Report on Interim Soil Removal Action and Release Investigation

for the

The Hub of Alaska

Milepost 189.5 Glenn Highway
Glennallen, Alaska

ADEC UST Facility ID 2945

Prepared by:

ENVIRONMENTAL MANAGEMENT, INC.
206 EAST FIREWEED LANE, SUITE 201
ANCHORAGE, ALASKA 99503

January 30, 2018

EMI
Consulting, Engineering & Training

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADOT&PF	Alaska Department of Transportation and Public Facilities
bgs	Below ground surface
BTEXN	Benzene, toluene, ethylbenzene, xylenes, and naphthalene
COC	Contaminants of Concern
DRO	Diesel range organics
EMI	Environmental Management, Inc.
°F	Degrees Fahrenheit
ft	Feet
GRO	Gasoline range organics
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
mg/Kg	Milligram per kilogram
ug/kg	Microgram per kilogram
PAH	Polyaromatic hydrocarbons
PID	Photoionization detector
ppmv	Parts per million by volume
QA	Quality assurance
QC	Quality control
ROW	Right of way
RPD	Relative percent difference
SGS	SGS North America, Inc.
UST	Underground storage tank
VOC	Volatile organic compounds
WELTS	Well Log Tracking System

Report on Interim Soil Removal Actions and Release Investigation

The Hub of Alaska
Milepost 189.5 Glenn Highway
Glennallen, Alaska
ADEC UST Facility ID 2945

1.0 INTRODUCTION

Environmental Management, Inc. (EMI) was retained by the owner of The Hub of Alaska, Inc. (The Hub) in Glennallen, Alaska. EMI provided environmental support for the continued release investigation and interim removal action associated with the removal of the former dispensers at The Hub. The land at the project site is currently in the Alaska Department of Transportation and Public Facilities (ADOT&PF) right-of-way (ROW), but is in the process of being vacated. The focus of this project was in the area where new dispensers and piping are planned to be installed.

2.0 SITE DESCRIPTION AND BACKGROUND

The Hub is a convenience store and gas station established in 1975 and located in Glennallen, Alaska on the corner of the Glenn and Richardson Highways, as shown on Figure 1. The dispenser area The Hub is built up with 6 to 8 feet of fill over the native soils.

The dispenser area that is the focus of this project is roughly 60 feet by 60 feet area located on the southeast side of The Hub store (see Figure 2). The previous dispensers had two fuel islands with a third island to fill large diesel vehicles. The new dispenser islands are planned to be in roughly the same location as the old dispenser islands without the third satellite dispenser (i.e., diesel island).

During the initial site investigation between October 9 and 11, 2017, the previous dispensers, piping and underground storage tanks (UST) were removed. A summary of the removal efforts are described below.

2.1 First Fuel Island (closest to the store)

When the soil was removed around the dispensers at the first island a release was noted by the middle dispenser where the lines entered the sump. Initially it appeared to be only a few cubic yards, but a more thorough investigation identified more suspect areas. A bermed and lined area was constructed to contain the suspect soils. Additional suspect soil was removed from area around the first island until everything appeared to be close to clean. At that point samples were collected to confirm the site was clean. The number of headspace and analytical samples followed Table 2B of the Field Sampling Guidance (Headspace: 6 bottom and 9 sidewalls; Analytical: 2 bottom and 4 sidewalls.). The samples were analyzed for gasoline range organics (GRO), diesel range organics (DRO), petroleum list volatile organic compounds (VOC), and

polyaromatic hydrocarbons (PAH). The sample from location C32 was the only sample that came back with results above the cleanup level.

2.2 Second Fuel Island (Middle Island)

The contamination by the middle set of dispensers appears to mix with a historical spill. EMI encountered minor contamination near the middle dispenser (Diesel only pump) and the northern dispenser (diesel and gasoline pumps), and contamination appeared to get worse further from the dispenser. A trench was excavated into the native soil under the fill, and samples C-BSW and C-SN were from the bottom and sidewall of that trench, respectively. Both locations are still highly contaminated with the sidewall sample being the worst.

2.3 Stockpile Area (West of Store by the Solar Panels)

Suspect soils were placed in a stockpile west of the store next to the gravel pad for the solar panels. The soil was placed on 12-mil plastic liner.

3.0 PURPOSE AND OBJECTIVES

The purpose of the interim removal action was to clean up the area under the planned concrete pad for the new dispensers. The objective is not to clean up all of the contaminated soils at the site, but rather to clean up the most contaminated soils and ensure any contaminated soils that must be moved are handled appropriately.

4.0 REGULATORY CONTEXT

The Alaska regulations on Underground Storage Tanks (18 AAC 78, as amended through November 7, 2017) requires a release investigation if there is evidence that a release occurred. The release investigation and interim removal actions will follow the Alaska Department of Environmental Conservation (ADEC) August 2017, *Field Sampling Guidance*.

The Alaska regulations on Oil and Other Hazardous Substances Pollution Control (18 AAC 75, as amended through November 7, 2017) establishes cleanup levels and cleanup procedures to address oil and other hazardous substances that have impacted soils.

The primary contaminants of concern (COC) for the spots identified for this removal action are GRO, DRO, benzene, toluene, ethylbenzene, xylene, and naphthalene (BTEXN). Other contaminants of concern include PAH and VOC. The current cleanup levels in 18 AAC 75 are used as the basis for the action levels for the COCs listed below.

- **GRO: 300 mg/kg** – cleanup level for "under 40 inch zone" (18 AAC 75, Table B2)
- **DRO: 250 mg/kg** – cleanup level for "under 40 inch zone" (18 AAC 75, Table B2)
- **Benzene: 0.022 mg/kg** – cleanup level for "migration to groundwater" (18 AAC 75, Table B1).
- **Ethylbenzene: 0.13 mg/kg** – cleanup level for "migration to groundwater" (18 AAC 75, Table B1).
- **Toluene: 6.7 mg/kg** – cleanup level for "migration to groundwater" (18 AAC 75, Table B1).

- **Xylene: 1.5 mg/kg** – cleanup level for "migration to groundwater" (18 AAC 75, Table B1).
- **Naphthalene: 0.038 mg/kg** – cleanup level for "migration to groundwater" (18 AAC 75, Table B1).
- **Other petroleum VOCs:** varies by compound -- cleanup level under "migration to groundwater" (18 AAC 75, Table B1).
- **PAH:** varies by compound -- cleanup level under "migration to groundwater" (18 AAC 75, Table B1).

5.0 SAMPLING AND ANALYSIS METHODS

Field screening and analytical sampling was conducted in accordance with the procedures presented in the ADEC *Field Sampling Guidance*, August 2017 and EMI's ADEC-approved work plan. The following methods were used to collect confirmation samples from the limit of excavation.

5.1 Field Screening

Initial field screening will be conducted by looking for physical evidence of soil contamination, such as visual or olfactory. Any areas with evidence of contamination were removed as suspect soils. Once the area appeared to be clean samples for headspace analysis from the bottom and each sidewall was collected and tested (the number of samples will be per Table 2B, ADEC Field Sampling Guidance).

Headspace samples were collected by filling re-sealable quart size bags approximately 1/3 to 1/2 full with soil. The bags were then agitated before being allowed to develop for at least 10 minutes, but not longer than an hour. All headspace samples were at least 40 degrees Fahrenheit (°F) at the time of readings. After the samples had been allowed to develop, the probe of the calibrated MiniRae 3000 photoionization detector (PID) was inserted into the bag and the displayed reading was recorded in the field notes along with other pertinent information including the location of the sample. Disposable or clean trowels or spoons were used to collect the samples.

5.2 Sampling for Laboratory Analysis

Analytical samples were collected from the limits of excavation and potentially clean stockpiled soil. Analytical soil samples were collected from 2 to 6 inches below the surface from the in-situ soil at the frequency per Table 2B of the ADEC's *Field Sampling Guidance*. A clean decontaminated stainless-steel sampling tool or a sterile disposable sampling tool was used to collect analytical samples at each sample location. In some cases digging was required to reach a sufficient depth to expose fresh soils before sampling.

5.3 Laboratory Analytical Methods

The analytical samples were submitted to SGS North America, Inc. (SGS) of Anchorage, Alaska, an ADEC UST certified and A2LA Accredited (DoD ELAP) laboratory. Each sample was analyzed for DRO, GRO, and VOC-petroleum list. Additionally, ten percent of samples were analyzed for polycyclic aromatic hydrocarbons (PAH).

6.0 FIELD ACTIVITIES

Field activities were conducted on October 21 and 22, 2017. Larry Helgeson, an ADEC Qualified Environmental Professional, was on site to direct the collection all samples. Weather at the time of field activities was mostly clear with a temperature of 10° to 30° F. Field activities included excavating impacted soil prior to placement of the new fuel islands and a release investigation. Field notes and photos taken during the field activities are included as Appendices A and B, respectively.

6.1 Work Plan Variances

In general, the ADEC-approved work plan was followed as written, with the following exceptions:

- The work plan described two discrete removal actions—one from the first island near the October 11, 2017 Sample C32 location, and another from the second island. However, upon soil removal, one large excavation covering both areas was completed.
- Sampling of the stockpiled suspect soil was to be conducted per the work plan. Instead, samples were collected from the potentially clean stockpiled soil to characterize the potentially clean soil that would be used for excavation backfill.
- The work plan listed BTEXN as a parameter to be analyzed. Due to the extent and elevated levels of contamination, a VOC-petroleum list was instead analyzed. This list includes BTEXN but has additional petroleum contaminants.

6.2 Removal Actions and Release Investigation Sampling

The interim removal was conducted to excavate the contaminated soils in the area planned for new construction. The additional soil removal started at the first fuel island, as this area seemed the least contaminated. The excavation centered on the area where previous Sample C32 was collected and went down two feet as planned to 4.5 feet (ft) below ground surface (bgs). One headspace test was a little high at 35.2 parts per million by volume (ppmv) so additional soil was removed. Some burn debris was found around 6 ft bgs and the headspace tests went up to above 100 ppmv. It became obvious that this spot had more contamination than anticipated. The excavator moved to the middle fuel island and dug a deep test pit down to the ground water to see if we could find the bottom of the contamination. Figure 4 shows the strata encountered in the test pit. Contamination was still present at the ground water level so it became obvious that we could not remove all the contamination from the area. Based on the field screening results it appeared the highest concentration of contamination was in the sandy layer just above the layer of peat. After consulting with the contractor and the owner, the decision was made to remove the contaminated soils down to the peat layer, but not go below that layer at this time. Typically fuel contamination bound up in the peat will not readily leach into the ground water below.

The soil from above the peat layer was excavated. EMI segregated the excavated soil from contaminated to potentially clean soil by using direct readings with the PID. This soil was placed in the appropriate stockpile, as described below.

6.3 Stockpile Construction and Maintenance

The contaminated soils from this effort (300 cy) were added to the contaminated soil stockpile that was constructed during the UST removal phase. The stockpile was covered with a 6-mil poly that was to be secured and maintained over the winter.

Soil that was removed but did not appear to be contaminated was segregated and placed in a separate pile. That "potentially clean" pile was screened and analytical sampled to confirm it is safe for reuse on site. Since it was freezing conditions and the limits of excavation were still highly contaminated, this potentially clean soil was approved by ADEC for reuse in the same location it came from without having sample results.

6.4 Excavation Backfill

The bottom of the excavation was filled with clean gravel from the JCE Enterprises gravel pit. The peat layer left at the bottom is a good visual indicator for the separation between the clean fill and the contaminated materials left below. The material was placed in 16" lifts and then compacted. After being about ½ full a plastic tarp was placed to visually indicate the separation from the spoils from the excavation and imported clean backfill. The probably clean spoils from the excavation were then placed in 16" compacted lifts so that the installation of the new dispensers in the area could be completed.

6.5 Water Well Sampling

The water from the well was sampled by disconnecting the plumbing before the water filter. There are not faucets attached to the plumbing of this water as the water is only plumbed directly into the toilets. The on-site non-potable water well was purged by running water into a bucket within the building. After purging the analytical sample was collected directly from the disconnected plumbing. The purge water was dumped into the utility sink which discharges to the on-site septic system.

6.6 Decontamination

All construction equipment that has been in direct contact with the contaminated soils was decontaminated before it is reused on other parts of the project. Dry decon methods were used with the part of the equipment in contact with the contaminated soils placed over the stockpile and brushed clean. The decon material was stored and disposed with the contaminated soil.

7.0 SAMPLING RESULTS

Samples were collected from the excavation base, excavation sidewalls, "potentially clean" stockpile, and the on-site non-potable well. Field screening results are presented in Table 1 and analytical results are presented in Tables 2 through 5.

7.1 Soil Descriptions

Surface soils at the site consisted of fill over peat. Beyond the peat, silt with varying amounts of sand and gravel was encountered. Burn debris was encountered in portions of the excavation around 6 feet bgs. A typical soil profile is included as Figure 4.

Groundwater was encountered in the test pit at approximately 12 ft bgs. Based on conversations with Glennallen residents, the water table fluctuates seasonally between 8 and 15 ft bgs.

7.2 Soil Sampling Results

In total, 205 headspace samples were collected from the excavation base, sidewalls, and "potentially clean" stockpile. Headspace results from the excavation ranged from 2.8 ppmv to 2,877 ppmv with the highest levels in the northeast portion of the excavation, closest to previous Sample C-SN. Similarly, the highest sidewall headspace samples were from that area with readings ranging from 0.2 ppmv to 1,452 ppmv. Headspace readings from the "potentially clean" stockpile ranged from 0.6 ppmv to 82.6 ppmv. Soil from the area X02 in the stockpile had 386 ppmv but this soil was removed and transferred to the on-site contaminated stockpile; the soils was resampled and tested with the highest result of the soil remaining in X02 area at 19.3 ppmv.

A total of 23 analytical samples (including duplicates) were collected from the project site. The samples included seven from the excavation base, eight from the sidewalls, seven from the "potentially clean" stockpile, and one from the on-site non-potable well. Each sample from the excavation base contained one or more COCs greater than the ADEC action levels with the highest concentrations in Samples BR15 and BR47. With the exception of two samples, each of the sidewall samples contained one or more COCs greater than the ADEC action levels. These sidewall concentrations were, for most of the parameters, over an order of magnitude greater than the nearby base samples.

The "potentially clean" stockpile samples contained benzene, 1,2,4-trimethylbenzene, and naphthalene in one or more samples. However, the levels were orders of magnitude less than the contaminated soils remaining at the limits of the excavation.

7.3 Water Well Sampling Results

One water sample was collected from the non-potable on-site well. Benzene and naphthalene levels exceeding ADEC Table C Cleanup Levels were detected in the water sample.

8.0 DATA VALIDATION

Quality Control (QC) data and Quality Assurance (QA) procedures were used to determine if the analytical results are representative of the sampled material. The ADEC Laboratory Data Review Checklist was completed for SGS Laboratory Report of Analysis 1179324. The completed checklist is included in Appendix C. Only minor QC failures were noted in the report.

There were multiple failed surrogate recoveries typically associated with matrix interference or dilution according to the report's Case Narrative. These failed recoveries do not have any significant impact on data quality or usability since the concentrations in the associated samples were well above cleanup levels.

Two duplicate sets were collected during this project. Sample BR46 is a duplicate of excavation base Sample BR45, and Sample X50 was a duplicate of "potentially clean" stockpile Sample

X02. Duplicate analysis was only performed on GRO, DRO, and VOCs. The relative percent difference (RPD) for benzene and toluene for Samples X02 and X50 were above 50. The poor RPDs may be due to the heterogeneous nature of the stockpiles. Precision for the laboratory QC samples is considered acceptable since RPD between all laboratory control sample/laboratory control sample duplicate (LCS/LCSD) were within range.

