SB-11 (2.0-2.5) / SD-11 (2.0-2.5); and SB-19 (3.5-4.0) / SD-19 (3.5-4.0) were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐Yes ☒ No ☐NA (Please explain.) Comments:

The RPD for RRO in duplicate-sample set SB-19 (3.5-4.0) / SD-19 (3.5-4.0) was greater than 50 percent.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The affected sample results are flagged with "J*", and will be considered estimates due to imprecision.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☒ No ☐NA (Please explain.) Comments:

Samples were not collected using reusable equipment.

i. All results less than PQL?

☐Yes ☐ No ☒NA (Please explain.) Comments:

An equipment blank was not collected.

ii. If above PQL, what samples are affected?

Comments:

An equipment blank was not collected.

iii. Data quality or usability affected? (Please explain.)

Comments:

An equipment blank was not collected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      ☐ Yes ☐ No ☒ NA (Please explain.) Comments:

There were no other data flags/qualifiers.

QUALITY ASSURANCE AND QUALITY CONTROL SUMMARY

Quality Assurance/Quality Control (QA/QC) procedures assist in producing data of acceptable quality and reliability. We reviewed the analytical results for laboratory QC samples, and also conducted our own QA assessment for this project. We reviewed the chain-of-custody (COC) records and laboratory-receipt forms to check that custody was not breached, sample holding-times were met, and the samples were kept properly chilled (between 0 ºC and 6 ºC) during shipping. Our QA review procedures allowed us to document the accuracy and precision of the analytical data, as well as check the analyses were sufficiently sensitive to detect analytes at levels below regulatory standards.

We reviewed soil analytical results reported by SGS in work order 1134453. The laboratory report and associated ADEC data-review checklist are provided as an attachment to this report.

Sample Handling

There were no sample-handling anomalies. The COC form was properly completed, the temperature blank was within the recommended range of 0 °C to 6 °C upon receipt of the samples at the laboratory in Anchorage, and the samples were received in good condition.

Analytical Sensitivity

The soil-sample limits of detection (LODs) for GRO, DRO, RRO, BTEX, and PAHs were less than the ADEC-established Arctic-Zone cleanup levels.

Laboratory method blanks were analyzed in association with samples collected for this project to check for contributions to the analytical results possibly attributable to laboratory-based contamination. There were no analytes detected in the method blanks.

A trip blank accompanied the soil samples to determine if cross-contamination or contamination from an outside source may have occurred during shipment or storage. The trip blank was analyzed for GRO by Alaska Method AK101 and BTEX by EPA Method SW8021B. No analytes were detected in the trip blank, indicating there was no sample contamination.

Overall, analytical sensitivity was sufficient for the purposes of the site assessment.

Accuracy

The laboratory assessed the accuracy of their analytical procedure through a variety of QA procedures. Analysis of matrix spike (MS) and MS duplicate (MSD) samples allowed the laboratory to assess the accuracy of their procedures by checking their ability to recover analytes

added to field samples with matrices similar to our project samples. They also analyzed laboratory control samples (LCSs) and LCS duplicates (LCSDs); they are similar to MS/MSD analysis, but evaluate the laboratory's ability to recover analytes added to clean matrices, as opposed to field samples. The laboratory accuracy was also evaluated for each sample by assessing recovery of analyte surrogates added to individual project samples.

MS and MSD recoveries were within control limits, as were the LCS/LCSD recoveries, indicating the analytical results were generally accurate.

The AK101 surrogate recovery did not meet QC criteria (biased high) due to matrix interference for samples *SB-01 (3.0-3.5)*, *SB-02 (3.5-3.8)*, *SB-09 (2.5-3.0)*, *SD-09 (2.5-3.0)*, *SB-10 (2.5-3.0)*, *SB-10 (2.0-2.5)*, *SB-11 (2.0-2.5)*, *SB-11 (3.0-3.5)*, and *SD-11 (2.0-2.5)*. The GRO results for these samples are considered to be biased high; the data-validation flag "JH*" is appended to the analytical results in Table 1 to indicate the high analytical bias.

The AK103 surrogate recovery was also above QC criteria due to the sample matrix in sample *SB-17 (2.0-2.5)*. The RRO result for that sample is considered to be biased high, and is flagged "JH*" to indicate the high bias.

In addition to the surrogate-recovery failures, the laboratory report noted the DRO result is biased high due to heavier hydrocarbons contributing to the middle distillate range in samples *SB-17 (2.0-2.5)* and *SB-20 (2.5-3.0)*. The DRO results for these samples are flagged "JH*" to indicate the high bias.

Aside from the instances noted above, the MS/MSD, LCS/LCSD, and surrogate recoveries for soil samples indicate the analyses were accurate.

Precision

We collected three sets of duplicate samples for GRO, DRO, RRO, and BTEX analysis to evaluate the precision of analytical measurements and the reproducibility of our sampling technique. The sample sets were:

- *SB-09 (2.5-3.0)* / *SD-09 (2.5-3.0)*
- *SB-11 (2.0-2.5)* / *SD-11 (2.0-2.5)*
- *SB-19 (3.5-4.0)* / *SD-19 (3.5-4.0)*

We also collected one set of duplicate samples (*SB-10 (2.0-2.5)* / *SD-10 (2.0-2.5)*) for PAH analysis.

To evaluate precision of the soil data, we calculated the relative percent difference (RPD; the difference between the sample and its field duplicate divided by the mean of the two); RPD can be evaluated only if the results of the analysis for both the sample and its duplicate exceed the

method-detection limits.

Field-duplicate RPDs were less than 50 percent for each of the analytes and sample sets, with the exception of the RRO data in samples *SB-19 (3.5-4.0)* / *SD-19 (3.5-4.0)*. The RRO results for those duplicate samples are considered estimates, and are flagged "J*" to indicate analytical imprecision.

Laboratory analytical precision can also be evaluated by RPD calculations. The laboratory MS/MSD RPDs and LCS/LCSD RPDs provide information regarding the reproducibility of their procedures and are therefore a measure of analytical precision. The MS/MSD RPDs and LCS/LCSD RPDs for the soil analyses fell within the laboratory- or method-established limits, indicating the analyses were precise.

Accounting for the imprecision of the data noted above, the data are considered usable for the purposes of this project.

Data Quality Summary

By working in accordance with our proposed scope of services, the samples we collected are considered to be representative of site conditions at the locations and times they were obtained. Based on our QA review, no samples were rejected as unusable due to QC failures, and our completeness goal of obtaining 85 percent useable data was met. In general, the quality of the analytical data for this project does not appear to have been compromised by analytical irregularities and is adequate for the purposes of our assessment.

The laboratory report for the project's samples, including the case narrative describing the laboratory QA results in detail, are included with the ADEC laboratory-review checklist in an attachment to this report.