9.0 WELL INVESTIGATION

A search was conducted in the Alaska Department Natural Resources Well Log Tracking System (WELTS) of the area around the intersection of the Glenn and Richardson Highway. Results from the search are included in Appendix D. The closest well to the intersection were wells on Sam Bishop's and Carl Bouers's Properties that are about a 1 mile away. The well log for Bishop's well show that it is 103 ft deep and the static water level in that well was 55 ft below the top of the casing. The well log recorded blue clay from 6 to 85 ft bgs and shows the gravel aquifer starting at 95 ft.

Based on interviews with locals and a visual inspection the only well within ¼ mile of The Hub is its own non-potable well that is used only for supplying water to the toilets. There are no known drinking water wells within ½ mile of The Hub.

10.0 CONCEPTUAL SITE MODEL

A conceptual site model was developed based on the analytical data generated to date on this site. The ADEC *Human Health Conceptual Site Model Graphic Form* and *Human Health Conceptual Site Model Scoping Form and Standardized Graphic* are included in Appendix E. A summary of the exposure pathways that apply to the site are summarized below.

10.1 Site Summary

The site has been used for commercial purposes as a fueling station. The sources of the contamination are a result of the site use and include releases from fueling and leaking piping since the 1970s. While a large volume of contamination was removed during the 2017 interim removal action, contamination remains in the subsurface soils and is present in the site's non-potable well. The site use will remain a fueling station, therefore the current and future receptors may include commercial or industrial workers, site visitors, and construction workers.

10.2 Exposure Pathways

The exposure pathways including direct contact, ingestion, and inhalation were evaluated and are summarized below.

10.2.1 Direct Contact

The direct contact with soil comprises of ingestion of soil and dermal absorption of contaminants. The maximum concentrations reported in the soil remaining on the site are summarized below:

Contaminant of Concern	Max concentration	Depth (feet bgs)	Sample Location
GRO	4,630 mg/kg	4	C-SN
DRO	4,060 mg/kg	5	SR11
Benzene	52,700 ug/kg	4	C-SN
Ethylbenzene	137,000 ug/kg	4	C-SN
Toluene	369,000 ug/kg	7	SR09
Total Xylenes	656,000 ug/kg	4	C-SN
1,2,4-Trimethylbenzene	243,000 ug/kg	4	C-SN
1,2-Dichloroethane	832 ug/kg	8	BR47
1,3,5-Trimethylbenzene	67,500 ug/kg	4	C-SN
Isopropylbenzene	23,700 ug/kg	7	SR09
Naphthalene	50,100 ug/kg	5	SR11

As noted above, each of these contaminants are present between 2 and 15 ft bgs. Therefore, the incidental soil ingestion pathway is considered complete. Of these contaminants, only naphthalene is able to permeate the skin per Appendix B of the ADEC's January 2017 *Guidance on Developing Conceptual Site Models*. As a result, the Dermal Absorption of Contaminants from soil pathway is Complete.

10.2.2 Ingestion

Ingestion of contaminants may also be through groundwater, surface water, or wild and farmed foods. Groundwater has not been fully assessed at the site. The on-site non-potable well was sampled as part of this effort. Benzene and naphthalene were detected above cleanup levels in the well sample. Although the water is not used nor will potentially be used in the future for drinking water, the ADEC has not determined that the water is not a currently or expected to be a future drinking water source per 18 AAC 75.350. Therefore, the Ingestion of Groundwater pathway is considered Complete.

The closest surface water bodies from the project area Tazlina and Copper Rivers, located more than 2 miles from the site. Due to the distance, the Ingestion of Surface Water is considered Incomplete.

The site is currently and not expected to be used for hunting, fishing, or harvesting of wild or farmed foods. In addition, the contaminants remaining on the site do not have the potential to bioaccumulate per Appendix C of the ADEC's January 2017 *Guidance on Developing Conceptual Site Models.* Therefore, the Ingestion of Wild and Farmed Foods is considered Incomplete.

10.2.3 Inhalation

Inhalation of contaminants includes both outdoor and indoor air. Of the contaminants remaining on the site, benzene, toluene, ethylbenzene, xylenes, naphthalene, 1,2,4-trimethylbenzen, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), and 1,2-dichloroethane are considered volatile per Appendix D of the ADEC's January 2017 *Guidance on Developing Conceptual Site Models.* Due to the presence of contamination in the soil between 0 and 15 ft bgs and the presence of volatiles, the Inhalation of Outdoor Air is considered Complete.

Inhalation of indoor air through vapor intrusion can be through the presence of contamination near occupied buildings and the presence of volatile compounds in the soil or groundwater. Volatile contamination remains within 30 feet from the nearest building, so Inhalation of Indoor Air is considered Complete.

10.2.4 Other Pathways

Additional pathways evaluated for the site include Dermal Exposure to Contaminants in Groundwater and Surface Water, Inhalation of Volatile Compounds in Tap Water, Inhalation of Fugitive Dust, and Direct Contact with Sediment. The water from the on-site well is not used beyond flushing of toilets, so further evaluation of the Dermal Exposure and Inhalation of Volatile Compounds pathways are needed at this time. Contamination that does remain on site is predominantly volatiles and is not likely within the top 2 inches of soil, so additional evaluation of Inhalation of Fugitive Dust and Direct Contact with Sediment is not warranted.

10.2.5 Exposure Pathway Summary

Of the exposure pathways that were evaluated, including direct contact, ingestion, and inhalation evaluated, Direct Contact – Incidental Soil Ingestion, Direct Contact – Dermal Absorption of Contaminants from Soil, Ingestion of Groundwater, Inhalation of Indoor Air, and Inhalation of Outdoor Air are considered Complete Pathways.

11.0 CONCLUSIONS AND RECOMMENDATIONS

Analytical results indicate contaminant concentrations greater than ADEC Method 2 Migration to Groundwater Cleanup levels and Human Health/Maximum Allowable Concentrations remain in the excavation base and sidewalls. The concentrations remain highest in the western portion of the excavation, closest to the former middle island. Due to the impending installation of the replacement dispenser islands and related construction, the excavation was backfilled with contamination remaining in place. While a portion of the elevated readings closest to October 11, 2017 Sample C-SN was removed, the location where Sample C-SN is still present. It is unknown whether Sample C-SN is indicative of a release from the former dispenser, a separate source, or a combination of the two. Further investigation of the extent of contamination at the site may be warranted. However, due to the proximity of the site to the ADOT&PF ROW, we recommend a copy of this report be provided to both the ADEC and the ADOT&PF.

12.0 REFERENCES

ADEC. 2017. Division of Spill Prevention and Response, Contaminated Sites Program, *Guidance on Developing Conceptual Site Models*. January.

ADEC. 2017. Division of Spill Prevention and Response, Contaminated Sites Program, *Field Sampling Guidance*. August.

ADEC. 2017. Division of Spill Prevention and Response, Contaminated Sites Program, *Technical Memorandum, Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling*. March.

ADEC. 2017. Title 18, Alaska Administrative Code, Chapter 75. *Oil and Other Hazardous Substances Pollution Control.* November 7.

ADEC. 2017. Title 18, Alaska Administrative Code, Chapter 78. *Underground Storage Tanks.* November 7.

If you have any questions or wish to discuss this project further please do not hesitate to contact the undersigned at (907) 272-9336.

Respectfully,

Larry Helgeson, P.E.
Qualified Environmental Professional

Table 1 Headspace Readings for The Hub Interim Removal Action

Sample ID	Date Taken	Depth (ft)		Headspace (ppmv)	Notes	Sample ID Chain of Custody
BG01	10/21/2017	4.5	BGS	20.0	First Fuel Island	
BG02	10/21/2017	4.5	BGS	4.1	First Fuel Island	
BG03	10/21/2017	4.5	BGS	6.0	First Fuel Island	
BG04	10/21/2017	4.5	BGS	35.2	First Fuel Island	
BG05	10/21/2017	3.5	BGS	2.8	First Fuel Island	
BG06	10/21/2017	3.5	BGS	5.5	First Fuel Island	
BG07	10/21/2017	3.5	BGS	5.8	First Fuel Island	
BG08	10/21/2017	5	BGS	8.1	First Fuel Island	
BG09	10/21/2017	5	BGS	13.1	First Fuel Island	
BG10	10/21/2017	5	BGS	230.1	First Fuel Island	
BG11	10/21/2017	5	BGS	143.9	First Fuel Island	
Deep Test Pit						
BK01	10/21/2017	13.5	BGS	208.5	4' @ 45° NE of piling 4	
BK02	10/21/2017	5.5	BGS	929.0	8' @ 45° NW of piling 4	
BK03	10/21/2017	6	BGS	830.0	8' @ 45° NW of piling 4	
BK04	10/21/2017	12	BGS	609.0	3' W / 4' N of piling 4	BK04
Bottom of excavation						
BR01	10/22/2017	8	BGS	1,012.0	peat brown	
BR02	10/22/2017	8	BGS	760.0	peat brown	
BR03	10/22/2017	8	BGS	1,515.0	peat brown	
BR04	10/22/2017	8	BGS	475.0	peat brown	
BR05	10/22/2017	8	BGS	585.0	silt gray	
BR06	10/22/2017	8	BGS	946.0	peat and silt	
BR07	10/22/2017	8	BGS	617.0	silt gray	
BR08	10/22/2017	8	BGS	697.0	peat and silt	
BR09	10/22/2017	8	BGS	2,658.0	peat and silt	
BR10	10/22/2017	8	BGS	1,235.0	peat and silt	
BR11	10/22/2017	8	BGS	1,557.0	peat	
BR12	10/22/2017	8	BGS	758.0	silt and peat mix	
BR13	10/22/2017	8	BGS	623.0	peat	
BR14	10/22/2017	8	BGS	990.0	dark silt and peat	
BR15	10/22/2017	8	BGS	2,877.0	peat and silt	BR15
BR16	10/22/2017	8	BGS	1,623.0	dark silt and peat	
BR17	10/22/2017	8	BGS	1,718.0	dark silt and peat	
BR18	10/22/2017	8	BGS	944.0	dark silt and peat	
BR19	10/22/2017	8	BGS	971.0	peat and silt	
BR20	10/22/2017	8.5	BGS	565.0	silt gray	
BR21	10/22/2017	7	BGS	19.6	gravel	
BR22	10/22/2017	7	BGS	27.8	sand and gravel	
BR23	10/22/2017	6	BGS	18.3		
BR24	10/22/2017	6	BGS	24.4	silt	
BR25	10/22/2017	8	BGS	965.0	peat	
BR26	10/22/2017	8	BGS	800.0	sand	
BR27	10/22/2017	8	BGS	1,907.0	peat	
BR28	10/22/2017	8	BGS	1,580.0	peat	
BR29	10/22/2017	8	BGS	1,811.0	peat	
BR30	10/22/2017	8	BGS	2,681.0	peat	
BR31	10/22/2017	11.5	BGS	2,132.0	peat	
BR32	10/22/2017	8	BGS	2,295.0	peat	
BR33	10/22/2017	9.5	BGS	795.0	silt	
BR34	10/22/2017	8	BGS	1,830.0	peat	

Notes last page

Table 1 Headspace Readings for The Hub Interim Removal Action

Sample ID	Date Taken	Depth (ft)		Headspace (ppmv)	Notes	Sample ID Chain of Custody
Bottom of excavation (continued)						
BR35	10/22/2017	8	BGS	2,086.0	peat	
BR36	10/22/2017	8	BGS	1,883.0	peat	
BR37	10/22/2017	8	BGS	1,058.0	peat	
BR38	10/22/2017	8	BGS	970.0	peat	
BR39	10/22/2017	8	BGS	1,669.0	peat	
BR40	10/22/2017	8	BGS	289.0	gravel	
BR41	10/22/2017	8	BGS	1,021.0	peat	
BR42	10/22/2017	8	BGS	844.0	peat	
BR43	10/22/2017	8	BGS	650.0	peat	
BR44	10/22/2017	8	BGS	1,150.0	peat	
BR45	10/22/2017	9	BGS	392.0	dark silt	BR45, BR46 (dup)
BR46	10/22/2017	8	BGS	1,223.0	peat	
BR47	10/22/2017	8	BGS	2,810.0	peat	BR47
BR48	10/22/2017	8	BGS	976.0	peat	
BR49	10/22/2017	9	BGS	515.0	silt	BR49
BR50	10/22/2017	8	BGS	190.0	peat	BR50
BR51	10/22/2017	8	BGS	91.4	peat	
BR52	10/22/2017	8	BGS	74.8	peat	
BR53	10/22/2017	8	BGS	16.3	peat	
BR54	10/22/2017	8	BGS	1,287.0	peat	
Sidewall samples						
SM01	10/21/2017	2	BGS	1.1		
SM02	10/21/2017	3	BGS	0.4		
SM03	10/21/2017	4.5	BGS	0.3		
SM04	10/21/2017	2	BGS	0.3		
SM05	10/21/2017	2	BGS	0.4		
SM06	10/21/2017	4	BGS	0.3		
SM07	10/21/2017	2	BGS	0.2		
SM08	10/21/2017	3	BGS	0.5		
SM09	10/21/2017	4	BGS	0.4		
SM10	10/21/2017	2	BGS	0.3		
SM11	10/21/2017	3	BGS	0.3		
SM12	10/21/2017	4	BGS	0.3	corner	
SM13	10/21/2017	3	BGS	0.2		
SM14	10/21/2017	2	BGS	0.2		
SM15	10/21/2017	4	BGS	0.4		
SM16	10/21/2017	3	BGS	0.3		
SM17	10/21/2017	2	BGS	0.3		
SM18	10/21/2017	4	BGS	0.2		
SM19	10/21/2017	3	BGS	0.2		
SM20	10/21/2017	2	BGS	0.4		
SM21	10/21/2017	4	BGS	0.6		
SM22	10/21/2017	3	BGS	0.6		
SM23	10/21/2017	3	BGS	43.1		
SM24	10/21/2017	3	BGS	3.0	End of NSW 3' E of pile	
SM25	10/21/2017	4	BGS	11.4	E of pile	
SM26	10/21/2017	4	BGS	7.2		
SM27	10/21/2017	4	BGS	17.3		
SM28	10/21/2017	4	BGS	41.0		
SM29	10/21/2017	4	BGS	3.5		

Notes last page

Table 1 Headspace Readings for The Hub Interim Removal Action

Sample ID	Date Taken	Depth (ft)	Headspace (ppmv)	Notes	Sample ID Chain of Custody
Sidewall samples (continued)					
SM30	10/21/2017	2 BGS	3.9		
SM31	10/21/2017	3 BGS	3.3		
SM32	10/21/2017	4 BGS	464.0		
SM33	10/21/2017	2 BGS	3.0		
SM34	10/21/2017	3 BGS	1.8	SE corner	
SM35	10/21/2017	4 BGS	1.4		
SM36	10/21/2017	2 BGS	1.1		
SM37	10/21/2017	3 BGS	0.9		
SM38	10/21/2017	4 BGS	0.8		
SM39	10/21/2017	2 BGS	0.7		
SM40	10/21/2017	3 BGS	0.7		
SM41	10/21/2017	4 BGS	0.4		
SM42	10/21/2017	2 BGS	0.5		
SM43	10/21/2017	3 BGS	0.5		
SM44	10/21/2017	4 BGS	0.4		
SM45	10/21/2017	2 BGS	0.4		
SM46	10/21/2017	3 BGS	0.7		
SM47	10/21/2017	4 BGS	0.6	4' from SW corner	
SR01	10/22/2017	7 BGS	824.0	sand	SR01
SR02	10/22/2017	6 BGS	10.6		
SR03	10/22/2017	5 BGS	5.5	gravel	
SR04	10/22/2017	6 BGS	57.8		
SR05	10/22/2017	5 BGS	9.6	gravel	
SR06	10/22/2017	5 BGS	10.0	gravel	
SR07	10/22/2017	5 BGS	3.2	gravel	
SR08	10/22/2017	7 BGS	510.0	sand	
SR09	10/22/2017	7 BGS	1,270.0		SR09
SR10	10/22/2017	5 BGS	922.0		
SR11	10/22/2017	5 BGS	210.0	Sand	SR11
SR12	10/22/2017	7 BGS	997.0		
SR13	10/22/2017	5 BGS	916.0		
SR14	10/22/2017	7 BGS	386.0		
SR15	10/22/2017	5 BGS	667.0	Black layer	
SR16	10/22/2017	7 BGS	1,290.0	NE corner	
SR17	10/22/2017	5 BGS	1,342.0		
SR18	10/22/2017	7 BGS	506.0		
SR19	10/22/2017	5 BGS	1,160.0		
SR20	10/22/2017	7 BGS	241.0		SR20
SR21	10/22/2017	5 BGS	684.0		
SR22	10/22/2017	7 BGS	380.0		
SR23	10/22/2017	5 BGS	1,205.0		
SR24	10/22/2017	7 BGS	1,431.0		SR24
SR25	10/22/2017	5 BGS	1,302.0		
SR26	10/22/2017	7 BGS	1,452.0	SE corner (gas smell)	
SR27	10/22/2017	5 BGS	995.0		SR27
SR28	10/22/2017	7 BGS	227.0		
SR29	10/22/2017	5 BGS	8.1		
SR30	10/22/2017	7 BGS	44.0		SR30
SR31	10/22/2017	5 BGS	5.0		
SR32	10/22/2017	7 BGS	5.0		

Notes last page

Table 1 Headspace Readings for The Hub Interim Removal Action

Sample ID	Date Taken	Depth (ft)		Headspace (ppmv)	Notes	Sample ID Chain of Custody
Sidewall samples (continued)						
SR33	10/22/2017	5	BGS	2.5		
SR34	10/22/2017	7	BGS	21.9		
SR35	10/22/2017	5	BGS	2.2	SW corner	
SR36	10/22/2017	7	BGS	4.6		SR36
SR37	10/22/2017	5	BGS	2.3		
SR38	10/22/2017	7	BGS	27.5		
Extra sampes						
E01	10/22/2017	8.5	BGS	1,195.0	silt	
E02	10/22/2017	6	BGS	32.8	gravel	
E03	10/22/2017	6	BGS	1,213.0	10' E of piling 3	
E04	10/22/2017	7	BGS	382.0	3' E of piling 3	
E05	10/22/2017	7	BGS	42.0	3' S of piling 3	
E06	10/22/2017	6	BGS	32.3	10' S of piling 3	
Stockpile samples						
X01	10/22/2017	4	AGS	29.9	R1	
X02	10/22/2017	4	AGS	386.0	R1 (removed 2 CY)	
X02C	10/22/2017	4	AGS	17.4	R1 (resample & test)	
X02L	10/22/2017	4	AGS	5.5	R1 (resample & test)	
X02R	10/22/2017	4	AGS	19.3	R1 (resample & test)	X02, X50 (dup)
X03	10/22/2017	5	AGS	47.1	R2	
X04	10/22/2017	8	AGS	13.2	R2	
X05	10/22/2017	2	AGS	10.4	R2	
X06	10/22/2017	4	AGS	21.8	R3	
X07	10/22/2017	7	AGS	21.1	R3	
X08	10/22/2017	8	AGS	22.7	R3	
X09	10/22/2017	5	AGS	41.2	R3	
X10	10/22/2017	2	AGS	52.3	R3	
X11	10/22/2017	2	AGS	61.5	R4	X11
X12	10/22/2017	5	AGS	61.8	R4	X12
X13	10/22/2017	8	AGS	55.0	R4	X13
X14	10/22/2017	7	AGS	8.2	R4	
X15	10/22/2017	4	AGS	5.8	R4	
X16	10/22/2017	3	AGS	42.4	R5	
X17	10/22/2017	6	AGS	35.2	R5	
X18	10/22/2017	8	AGS	16.1	R5	
X19	10/22/2017	5	AGS	8.5	R5	
X20	10/22/2017	2	AGS	5.3	R5	
X21	10/22/2017	2	AGS	24.2	R6	
X22	10/22/2017	5	AGS	20.7	R6	
X23	10/22/2017	8	AGS	11.0	R6	
X24	10/22/2017	6	AGS	4.7	R6	
X25	10/22/2017	4	AGS	5.0	R6	
X26	10/22/2017	2	AGS	63.7	R7	X26
X27	10/22/2017	8	AGS	13.9	R7	
X28	10/22/2017	6	AGS	8.7	R7	
X29	10/22/2017	6	AGS	54.1	R8	
X30	10/22/2017	8	AGS	8.7	R8	
X31	10/22/2017	2	AGS	8.2	R8	
X32	10/22/2017	2	AGS	29.0	R9	
X33	10/22/2017	7	AGS	82.6	R9	X33

Notes last page

Table 1 Headspace Readings for The Hub Interim Removal Action

Sample ID	Date Taken	Depth (ft)		Headspace (ppmv)	Notes	Sample ID Chain of Custody
Stockpile samples (continued)						
X34	10/22/2017	6	AGS	0.8	R9	
X35	10/22/2017	6	AGS	1.3	R10	
X36	10/22/2017	7	AGS	2.0	R10	
X37	10/22/2017	3	AGS	0.6	R10	
X38	10/22/2017	2	AGS	1.5	R11	
X39	10/22/2017	7	AGS	0.8	R11	
X40	10/22/2017	6	AGS	5.3	R11	
X41	10/22/2017	4	AGS	4.4	R12	
X42	10/22/2017	4	AGS	21.0	R12	

Notes:

BGS = below ground surface
AGS = above ground surface
ppmv = parts per million by volume
ft = feet
R1 = Row 1 of the stockpile

Table 2 - Bottom Analytical Sample Results

				Client Sample Id:	BK04	BR15	BR45	~BR46	BR47	BR49	BR50
				Date Sampled:	10/21/17	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17
				Matrix	Silt w/ Gr*	Silt & P*	Dk. Silt*	Dk. Silt*	Peat	Silt	Peat
				Headspace (ppmv)	609	2877	392	392	2810	515	190
				Depth (feet below ground surface)	12	8	9	9	8	9	8
Analyte	**Unit**	**AL**	**MAC**								
Gasoline Range Organics	mg/Kg	300	1,400		**6.65**	**348**	**7.52**	**8.16**	**266**	**27.6**	**11.3**
Diesel Range Organics	mg/Kg	250	10,250		25.4 U	**528**	24.0 U	**35.4**	**557**	**35.5**	**331**
Benzene	ug/Kg	22	11,000		**5,050**	**23,700**	**3,300**	**3,590**	**28,700**	**11,000**	**7,370**
Ethylbenzene	ug/Kg	130	49,000		32.3 U	**15,400**	23.6 U	25.8 U	**13,900**	**597**	**2,520**
Toluene	ug/Kg	6,700	200,000		32.3 U	**34,800**	23.6 U	25.8 U	**59,500**	**281**	88.9 U
Xylenes (total)	ug/Kg	1,500	57,000		96.9 U	**49,400**	70.7 U	77.4 U	**43,600**	**475**	**1,450**
Other VOCs Detected											
1,2,4-Trimethylbenzene	ug/Kg	160	43,000		64.6 U	*262 U*	47.1 U	51.6 U	**1,260**	**134**	*178 U*
1,2-Dichloroethane	ug/Kg	5.5	5,500		**39.7**	**161**	*9.42 U*	*10.3 U*	**832**	**50.7**	*35.6 U*
1,3,5-Trimethylbenzene	ug/Kg	1,300	37,000		32.3 U	131 U	23.6 U	25.8 U	**326**	**29.4**	88.9 U
Isopropylbenzene (Cumene)	ug/Kg	5,600	54,000		32.3 U	131 U	23.6 U	25.8 U	**392**	**118**	88.9 U
Naphthalene	ug/Kg	38	29,000		32.3 U	*131 U*	23.6 U	25.8 U	*123 U*	**211**	*88.9 U*
sec-Butylbenzene	ug/Kg	42,000	28,000		32.3 U	131 U	23.6 U	25.8 U	123 U	**35.8**	88.9 U

Notes (see table 4)

Table 3 - Sidewall Analytical Sample Results

				Client Sample Id:	SR01	SR09	SR11	SR20	SR24	SR27	SR30	SR36	C-SN
				Date Sampled:	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17	10/11/17
				Headspace (ppmv)	824	1270	210	241	1431	995	44	4.6	51.8
				Depth (feet below ground surface)	7	7	5	7	7	5	7	7	4
Analyte	**Unit**	**AL**	**MAC**										
Gasoline Range Organics	mg/Kg	300	1,400		**5.21**	**3,240**	**1,290**	**1,590**	**435**	**92.4**	1.55 U	1.47 U	**4,630**
Diesel Range Organics	mg/Kg	250	10,250		**836**	**2,890**	**4,060**	**1,390**	**281**	**1,570**	20.6 U	20.9 U	**2,330**
Benzene	ug/Kg	22	11,000		**787**	**46,600**	**6,820**	**28,700**	**623**	**134**	**11.8**	**15.3**	**52,700**
Ethylbenzene	ug/Kg	130	49,000		**1,380**	**116,000**	**22,200**	**64,800**	**14,600**	**4,040**	15.5 U	14.7 U	**137,000**
Toluene	ug/Kg	6,700	200,000		**4,420**	**369,000**	**71,800**	**178,000**	**4,690**	**84.1**	15.5 U	14.7 U	**341,000**
Xylenes (total)	ug/Kg	1,500	57,000		**4,690**	**462,000**	**178,300**	**248,600**	**30,160**	**3,441**	46.6 U	44.2 U	**656,000**
Other VOCs Detected													
1,2,4-Trimethylbenzene	ug/Kg	160	43,000		**813**	**127,000**	**96,500**	**71,500**	**26,800**	**3,340**	31.1 U	29.5 U	**243,000**
1,2-Dichloroethane	ug/Kg	5.5	5,500		**36.2**	*50.5 U*	*57.8 U*	*58.4 U*	*71.2 U*	*6.25 U*	*6.21 U*	*5.89 U*	*53.0 U*
1,3,5-Trimethylbenzene	ug/Kg	1,300	37,000		**420**	**35,300**	**25,700**	**25,900**	**9,280**	**1,570**	15.5 U	14.7 U	**67,500**
Isopropylbenzene (Cumene)	ug/Kg	5,600	54,000		**152**	**23,700**	**6,340**	**12,500**	**4,700**	**731**	15.5 U	14.7 U	**17,500**
Methyl-t-butyl ether	ug/Kg	400	670,000		302 U	*505 U*	*578 U*	*584 U*	*712 U*	62.5 U	62.1 U	58.9 U	**6,220**
Naphthalene	ug/Kg	38	29,000		**190**	**15,700**	**50,100**	**10,500**	**4,050**	**306**	15.5 U	14.7 U	**27,300**
sec-Butylbenzene	ug/Kg	42,000	28,000		75.4 U	**7,110**	**2,290**	**3,760**	**1,330**	**158**	15.5 U	14.7 U	**6,220**
Lead	mg/Kg	n/a	400										**9.81**

Notes (see table 4)

Table 4 - Stock Pile Analytical Sample Results

			Client Sample Id:	X02	~X50	X11	X12	X13	X26	X33
			Date Sampled:	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17	10/22/17
			Headspace (ppmv)	386	386	61.5	61.8	55	63.7	82.6
			Depth (feet)	4	4	2	5	8	2	7
Analyte	**Unit**	**AL**								
Total Solids	%			94.3	93.9	95.1	94.6	94.9	96	95.7
Gasoline Range Organics	mg/Kg	300		1.81 U	1.60 U	**4.32**	1.70 U	1.53 U	**3.49**	1.61 U
Diesel Range Organics	mg/Kg	250		**23.5**	105 U	**148**	**85.4**	**92.6**	**112**	20.7 U
Benzene	ug/Kg	22		**11.1**	**55.5**	**17.3**	8.52 U	7.66 U	**81.9**	**9.96**
Ethylbenzene	ug/Kg	130		18.1 U	**18.9**	15.3 U	17.0 U	15.3 U	**46.9**	16.1 U
Toluene	ug/Kg	6,700		**18.5**	**50.4**	**17.4**	17.0 U	15.3 U	**91.0**	16.1 U
Xylenes (total)	ug/Kg	1500		**131**	**104**	**66.1**	51.1 U	**38.0**	**263**	**21.4**
Other VOCs Detected										
1,2,4-Trimethylbenzene	ug/Kg	160		**45.4**	**34.2**	**54.0**	34.1 U	**67.8**	**253**	**70.2**
1,3,5-Trimethylbenzene	ug/Kg	1,300		**24.9**	**20.5**	**55.2**	17.0 U	**46.7**	**104**	**40.0**
Naphthalene	ug/Kg	38		18.1 U	16.0 U	**24.6**	17.0 U	15.3 U	**57.6**	16.1 U
PAH Detected										
Acenaphthene	ug/Kg	37,000								**43.0**
Fluoranthene	ug/Kg	590,000								**61.4**
Fluorene	ug/Kg	36,000								**46.4**
Phenanthrene	ug/Kg	39,000								**149**
Pyrene	ug/Kg	87,000								**40.6**

Notes (see table 4)

Table 5 - Water Analytical Sample Results

			Client Sample Id:	W-01	VLP
			Date Sampled:	10/21/17	10/20/17
Analyte	**Unit**	**AL****			
Diesel Range Organics	mg/L	1.5		0.62 U	
VOCs Detected					
Benzene	ug/L	4.6		**19.4**	0.400 U
Ethylbenzene	ug/L	15		**6.91**	1.00 U
Xylenes (Total)	ug/L	190		**8.38**	2.00 U
1,2,4-Trimethylbenzene	ug/L	15		**4.02**	1.00 U
1,2-Dibromoethane	ug/L	0.075		0.0750 U	0.0750 U
1,2-Dichloroethane	ug/L	1.7		**1.62**	0.500 U
1,3,5-Trimethylbenzene	ug/L	120		**1.30**	1.00 U
Isopropylbenzene (Cumene)	ug/L	450		**1.39**	1.00 U
Methyl-t-butyl ether	ug/L	140		10.0 U	10.0 U
Naphthalene	ug/L	1.7		**2.82**	1.00 U

Notes:

AL = Project Action Level is from 18 AAC 75, Table 1B under "Migration to Ground Water".

AL** = Project Action Level is form 18 AAC 75, Table C

MAC = Human Health cleanup level for the Under 40 inch Zone or Maximum Allowable Concentration

23,700 = Concentration above the MAC

23.5 = Detectable concentration reported in project sample

55.5 = Concentration above Action Level.

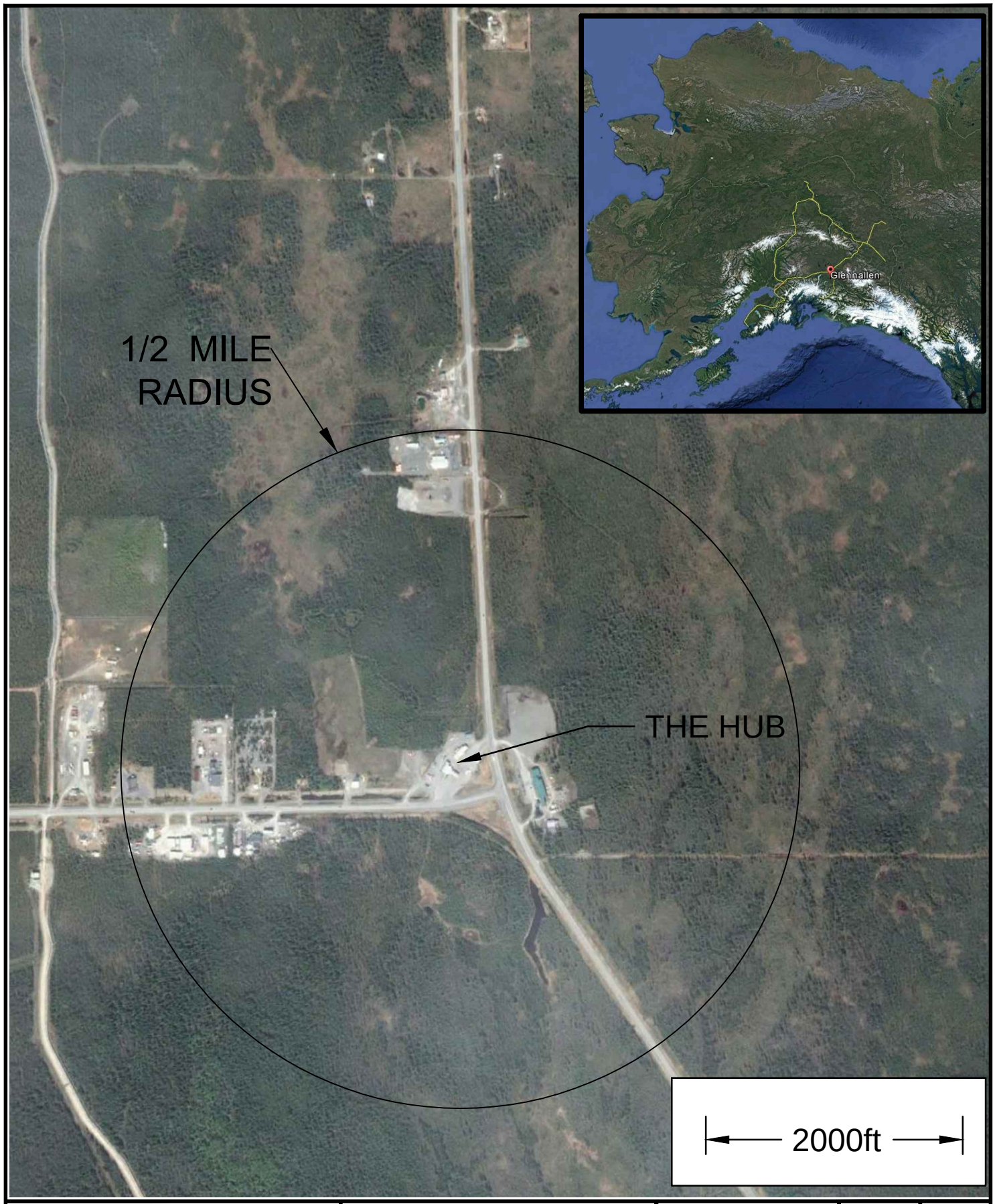
U = Undected - Concentration is below listed LOQ,
Italics - (LOQ > AL) Concentration is below listed LOD

Silt & P* = Silt and Peat

Dk. Silt* = Dark Silt

Silt w/ Gr* = Silt with Gravel

~ = Duplicate sample for the previous column.



SITE GENERAL LOCATION	THE HUB UST CLOSURE GLENNALLEN, AK	EMI Consulting, Engineering & Training	PREPARED: TRM DRAWN: TRM REVIEWED: LAH DATE: 11/22/17	FIGURE 1

SITE OVERVIEW WITH WORK AREAS	THE HUB UST CLOSURE GLENNALLEN, AK	EMI Consulting, Engineering & Training	PREPARED: TRM DRAWN: TRM REVIEWED: LAH DATE: 11/22/17	FIGURE 2

Legend

◎ Pilings for future canopy

Ⓐ SR11 Analytical Sample ID
PID:210 Headspace (ppmv)
Depth: 5ft Below ground surface
BETX: 279 Concentration of total benzene, ethylbenzene, toluene, and xylene in mg/Kg.

BETX = One compound above action limit

BETX* = One compound 100 times above action limit

BETX** = One compound 1000 times above action limit

② 2 ft bgs sidewall headspace
③ 3 ft bgs sidewall headspace
④ 4 ft bgs sidewall headspace
⑤ 5 ft bgs sidewall headspace
⑥ 6 ft bgs sidewall headspace
⑦ 7 ft bgs sidewall headspace
Ⓗ Bottom headspace

Non-potable water well

THE HUB BUILDING

2ft Shelf

4ft Shelf

SR11
PID: 210
Depth: 5ft
BETX*: 279

SR09
PID: 1210
Depth: 7ft
BETX: 994**

C-SN
PID: 1435
Depth: 4ft
BETX: 1,190**

North

BR47
PID:2810
Matrix: Peat
Depth: 8ft
BETX: 146**

BR49
PID:515
Matrix: Silt
Depth: 9ft
BETX*: 12.4

Deep Test Pit

BK04
PID:609
Depth: 12ft
BETX*: 5.24

Limit of excavation on 10/11/17

BR15
PID:190
Matrix: Peat + Silt
Depth: 8ft
BETX: 123**

SR20
PID: 241
Depth: 7ft
BETX: 520**

SR01
PID: 824
Depth: 7ft
BETX: 11.3

BR45, BR46 (Dup)
PID:392
Matrix: Dk. Silt
Depth: 9ft
BETX*: 3.72

SR24
PID: 1431
Depth: 7ft
BETX*: 50.1

BR50
PID:190
Matrix: Peat
Depth: 8ft
BETX*: 11.4

SR30
PID: 44
Depth: 7ft
BETX: .0890

SR27
PID: 995
Depth: 5ft
BETX: 7.70

SR36
PID: 4.6
Depth: 7ft
BETX: .0890

Limit of excavation on 10/22/17

0 3 6 12
GRAPHIC SCALE (IN FEET)

RELEASE INVESTIGATION
INTERIM SOIL
REMOVAL AREA

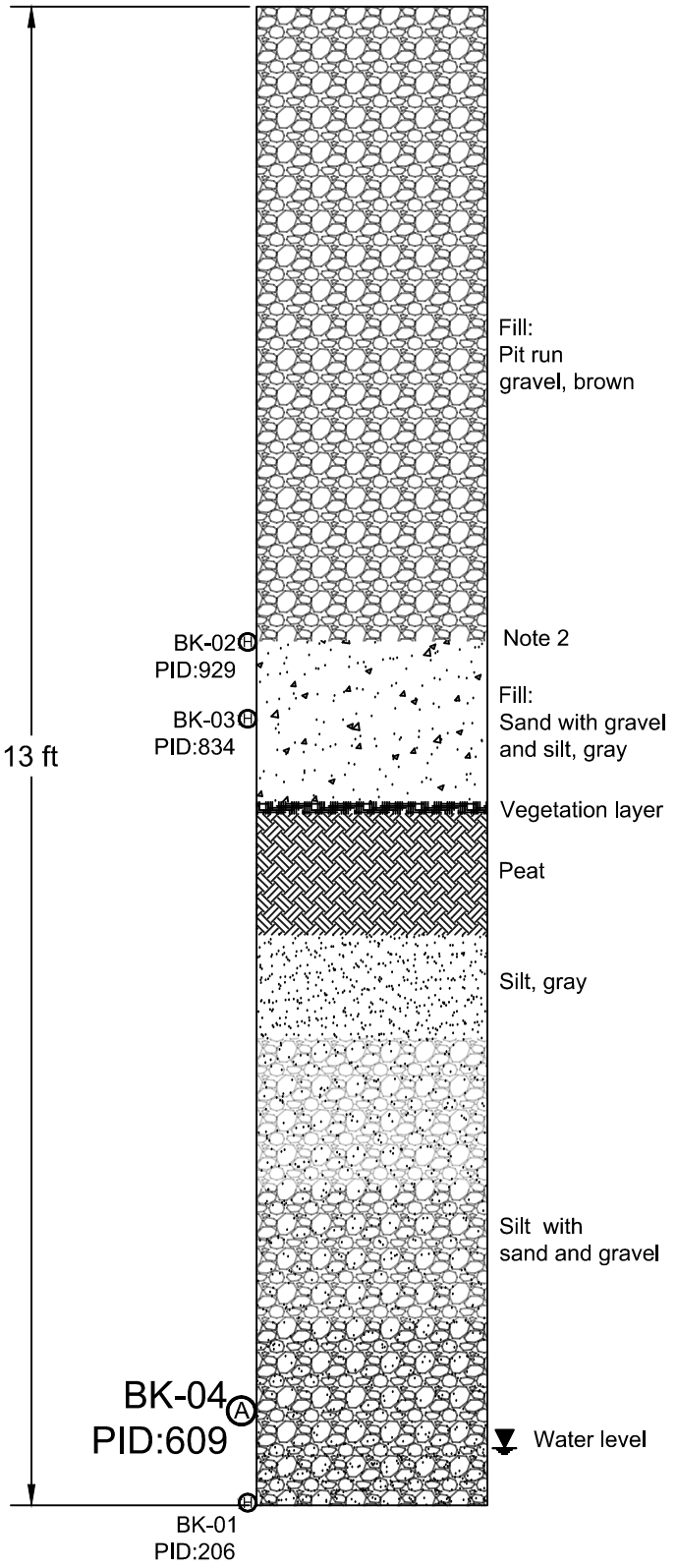
THE HUB
GLENNALLEN, ALASKA

EMI
Consulting, Engineering & Training

PREPARED: TRM
DRAWN: TRM
REVIEWED: LAH
DATE: 11/27/2017

FIGURE
3

Test Pit



Notes:

1. The cross section of the test pit represents similar strata across the entire excavation.
2. In some locations, burned debris was found on top of the sandy fill.
3. The layers just above the peat had the highest levels of contamination. That entire layer was removed and placed in the contaminated soil stockpile.
4. Most of the bottom samples were collected from the peat layer. Some locations were hand dug to expose the silt below the peat. Samples were collected from this silt in order to check the levels of contamination in this lower layer.

EXCAVATION CROSS-SECTION	THE HUB RELEASE INVESTIGATION GLENNALLEN, AK	EMI Consulting, Engineering & Training	PREPARED: TRM DRAWN: TRM REVIEWED: LAH DATE: 11/22/17	FIGURE 4

Appendix A
Field Notes

Job# 17875

THE Hub, Glennallen, AK 21-OCT-17

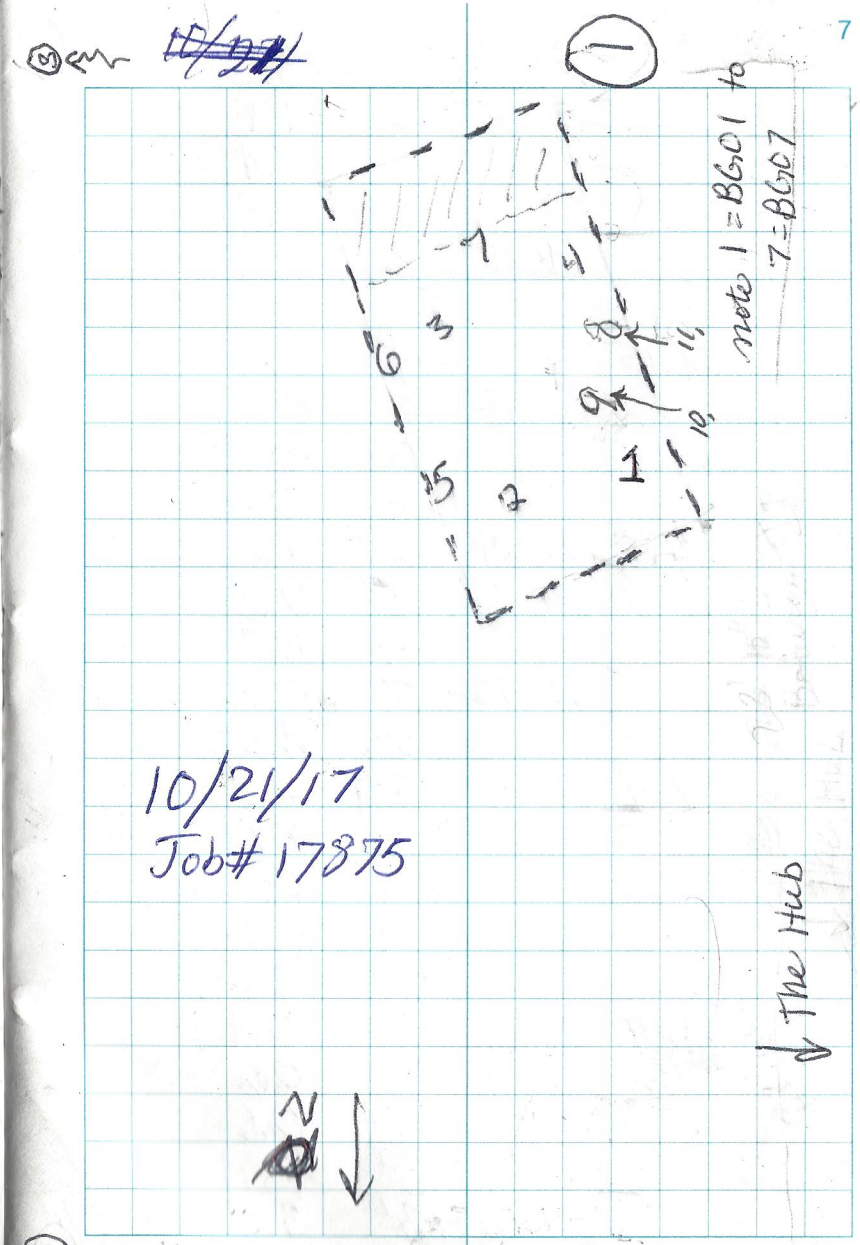
11:50 arrive on site, meet with operator. survey site. Cold/clear Wx

12:40 calibrate MiniRae 3000 with 100 ppm isobutylene, calgas reading 100.4 ppmm-

12:50 begin with excavator.

Headspace warmed on dash.

Sample ID	time	time	Depth	PID	Notes
BG01	12:53	13:21	4.5' BGS	20.0	
BG02	12:55		4.5'	4.1	
BG03	12:56		4.5'	6.0	
BG04	12:57	13:26	4.5'	35.2	
BG05	13:00		3.5'	2.8	
BG06	13:02		3.5'	5.5	
BG07	13:03		3.5'	5.8	
BG08	13:41	14:00	5'	8.1	
BG09	13:42	14:01	5'	13.1	
BG10	14:09			230.1	
BG11	14:10			143.9	
BK01	14:15		12.5' BGS	208.5	4@45° NE (#1)
BK02	14:50	15:45	5.5 BGS	929.	5'@75' NW (#2)
BK03	14:55	15:45	6.0 BGS	830.	" (#3)
BK04	~~15:45~~ 17:13	17:36	12' BGS	609	3'W; 4'N (#4) (*) Lab



10/21/17 Job# 17875

SM10	1	19:02	20:05	2	1.1	
SM	2			3	0.4	
	3			4.5	0.3	
	4		20:08	2	0.3	
	5			3	0.4	
	6	19:15		4'	0.3	
	7		20:12	2'	0.2	
	8	19:16		3'	0.5	
	9			4'	0.4	
	10	~~19:25~~ 19:15	20:14	2'	0.3	
SM	11	19:30	20:21	3'	0.3	
	12			4	0.3	corner
	13		20:22	3	0.2	
	14		20:23	2	0.2	
	15	19:37	20:33	~~34~~	~~0.3~~ 0.4	
	16		20:24	3 ~~2~~	0.3	
	17			~~24~~	~~0.2~~ 0.3	
	18		20:25	4	0.2	
	19			3	0.2	
SM	20	19:47	20:27	2	0.4	
SM	21		20:36		0.6	
	22			3	0.6	
	23			3'	43.1	
	24			3'	3.0	End of NSW 3' E of pile

10/21/17 Job# 17875

SM	25	19:56	20:39	4'	11.4	E of pile
	26			4'	7.2	
	27	19:59		4'	17.3	
	28			4'	41.0	
	29			4'	3.5	
	30		20:42	2'	3.9	
	31	20:03	20:49	3'	3.3	
	32			4	46.4	
	33			2'	3.0	
	34			3'	1.8	SE corner
	35			1	1.4	
	36	20:13		2'	1.1	
	37			3	0.9	
	38			4'	0.8	
	39			2'	0.7	
SM	40	20:22	20:55	3'	0.7	
SM	41	20:31	21:03	4'	0.4	
	42			2'	0.5	
	43			3'	0.5	
	44			4'	0.4	
	45			2'	0.4	
	46			3'	0.7	
	47	20:45	21:08	4'	0.6	4' from SW corner

10/22/17 Job# 17875

Wx: Cold and clear. (9°F)

09:00 ~~calibrate~~ calibrate MiniRAE 3000 100 ppm Isobutylene gas

Started mass ex of sandy layer between burn debris and top of the peat. Excavation started at middle by bldg and them moved east

ID					
E1	9:40	10:34	8.5'	1195	silt
E2			6'	32.8	Grav
BR01	9:44		8'	1012	Peat Brn
BR 02				760	"
03		10:37		1515	Peat Brn
04				475	Peat
05				585	Silt Gry
06	9:52			946	P+S
07	9:57	10:41		617	S.lt Grey
08				697	P+S
09				2658	"
BR 10		10:43	8'	1235	P+S
SR 01	10:13	10:05	7'	824	Sand

10/22/17 Job# 17875

SR02	11:30	12:33	6'	10.6	
SR03	10:16	11:10	5'	5.5	Gravel
SR04	10:18	11:11	6'	57.8	
BR11	10:23		8'	1557	Peat
BR12			8'	758	S+P Limit
BR13			8'	623	Peat
BR14	10:41	11:18	8'	990	Dk Sl Peat
15		11:42	8'	2877	P+S
16			8'	1623	DK S+P
17			8'	1718	"
18			8'	944	"
19			8'	971	P+S
20	10:57	11:46	8.5	565	Gry Silt
SR05	11:30	12:34	5'	9.6	G
SR06				10.0	G
SR07				3.2	G
SR08	11:35		7'	510	Sand
BR21	11:23	12:40	7'	19.6	Grav
22			7'	27.3	G+S
23			6'	15.3	
24			6	24.4	Silt
25			8	965	Peat
26			8	800	Sand
27			8	1907	Peat

10/22/17 Job# 17875

BR ~~28~~ 28		12:47	8'	1580	Peat
BR 29		12:47	8	1811	"
BR 30	11:39	12:48	8'	2681	"
BR 31	11:51		11 ~~8~~ 5'	2132	"
32			8	2295	"
33			9.5	795	Silt
34			8'	1830	Peat
35	12:01	12:53	8'	2086	"
36				1883	"
37				1058	"
38				970	"
39				1669	"
40	12:18	12:57		289	Gravel
41	12:21	13:30	8'	1021	Peat
42				844	Peat
43				650	Peat
44			8'	1150	Peat
45	12:40		9'	392	DK Silt
46		13:39	8'	1223	Peat
47	12:45			2810	Peat
48				976	"
49		13:43	9'	515	Silt
~~BR 50~~					

10/22/17 Job# 17875

EO3	13:35	13:48	6'	1213	10 E (3)
EO4			7'	382	3 E (3)
EO5			7'	42	3 S (3)
EO6	13:40	13:50	6'	32.3	10 S (3)
SR11	13:06	14:01	5'	210	Sand
12			7'	997	
13			5'	916	
14			7'	386	
15		14:06	5'	667	Black layer.
SR10	13:31	14:29	5'	922.	Outside crater
09	13:30	14:30	7'	1270.	
SR16	13:49		7'	1290.	NE corner
SR13			7'	506	
SR17			5'	1342	
SR19			5'	1160	
SR20	13:58	14:42	7'	241	
SR21		15:10	5'	684	
22			7'	380	
23			5'	1205	
24			7'	1431	
25	14:10		5'	1302	
26			7'	1452	
27	14:19	15:16	5'	995	SE Corner was found

10/22/17 Job # 17875

X02	14:00	15:20	4'	38.6	R7 ~~R7~~
X03			5'	47.1	R2 ~~R2~~
X04			8'	13.2	R2
X05			2'	16.4	~~R3~~ R2
X06			4'	21.8	R3
X07			7'	21.1	R3
X08			8'	22.7	R3
X09			5'	41.2	R3
X10			2'	52.3	R3
X11			2'	61.5	R4
X12			5'	61.8	R4
X13			8'	55.0	R4
X14			7'	8.2	R4
X15		15:35	4'	5.8	R4
X01	14:30	15:35	4'	29.9	R1
~~SR28~~			7'	22.7	
SR 29			5'	8.1	
30	14:25		7'	44.0	
31	14:45		5'	5.0	
32			7'	5.0	
33			5'	2.5	
35 ~~34~~			5'	2.2	SW Corner
34 ~~35~~			7'	21.9	
SR 36		15:45	7'	4.6	

10/22/17 Job # 17875

X16	14:40	15:45	3'	42.4	
X17			6'	35.2	
X18			8'	16.1	
X19	14:55	15:30	5'	8.5	R5
X20		15:50	2'	5.3	R5
X21		15:51	2'	24.2	R6
X22		15:51	5'	20.7	
X23	15:02	15:52	8'	11.0	
X24		15:52	6'	4.7	
X25		15:53	4'	5.0	
SR37			5'	2.3	
SR38			7	27.5	
BR34	15:20 ~~15:41~~	16:00	8'	1287	Peat
BR50	15:41		8'	190	Peat
BR51			8'	91.4	Peat
BR52			8'	74.8	"
BR53		16:03	8'	163	Peat
X26	15:30	16:18	2'	63.7	R7
X27			8'	13.9	R7
X28			6'	8.7	R7
X29			6'	54.1	R8
X30			8'	8.7	R8
X31			2'	8.2	R8
X32		16:22	2	29.0	R9

10/22/17 Job#17875

X33	15:52	16	7	82.6	R9
X34		16:52	6	0.8	MR2CC
X35		16:52	6	1.3	R10
36		16:53	7	2.0	
37	16:08	16:54	3	0.6	

PID cal check 16:51 97.5 ppm w Iso

X02R		4'	19.3	R1
X02L	16:27	4'	17.4	R1
X02C		4'	5.5	R1
X38		2'	1.5	R11
39		7'	0.8	R11
40		6'	5.3	R11
41		4'	4.4	R12
42		4'	21	R12

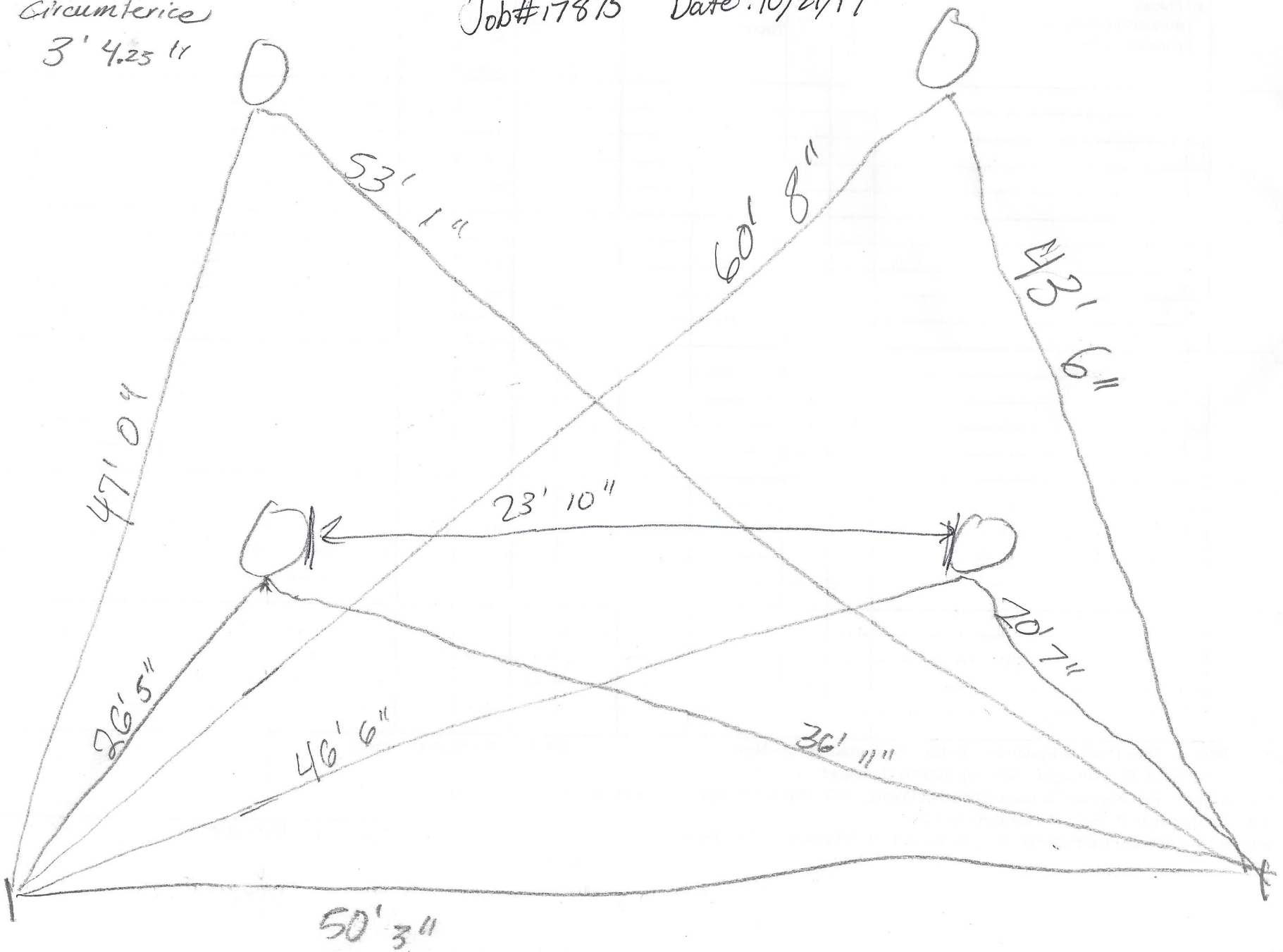
Well 4' + 7 3/4'

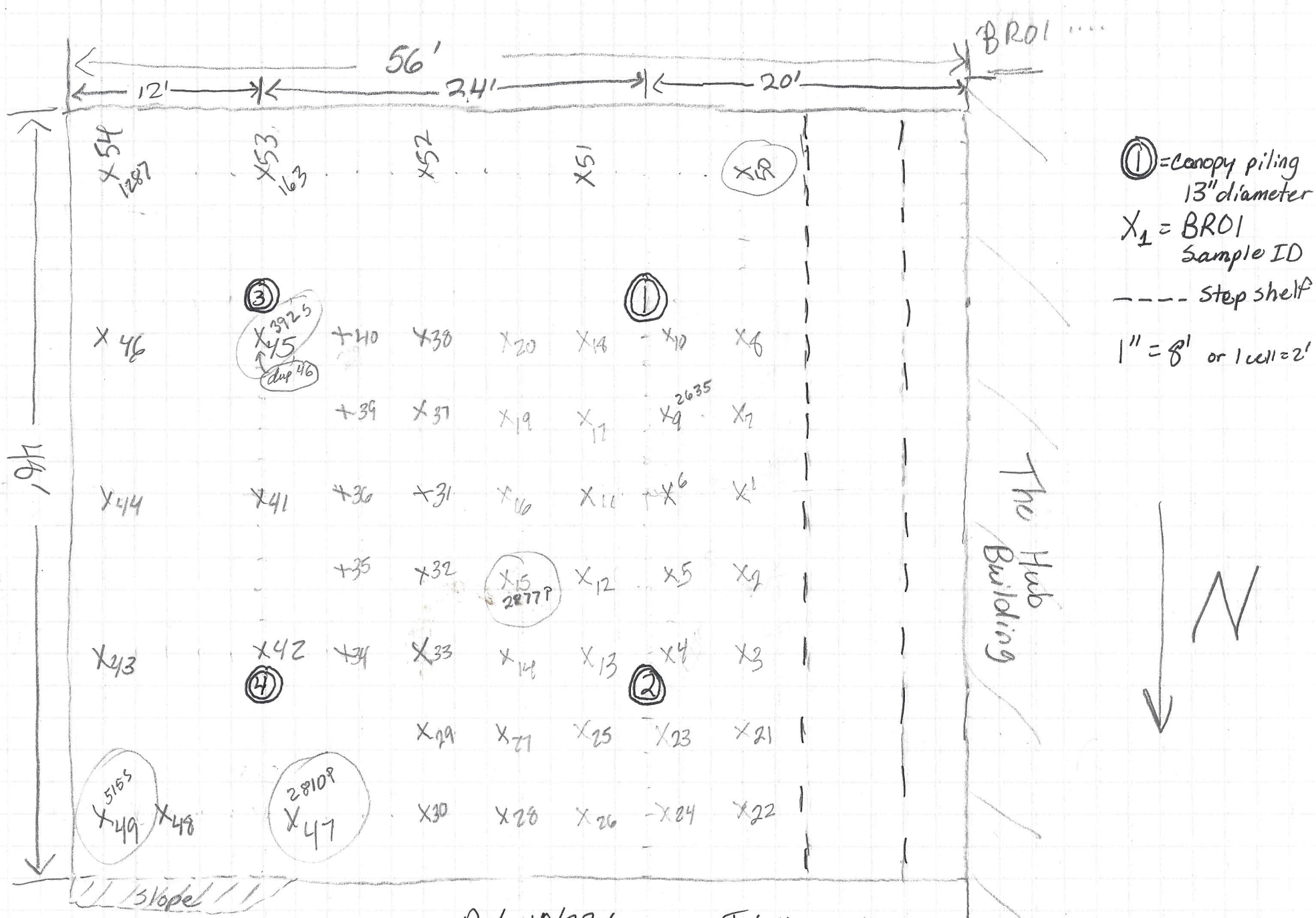
Dirty stockpile: 39x 48x12

Fig #1 Rough Measurements for Canopy pilings

The Hub Glennallen, AK

Job#17875 Date: 10/21/17



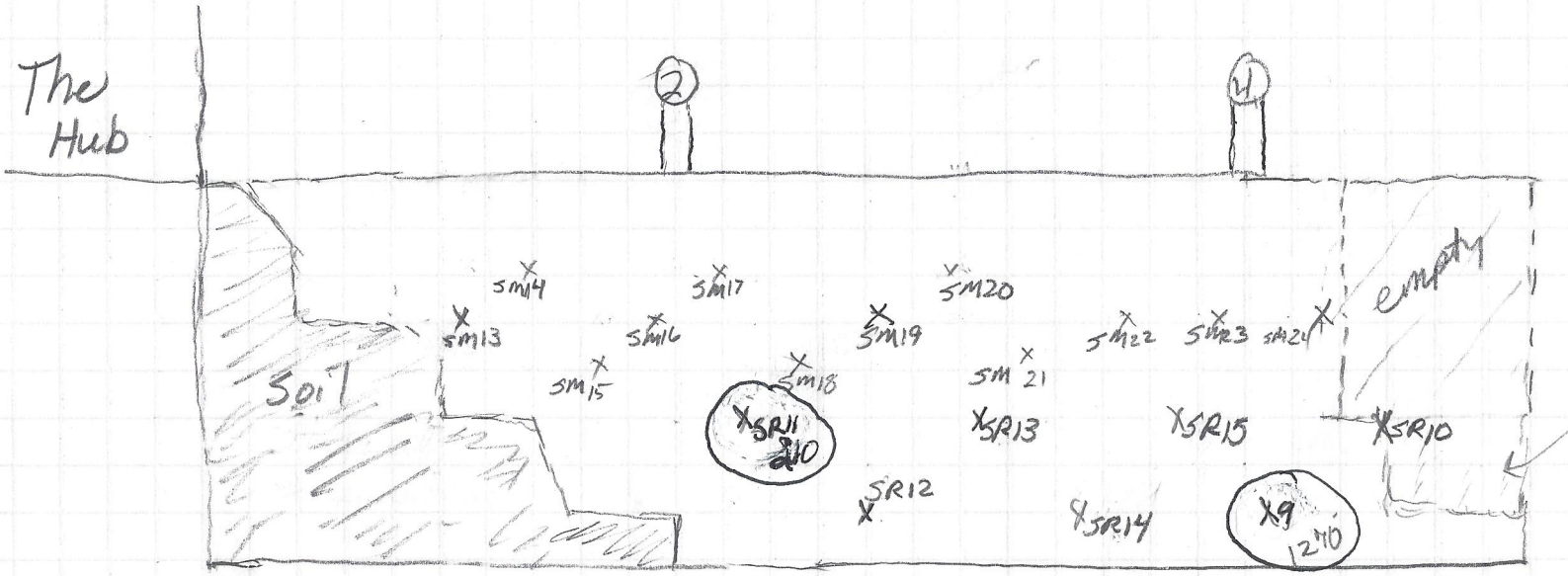


Date: 10/22/17 Job#: 17875

Fig# 2 Dispensor Area: Bottom Sample Locations.

The Hub Glennallen, Ak

Scale:
1" = 8' Horz
1" = 4' Vert



= empty area on sidewall - dug Back.

= soil step down in front of Hub foundation

X_{SR13} = sidewall sample SR13 = x_{13}

X^{210}_{SR11} = ~~analytical~~ analytical sample ID=SR11 D10=210

(2) alignment of pilings that are 12' from wall.

Fig#3 Dispensor Area: North side wall

The Hub, Glennallen, AK
Job# 17875 Date: 10/22/17

2' Horiz
1' Vert

A=
50X5=250 s.f

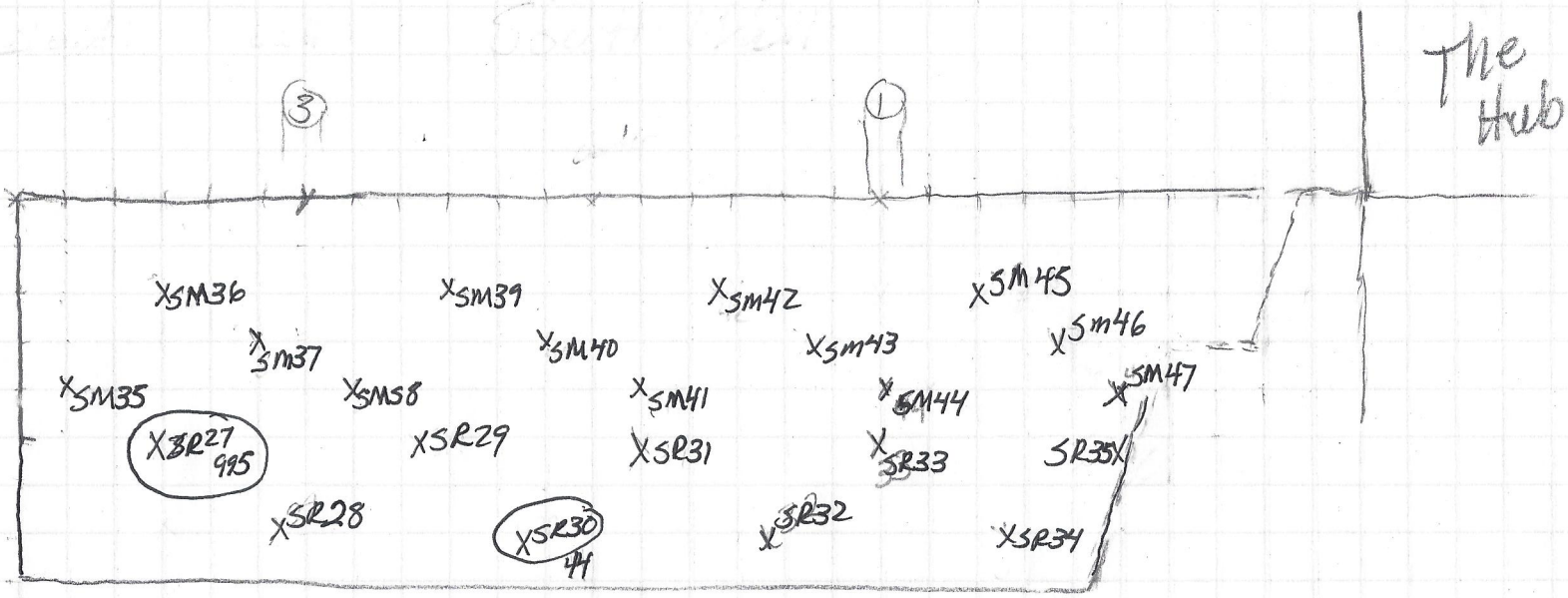
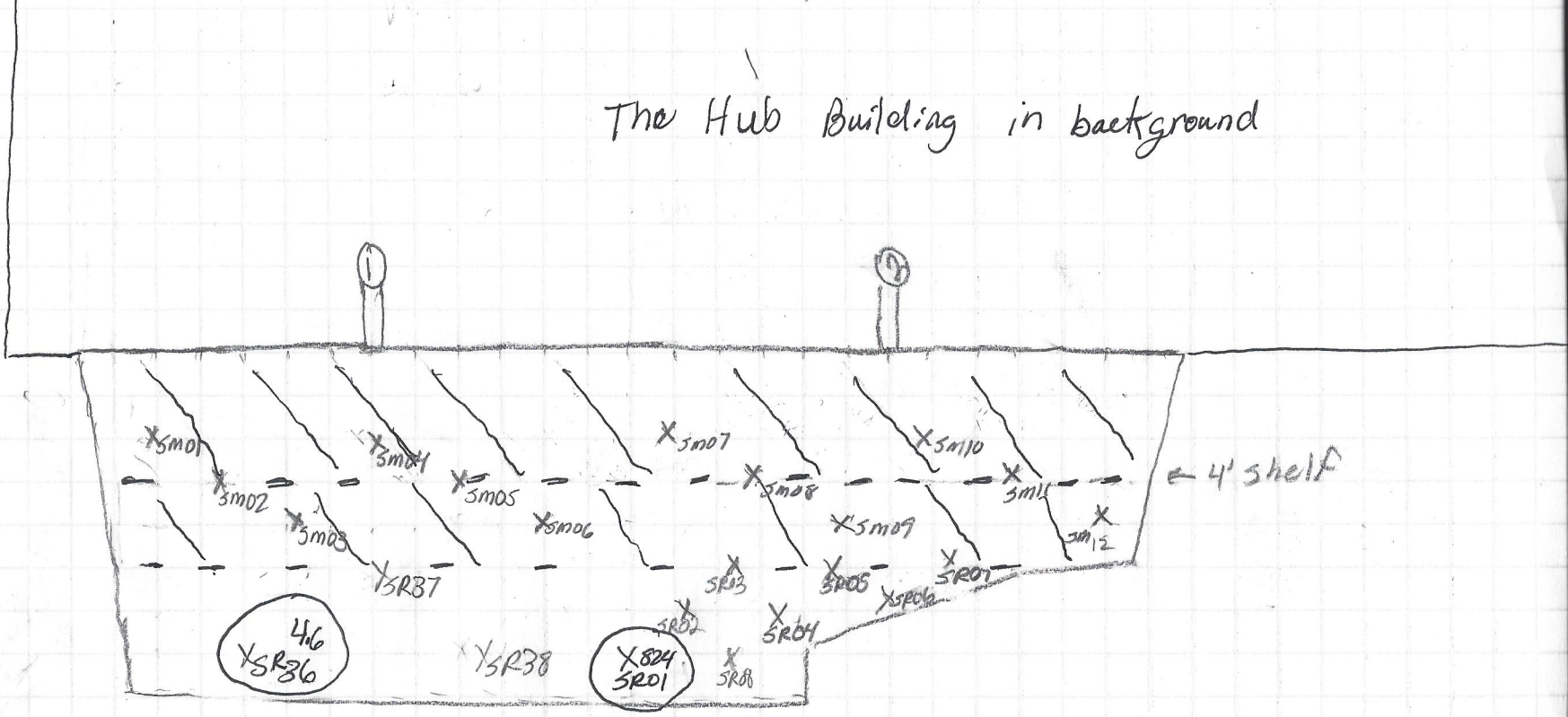


Figure #4

Date: 10/22/17 Job# 17875

Dispensor Area: South Sidewall

The Hub, Glennallen, AK



X_{SR38} = sidewall sample
headspace = SR38

(4.6 X_{SR36}) = Analytical sample SR36

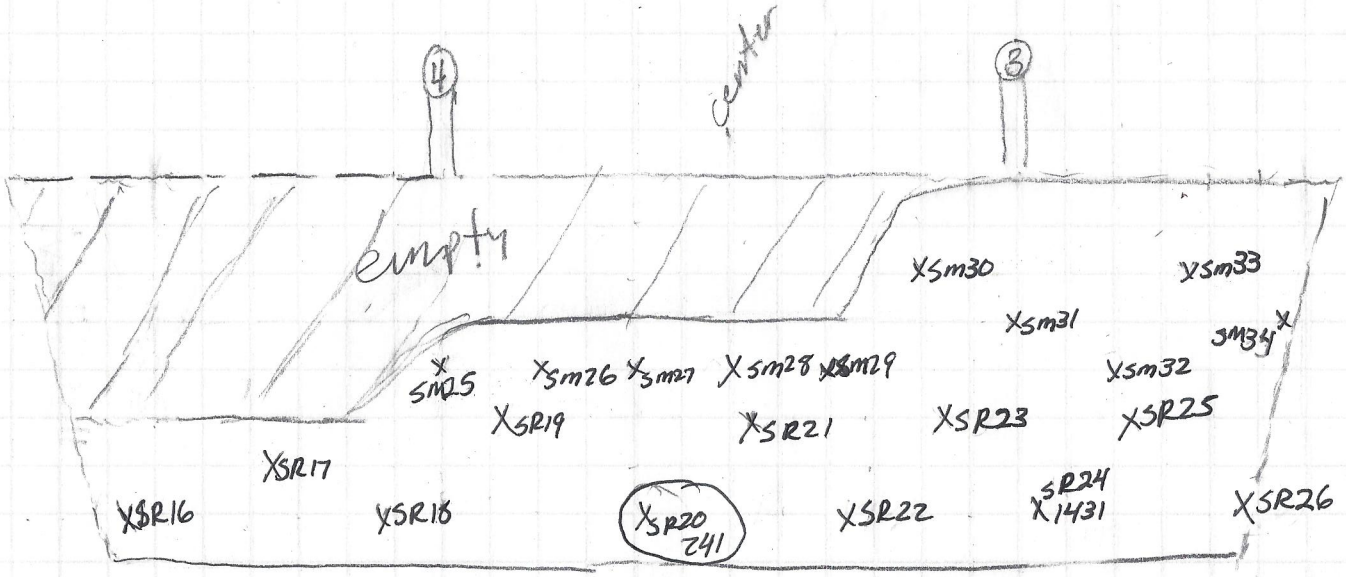
(1) = alignment of piling #1 that is from this wall

side wall step down

Fig# 5 Dispensor Area: West Sidewall

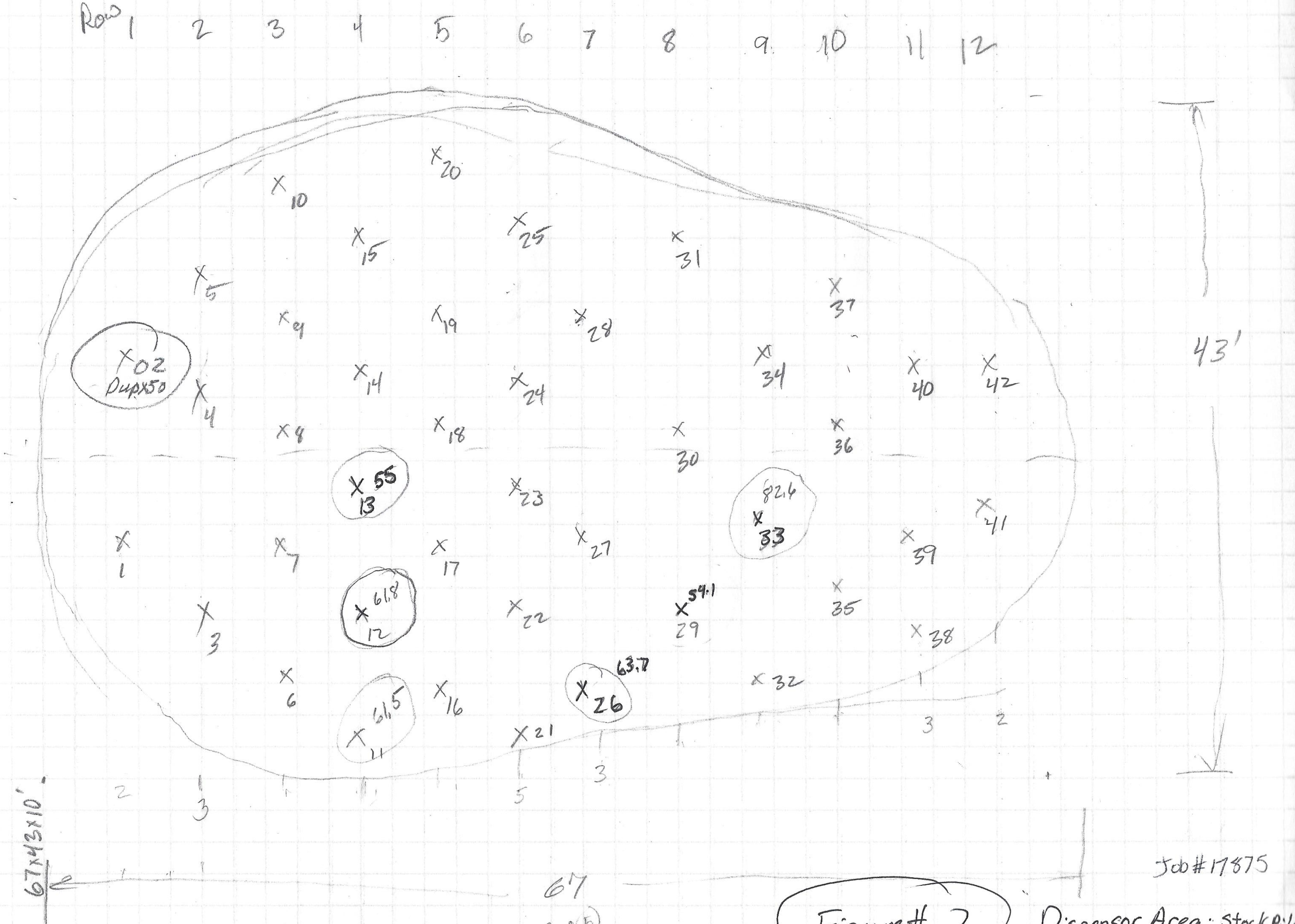
The Hub, Glennallen, AK
Job# 17875 Date: 10/22/17

Scale: 1" = 8' Horz.
1" = 4' Vert



//// = area excavated back out of target area. (Prior excavation)

Fig#6 Dispensor Area: East Sidewall
The Hub, Glennallen, AK
Job#17875 Date: 10/22/17



Job#17875

Figure# 7

Dispensor Area: StockPile
Date: 10-22-17

67x35 x10" 43 35 = 278 Ends = 50 TOT≈ 350CY

3+2 (5)
4 rows 5 20
6 rows 3 18
2 rows 2 2

Appendix B
Photo Pages

Photo Log

Photo 1: Burned debris encountered during excavation of the release from the first fuel island. Looking Northwest (10/21/2017)

Photo 2: Sandy layer found under the burned debris. Looking Northeast (10/21/2017)

Photo Log

Photo 3 Peat layer found under the layer of sandy fill. Looking North (10/21/17)

Photo 4 Deep test pit dug at the release site from the middle fuel island. Looking East (10/21/17)

Photo 5 Peat layer on the bottom of the excavation. Looking Northeast. (10/22/17)

Photo 6 Sidewalls of the excavation. Looking Northwest (10/22/17)

Photo Log

Photo 7 Sidewalls of the excavation. Looking Northeast (10/22/17)

Photo 8 Sidewalls of the excavation. Looking Southeast (10/22/17)

Photo 9 Sidewalls of the excavation. Looking Southwest (10/22/17)

Photo 10 Non-Potable water well . Looking West (10/22/17)

Photo 11 Contaminated Soil Stockpile. Looking West (10/22/17)

Photo 12 Contaminated Soil Stockpile. Looking North (10/22/17)

Photo Log

	
Photo 13 Looking Northeast. Plastic tarp being placed as a visible indicator of the top of the clean fill brought in from off site. (10/24/17)	**Photo 14** Looking Northwest. Dirt from the segregated and sampled stockpile being placed on the plastic tarp. (10/24/17)

Appendix C
SGS Laboratory Report and ADEC Laboratory Data Review Checklist

Laboratory Report of Analysis

To: Environmental Mgmt Inc (EMI)
206 E Fireweed Ln #201
Anchorage, AK 995032703
(907)272-9336

Report Number: **1179324**

Client Project: **Hub Release Investigation17875**

Dear Larry Helgeson,

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

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

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

Sincerely,
SGS North America Inc.

Victoria Pennick Date
Project Manager
Victoria.Pennick@sgs.com

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: Environmental Mgmt Inc (EMI)

SGS Project: 1179324

Project Name/Site: Hub Release Investigation17875

Refer to sample receipt form for information on sample condition.

SR01 **1179324008 PS**
8260C - Surrogate recovery for 4-bromofluorobenzene (160%) does not meet QC criteria due to matrix interference.

SR09 **1179324009 PS**
AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (20X).
8260C - Surrogate recovery for 4-bromofluorobenzene (241%) does not meet QC criteria due to matrix interference.
AK101 - Surrogate recovery for 4-bromofluorobenzene (12200%) does not meet QC criteria due to matrix.

SR11 **1179324010 PS**
AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (20X).
8260C - Surrogate recovery for 4-bromofluorobenzene (211%) does not meet QC criteria due to matrix interference.
AK101 - Surrogate recovery for 4-bromofluorobenzene (2820%) does not meet QC criteria due to matrix.

SR20 **1179324011 PS**
AK102 - Surrogate recovery for 5a-androstane (153%) does not meet QC criteria due to matrix interference.
8260C - Surrogate recovery for 4-bromofluorobenzene (198%) does not meet QC criteria due to matrix interference.
AK101 - Surrogate recovery for 4-bromofluorobenzene (5020%) does not meet QC criteria due to matrix.

SR24 **1179324012 PS**
8260C - Surrogate recovery for 4-bromofluorobenzene (180%) does not meet QC criteria due to matrix interference.
AK101 - Surrogate recovery for 4-bromofluorobenzene (1720%) does not meet QC criteria due to matrix.

SR27 **1179324013 PS**
AK102 - Surrogate recovery for 5a-androstane (0%) does not meet QC criteria due to sample dilution (4X) and a final extraction volume of 5 mL.
AK101 - Surrogate recovery for 4-bromofluorobenzene (539%) does not meet QC criteria due to matrix.

BR15 **1179324016 PS**
AK101 - Surrogate recovery for 4-bromofluorobenzene (30.2%) does not meet QC criteria due to dilution (10X).
8270D SIM - The PAH LOQs are elevated due to sample dilution (4X). The sample was diluted due to the dark color of the extract.

BR45 **1179324017 PS**
8260C - Surrogate recovery for 4-bromofluorobenzene (197%) does not meet QC criteria due to matrix interference.

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

Case Narrative

SGS Client: Environmental Mgmt Inc (EMI)

SGS Project: 1179324

Project Name/Site: Hub Release Investigation17875

BR46 **1179324018 PS**
8260C - Surrogate recovery for 4-bromofluorobenzene (239%) does not meet QC criteria due to matrix interference.

BR47 **1179324019 PS**
AK101 - Surrogate recovery for 4-bromofluorobenzene (32.7%) does not meet QC criteria. Sample was analyzed twice and results confirm.

BR50 **1179324021 PS**
AK101 - Surrogate recovery for 4-bromofluorobenzene (183%) does not meet QC criteria. Sample was analyzed twice and GRO results confirm.

1179324001MSD **1423941 MSD**
8260C - MSD recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy.
8260C - MSD RPD for several analytes do not meet QC criteria. Results for these analytes are estimated in the parent sample.

1179324018MS **1423971 MS**
8260C - MS recovery for benzene (60%) does not meet QC criteria. Refer to LCS for accuracy.
8260C - Surrogate recovery for 4-bromofluorobenzene (185%) does not meet QC criteria due to matrix interference.

1179324018MSD **1423972 MSD**
8260C - Surrogate recovery for 4-bromofluorobenzene (209%) does not meet QC criteria due to matrix interference.

1178572021MSD **1423980 MSD**
8260C - MSD RPD for naphthalene (22.5%) does not meet QC criteria. This analyte was not detected above the LOQ in the parent sample.

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

Laboratory Qualifiers

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

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

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

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

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

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

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

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
X02	1179324001	10/22/2017	10/24/2017	Soil/Solid (dry weight)
X11	1179324002	10/22/2017	10/24/2017	Soil/Solid (dry weight)
X12	1179324003	10/22/2017	10/24/2017	Soil/Solid (dry weight)
X13	1179324004	10/22/2017	10/24/2017	Soil/Solid (dry weight)
X26	1179324005	10/22/2017	10/24/2017	Soil/Solid (dry weight)
X33	1179324006	10/22/2017	10/24/2017	Soil/Solid (dry weight)
X50	1179324007	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR01	1179324008	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR09	1179324009	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR11	1179324010	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR20	1179324011	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR24	1179324012	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR27	1179324013	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR30	1179324014	10/22/2017	10/24/2017	Soil/Solid (dry weight)
SR36	1179324015	10/22/2017	10/24/2017	Soil/Solid (dry weight)
BR15	1179324016	10/22/2017	10/24/2017	Soil/Solid (dry weight)
BR45	1179324017	10/22/2017	10/24/2017	Soil/Solid (dry weight)
BR46	1179324018	10/22/2017	10/24/2017	Soil/Solid (dry weight)
BR47	1179324019	10/22/2017	10/24/2017	Soil/Solid (dry weight)
BR49	1179324020	10/22/2017	10/24/2017	Soil/Solid (dry weight)
BR50	1179324021	10/22/2017	10/24/2017	Soil/Solid (dry weight)
BK04	1179324022	10/21/2017	10/24/2017	Soil/Solid (dry weight)
VW8-91-42	1179324023	10/20/2017	10/24/2017	Soil/Solid (dry weight)
W-01	1179324024	10/21/2017	10/24/2017	Water (Surface, Eff., Ground)
VLP	1179324025	10/20/2017	10/24/2017	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel Range Organics (S)
AK102	DRO Low Volume (W)
AK101	Gasoline Range Organics (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted
SW8260C	Volatile Organic Compounds (W) FULL

Detectable Results Summary

Client Sample ID: **X02**
Lab Sample ID: 1179324001
Semivolatile Organic Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	23.5	mg/Kg
1,2,4-Trimethylbenzene	45.4	ug/Kg
1,3,5-Trimethylbenzene	24.9	ug/Kg
Benzene	11.1	ug/Kg
o-Xylene	49.5	ug/Kg
P & M -Xylene	81.6	ug/Kg
Toluene	18.5	ug/Kg

Client Sample ID: **X11**
Lab Sample ID: 1179324002
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	148	mg/Kg
Gasoline Range Organics	4.32	mg/Kg
1,2,4-Trimethylbenzene	54.0	ug/Kg
1,3,5-Trimethylbenzene	55.2	ug/Kg
Benzene	17.3	ug/Kg
Naphthalene	24.6	ug/Kg
o-Xylene	20.5	ug/Kg
P & M -Xylene	45.6	ug/Kg
Toluene	17.4	ug/Kg

Client Sample ID: **X12**
Lab Sample ID: 1179324003
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	85.4	mg/Kg

Client Sample ID: **X13**
Lab Sample ID: 1179324004
Semivolatile Organic Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	92.6	mg/Kg
1,2,4-Trimethylbenzene	67.8	ug/Kg
1,3,5-Trimethylbenzene	46.7	ug/Kg
o-Xylene	38.0	ug/Kg

Client Sample ID: **X26**
Lab Sample ID: 1179324005
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	112	mg/Kg
Gasoline Range Organics	3.49	mg/Kg
1,2,4-Trimethylbenzene	253	ug/Kg
1,3,5-Trimethylbenzene	104	ug/Kg
Benzene	81.9	ug/Kg
Ethylbenzene	46.9	ug/Kg
Naphthalene	57.6	ug/Kg
o-Xylene	69.8	ug/Kg
P & M -Xylene	193	ug/Kg
Toluene	91.0	ug/Kg

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

Detectable Results Summary

Client Sample ID: **X33**
Lab Sample ID: 1179324006

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Acenaphthene	43.0	ug/Kg
	Fluoranthene	61.4	ug/Kg
	Fluorene	46.4	ug/Kg
	Phenanthrene	149	ug/Kg
	Pyrene	40.6	ug/Kg
Volatile GC/MS	1,2,4-Trimethylbenzene	70.2	ug/Kg
	1,3,5-Trimethylbenzene	40.0	ug/Kg
	Benzene	9.96	ug/Kg
	o-Xylene	21.4	ug/Kg

Client Sample ID: **X50**
Lab Sample ID: 1179324007

	Parameter	Result	Units
Volatile GC/MS	1,2,4-Trimethylbenzene	34.2	ug/Kg
	1,3,5-Trimethylbenzene	20.5	ug/Kg
	Benzene	55.5	ug/Kg
	Ethylbenzene	18.9	ug/Kg
	o-Xylene	38.5	ug/Kg
	P & M -Xylene	65.5	ug/Kg
	Toluene	50.4	ug/Kg

Client Sample ID: **SR01**
Lab Sample ID: 1179324008

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	836	mg/Kg
Volatile Fuels	Gasoline Range Organics	5.21	mg/Kg
Volatile GC/MS	1,2,4-Trimethylbenzene	813	ug/Kg
	1,2-Dichloroethane	36.2	ug/Kg
	1,3,5-Trimethylbenzene	420	ug/Kg
	Benzene	787	ug/Kg
	Ethylbenzene	1380	ug/Kg
	Isopropylbenzene (Cumene)	152	ug/Kg
	Naphthalene	190	ug/Kg
	o-Xylene	1120	ug/Kg
	P & M -Xylene	3570	ug/Kg
	Toluene	4420	ug/Kg

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

Detectable Results Summary

Client Sample ID: **SR09**
Lab Sample ID: 1179324009
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	2890	mg/Kg
Gasoline Range Organics	3240	mg/Kg
1,2,4-Trimethylbenzene	127000	ug/Kg
1,3,5-Trimethylbenzene	35300	ug/Kg
Benzene	46600	ug/Kg
Ethylbenzene	116000	ug/Kg
Isopropylbenzene (Cumene)	23700	ug/Kg
Naphthalene	15700	ug/Kg
o-Xylene	135000	ug/Kg
P & M -Xylene	327000	ug/Kg
sec-Butylbenzene	7110	ug/Kg
Toluene	369000	ug/Kg

Client Sample ID: **SR11**
Lab Sample ID: 1179324010
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	4060	mg/Kg
Gasoline Range Organics	1290	mg/Kg
1,2,4-Trimethylbenzene	96500	ug/Kg
1,3,5-Trimethylbenzene	25700	ug/Kg
Benzene	6820	ug/Kg
Ethylbenzene	22200	ug/Kg
Isopropylbenzene (Cumene)	6340	ug/Kg
Naphthalene	50100	ug/Kg
o-Xylene	63300	ug/Kg
P & M -Xylene	115000	ug/Kg
sec-Butylbenzene	2290	ug/Kg
Toluene	71800	ug/Kg

Client Sample ID: **SR20**
Lab Sample ID: 1179324011
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	1390	mg/Kg
Gasoline Range Organics	1590	mg/Kg
1,2,4-Trimethylbenzene	71500	ug/Kg
1,3,5-Trimethylbenzene	25900	ug/Kg
Benzene	28700	ug/Kg
Ethylbenzene	64800	ug/Kg
Isopropylbenzene (Cumene)	12500	ug/Kg
Naphthalene	10500	ug/Kg
o-Xylene	70600	ug/Kg
P & M -Xylene	178000	ug/Kg
sec-Butylbenzene	3760	ug/Kg
Toluene	178000	ug/Kg

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

Detectable Results Summary

Client Sample ID: **SR24**
Lab Sample ID: 1179324012
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	281	mg/Kg
Gasoline Range Organics	435	mg/Kg
1,2,4-Trimethylbenzene	26800	ug/Kg
1,3,5-Trimethylbenzene	9280	ug/Kg
Benzene	623	ug/Kg
Ethylbenzene	14600	ug/Kg
Isopropylbenzene (Cumene)	4700	ug/Kg
Naphthalene	4050	ug/Kg
o-Xylene	3660	ug/Kg
P & M -Xylene	26500	ug/Kg
sec-Butylbenzene	1330	ug/Kg
Toluene	4690	ug/Kg

Client Sample ID: **SR27**
Lab Sample ID: 1179324013
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	1570	mg/Kg
Gasoline Range Organics	92.4	mg/Kg
1,2,4-Trimethylbenzene	3340	ug/Kg
1,3,5-Trimethylbenzene	1570	ug/Kg
Benzene	134	ug/Kg
Ethylbenzene	4040	ug/Kg
Isopropylbenzene (Cumene)	731	ug/Kg
Naphthalene	306	ug/Kg
o-Xylene	50.5	ug/Kg
P & M -Xylene	3390	ug/Kg
sec-Butylbenzene	158	ug/Kg
Toluene	84.1	ug/Kg

Client Sample ID: **SR30**
Lab Sample ID: 1179324014
Volatile GC/MS

Parameter	Result	Units
Benzene	11.8	ug/Kg

Client Sample ID: **SR36**
Lab Sample ID: 1179324015
Volatile GC/MS

Parameter	Result	Units
Benzene	15.3	ug/Kg

Client Sample ID: **BR15**
Lab Sample ID: 1179324016
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	528	mg/Kg
Gasoline Range Organics	348	mg/Kg
1,2-Dichloroethane	161	ug/Kg
Benzene	23700	ug/Kg
Ethylbenzene	15400	ug/Kg
o-Xylene	17100	ug/Kg
P & M -Xylene	32300	ug/Kg
Toluene	34800	ug/Kg

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

Detectable Results Summary

Client Sample ID: **BR45**
Lab Sample ID: 1179324017

	Parameter	Result	Units
Volatile Fuels	Gasoline Range Organics	7.52	mg/Kg
Volatile GC/MS	Benzene	3300	ug/Kg

Client Sample ID: **BR46**
Lab Sample ID: 1179324018

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	35.4	mg/Kg
Volatile Fuels	Gasoline Range Organics	8.16	mg/Kg
Volatile GC/MS	Benzene	3590	ug/Kg

Client Sample ID: **BR47**
Lab Sample ID: 1179324019

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	557	mg/Kg
Volatile Fuels	Gasoline Range Organics	266	mg/Kg
Volatile GC/MS	1,2,4-Trimethylbenzene	1260	ug/Kg
	1,2-Dichloroethane	832	ug/Kg
	1,3,5-Trimethylbenzene	326	ug/Kg
	Benzene	28700	ug/Kg
	Ethylbenzene	13900	ug/Kg
	Isopropylbenzene (Cumene)	392	ug/Kg
	o-Xylene	13500	ug/Kg
	P & M -Xylene	30100	ug/Kg
	Toluene	59500	ug/Kg

Client Sample ID: **BR49**
Lab Sample ID: 1179324020

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	35.5	mg/Kg
Volatile Fuels	Gasoline Range Organics	27.6	mg/Kg
Volatile GC/MS	1,2,4-Trimethylbenzene	134	ug/Kg
	1,2-Dichloroethane	50.7	ug/Kg
	1,3,5-Trimethylbenzene	29.4	ug/Kg
	Benzene	11000	ug/Kg
	Ethylbenzene	597	ug/Kg
	Isopropylbenzene (Cumene)	118	ug/Kg
	Naphthalene	211	ug/Kg
	o-Xylene	64.7	ug/Kg
	P & M -Xylene	410	ug/Kg
	sec-Butylbenzene	35.8	ug/Kg
	Toluene	281	ug/Kg

Client Sample ID: **BR50**
Lab Sample ID: 1179324021

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	331	mg/Kg
Volatile Fuels	Gasoline Range Organics	11.3	mg/Kg
Volatile GC/MS	Benzene	7370	ug/Kg
	Ethylbenzene	2520	ug/Kg
	P & M -Xylene	1450	ug/Kg

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

Detectable Results Summary

Client Sample ID: **BK04**
Lab Sample ID: 1179324022
Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Gasoline Range Organics	6.65	mg/Kg
1,2-Dichloroethane	39.7	ug/Kg
Benzene	5050	ug/Kg

Client Sample ID: **W-01**
Lab Sample ID: 1179324024
Volatile GC/MS

Parameter	Result	Units
1,2,4-Trimethylbenzene	4.02	ug/L
1,2-Dichloroethane	1.62	ug/L
1,3,5-Trimethylbenzene	1.30	ug/L
Benzene	19.4	ug/L
Ethylbenzene	6.91	ug/L
Isopropylbenzene (Cumene)	1.39	ug/L
Naphthalene	2.82	ug/L
P & M -Xylene	8.38	ug/L

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

Results of **X02**

Client Sample ID: **X02**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324001
Lab Project ID: 1179324

Collection Date: 10/22/17 17:17
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	23.5		21.2	6.56	mg/Kg	1		10/28/17 23:52
Surrogates								
5a Androstane (surr)	74.8		50-150		%	1		10/28/17 23:52

Batch Information

Analytical Batch: XFC13924
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/28/17 23:52
Container ID: 1179324001-A

Prep Batch: XXX38741
Prep Method: SW3550C
Prep Date/Time: 10/25/17 09:58
Prep Initial Wt./Vol.: 30.084 g
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **X02**

Client Sample ID: **X02**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324001
Lab Project ID: 1179324

Collection Date: 10/22/17 17:17
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.81	U	1.81	0.544	mg/Kg	1		11/03/17 03:05
Surrogates								
4-Bromofluorobenzene (surr)	82.5		50-150		%	1		11/03/17 03:05

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 03:05
Container ID: 1179324001-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:17
Prep Initial Wt./Vol.: 87.709 g
Prep Extract Vol: 30.0101 mL

Results of **X02**

Client Sample ID: **X02**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324001
Lab Project ID: 1179324

Collection Date: 10/22/17 17:17
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	45.4		36.3	10.9	ug/Kg	1		10/31/17 13:55
1,2-Dibromoethane	7.26	U	7.26	2.25	ug/Kg	1		10/31/17 13:55
1,2-Dichloroethane	7.26	U	7.26	2.25	ug/Kg	1		10/31/17 13:55
1,3,5-Trimethylbenzene	24.9		18.1	5.66	ug/Kg	1		10/31/17 13:55
Benzene	11.1		9.07	2.83	ug/Kg	1		10/31/17 13:55
Ethylbenzene	18.1	U	18.1	5.66	ug/Kg	1		10/31/17 13:55
Isopropylbenzene (Cumene)	18.1	U	18.1	5.66	ug/Kg	1		10/31/17 13:55
Methyl-t-butyl ether	72.6	U	72.6	22.5	ug/Kg	1		10/31/17 13:55
Naphthalene	18.1	U	18.1	5.66	ug/Kg	1		10/31/17 13:55
n-Butylbenzene	18.1	U	18.1	5.66	ug/Kg	1		10/31/17 13:55
o-Xylene	49.5		18.1	5.66	ug/Kg	1		10/31/17 13:55
P & M -Xylene	81.6		36.3	10.9	ug/Kg	1		10/31/17 13:55
sec-Butylbenzene	18.1	U	18.1	5.66	ug/Kg	1		10/31/17 13:55
tert-Butylbenzene	18.1	U	18.1	5.66	ug/Kg	1		10/31/17 13:55
Toluene	18.5		18.1	5.66	ug/Kg	1		10/31/17 13:55
Surrogates								
1,2-Dichloroethane-D4 (surr)	99.9		71-136		%	1		10/31/17 13:55
4-Bromofluorobenzene (surr)	130		55-151		%	1		10/31/17 13:55
Toluene-d8 (surr)	97.4		85-116		%	1		10/31/17 13:55

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 13:55
Container ID: 1179324001-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:17
Prep Initial Wt./Vol.: 87.709 g
Prep Extract Vol: 30.0101 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X11**

Client Sample ID: **X11**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324002
Lab Project ID: 1179324

Collection Date: 10/22/17 17:26
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	148		82.7	25.6	mg/Kg	4		10/29/17 01:19
Surrogates								
5a Androstane (surr)	77.1		50-150		%	4		10/29/17 01:19

Batch Information

Analytical Batch: XFC13924
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/29/17 01:19
Container ID: 1179324002-A

Prep Batch: XXX38741
Prep Method: SW3550C
Prep Date/Time: 10/25/17 09:58
Prep Initial Wt./Vol.: 30.486 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X11**

Client Sample ID: **X11**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324002
Lab Project ID: 1179324

Collection Date: 10/22/17 17:26
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	4.32		1.53	0.459	mg/Kg	1		11/03/17 03:23
Surrogates								
4-Bromofluorobenzene (surr)	99.7		50-150		%	1		11/03/17 03:23

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 03:23
Container ID: 1179324002-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:26
Prep Initial Wt./Vol.: 102.992 g
Prep Extract Vol: 29.9957 mL

Results of **X11**

Client Sample ID: **X11**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324002
Lab Project ID: 1179324

Collection Date: 10/22/17 17:26
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.1
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	54.0		30.6	9.18	ug/Kg	1		10/31/17 14:11
1,2-Dibromoethane	6.12 U		6.12	1.90	ug/Kg	1		10/31/17 14:11
1,2-Dichloroethane	6.12 U		6.12	1.90	ug/Kg	1		10/31/17 14:11
1,3,5-Trimethylbenzene	55.2		15.3	4.78	ug/Kg	1		10/31/17 14:11
Benzene	17.3		7.65	2.39	ug/Kg	1		10/31/17 14:11
Ethylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:11
Isopropylbenzene (Cumene)	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:11
Methyl-t-butyl ether	61.2 U		61.2	19.0	ug/Kg	1		10/31/17 14:11
Naphthalene	24.6		15.3	4.78	ug/Kg	1		10/31/17 14:11
n-Butylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:11
o-Xylene	20.5		15.3	4.78	ug/Kg	1		10/31/17 14:11
P & M -Xylene	45.6		30.6	9.18	ug/Kg	1		10/31/17 14:11
sec-Butylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:11
tert-Butylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:11
Toluene	17.4		15.3	4.78	ug/Kg	1		10/31/17 14:11
Surrogates								
1,2-Dichloroethane-D4 (surr)	107		71-136		%	1		10/31/17 14:11
4-Bromofluorobenzene (surr)	147		55-151		%	1		10/31/17 14:11
Toluene-d8 (surr)	99.4		85-116		%	1		10/31/17 14:11

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 14:11
Container ID: 1179324002-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:26
Prep Initial Wt./Vol.: 102.992 g
Prep Extract Vol: 29.9957 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X12**

Client Sample ID: **X12**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324003
Lab Project ID: 1179324

Collection Date: 10/22/17 17:32
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	85.4		84.5	26.2	mg/Kg	4		11/01/17 00:34
Surrogates								
5a Androstane (surr)	97.8		50-150		%	4		11/01/17 00:34

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 00:34
Container ID: 1179324003-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.018 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X12**

Client Sample ID: **X12**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324003
Lab Project ID: 1179324

Collection Date: 10/22/17 17:32
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.6
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.70	U	1.70	0.511	mg/Kg	1		11/03/17 03:42
Surrogates								
4-Bromofluorobenzene (surr)	83.7		50-150		%	1		11/03/17 03:42

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 03:42
Container ID: 1179324003-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:32
Prep Initial Wt./Vol.: 93.017 g
Prep Extract Vol: 30.001 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **X12**

Client Sample ID: **X12**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324003
Lab Project ID: 1179324

Collection Date: 10/22/17 17:32
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.6
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	34.1	U	34.1	10.2	ug/Kg	1		10/31/17 14:27
1,2-Dibromoethane	6.82	U	6.82	2.11	ug/Kg	1		10/31/17 14:27
1,2-Dichloroethane	6.82	U	6.82	2.11	ug/Kg	1		10/31/17 14:27
1,3,5-Trimethylbenzene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
Benzene	8.52	U	8.52	2.66	ug/Kg	1		10/31/17 14:27
Ethylbenzene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
Isopropylbenzene (Cumene)	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
Methyl-t-butyl ether	68.2	U	68.2	21.1	ug/Kg	1		10/31/17 14:27
Naphthalene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
n-Butylbenzene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
o-Xylene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
P & M -Xylene	34.1	U	34.1	10.2	ug/Kg	1		10/31/17 14:27
sec-Butylbenzene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
tert-Butylbenzene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
Toluene	17.0	U	17.0	5.32	ug/Kg	1		10/31/17 14:27
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		71-136		%	1		10/31/17 14:27
4-Bromofluorobenzene (surr)	139		55-151		%	1		10/31/17 14:27
Toluene-d8 (surr)	97.5		85-116		%	1		10/31/17 14:27

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 14:27
Container ID: 1179324003-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:32
Prep Initial Wt./Vol.: 93.017 g
Prep Extract Vol: 30.001 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X13**

Client Sample ID: **X13**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324004
Lab Project ID: 1179324

Collection Date: 10/22/17 17:37
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	92.6		83.0	25.7	mg/Kg	4		11/01/17 00:44
Surrogates								
5a Androstane (surr)	94		50-150		%	4		11/01/17 00:44

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 00:44
Container ID: 1179324004-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.474 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X13**

Client Sample ID: **X13**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324004
Lab Project ID: 1179324

Collection Date: 10/22/17 17:37
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.53	U	1.53	0.459	mg/Kg	1		11/03/17 04:00
Surrogates								
4-Bromofluorobenzene (surr)	81.3		50-150		%	1		11/03/17 04:00

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 04:00
Container ID: 1179324004-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:37
Prep Initial Wt./Vol.: 104.465 g
Prep Extract Vol: 30.3555 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X13**

Client Sample ID: **X13**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324004
Lab Project ID: 1179324

Collection Date: 10/22/17 17:37
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	67.8		30.6	9.19	ug/Kg	1		10/31/17 14:43
1,2-Dibromoethane	6.13 U		6.13	1.90	ug/Kg	1		10/31/17 14:43
1,2-Dichloroethane	6.13 U		6.13	1.90	ug/Kg	1		10/31/17 14:43
1,3,5-Trimethylbenzene	46.7		15.3	4.78	ug/Kg	1		10/31/17 14:43
Benzene	7.66 U		7.66	2.39	ug/Kg	1		10/31/17 14:43
Ethylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:43
Isopropylbenzene (Cumene)	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:43
Methyl-t-butyl ether	61.3 U		61.3	19.0	ug/Kg	1		10/31/17 14:43
Naphthalene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:43
n-Butylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:43
o-Xylene	38.0		15.3	4.78	ug/Kg	1		10/31/17 14:43
P & M -Xylene	30.6 U		30.6	9.19	ug/Kg	1		10/31/17 14:43
sec-Butylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:43
tert-Butylbenzene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:43
Toluene	15.3 U		15.3	4.78	ug/Kg	1		10/31/17 14:43
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		71-136		%	1		10/31/17 14:43
4-Bromofluorobenzene (surr)	136		55-151		%	1		10/31/17 14:43
Toluene-d8 (surr)	98.5		85-116		%	1		10/31/17 14:43

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 14:43
Container ID: 1179324004-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:37
Prep Initial Wt./Vol.: 104.465 g
Prep Extract Vol: 30.3555 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X26**

Client Sample ID: **X26**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324005
Lab Project ID: 1179324

Collection Date: 10/22/17 17:46
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	112		83.1	25.8	mg/Kg	4		11/01/17 00:54
Surrogates								
5a Androstane (surr)	105		50-150		%	4		11/01/17 00:54

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 00:54
Container ID: 1179324005-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.067 g
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **X26**

Client Sample ID: **X26**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324005
Lab Project ID: 1179324

Collection Date: 10/22/17 17:46
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.0
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.49		1.40	0.421	mg/Kg	1		11/03/17 04:37
Surrogates								
4-Bromofluorobenzene (surr)	95.4		50-150		%	1		11/03/17 04:37

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 04:37
Container ID: 1179324005-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:46
Prep Initial Wt./Vol.: 108.839 g
Prep Extract Vol: 29.3443 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **X26**

Client Sample ID: **X26**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324005
Lab Project ID: 1179324

Collection Date: 10/22/17 17:46
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.0
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	253		28.1	8.42	ug/Kg	1		10/31/17 14:59
1,2-Dibromoethane	5.62 U		5.62	1.74	ug/Kg	1		10/31/17 14:59
1,2-Dichloroethane	5.62 U		5.62	1.74	ug/Kg	1		10/31/17 14:59
1,3,5-Trimethylbenzene	104		14.0	4.38	ug/Kg	1		10/31/17 14:59
Benzene	81.9		7.02	2.19	ug/Kg	1		10/31/17 14:59
Ethylbenzene	46.9		14.0	4.38	ug/Kg	1		10/31/17 14:59
Isopropylbenzene (Cumene)	14.0 U		14.0	4.38	ug/Kg	1		10/31/17 14:59
Methyl-t-butyl ether	56.2 U		56.2	17.4	ug/Kg	1		10/31/17 14:59
Naphthalene	57.6		14.0	4.38	ug/Kg	1		10/31/17 14:59
n-Butylbenzene	14.0 U		14.0	4.38	ug/Kg	1		10/31/17 14:59
o-Xylene	69.8		14.0	4.38	ug/Kg	1		10/31/17 14:59
P & M -Xylene	193		28.1	8.42	ug/Kg	1		10/31/17 14:59
sec-Butylbenzene	14.0 U		14.0	4.38	ug/Kg	1		10/31/17 14:59
tert-Butylbenzene	14.0 U		14.0	4.38	ug/Kg	1		10/31/17 14:59
Toluene	91.0		14.0	4.38	ug/Kg	1		10/31/17 14:59
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		71-136		%	1		10/31/17 14:59
4-Bromofluorobenzene (surr)	138		55-151		%	1		10/31/17 14:59
Toluene-d8 (surr)	97.6		85-116		%	1		10/31/17 14:59

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 14:59
Container ID: 1179324005-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:46
Prep Initial Wt./Vol.: 108.839 g
Prep Extract Vol: 29.3443 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **X33**

Client Sample ID: **X33**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324006
Lab Project ID: 1179324

Collection Date: 10/22/17 17:52
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
2-Methylnaphthalene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Acenaphthene	43.0		25.9	7.77	ug/Kg	1		11/10/17 17:06
Acenaphthylene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Anthracene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Benzo(a)Anthracene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Benzo[a]pyrene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Benzo[b]Fluoranthene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Benzo[g,h,i]perylene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Benzo[k]fluoranthene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Chrysene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Dibenzo[a,h]anthracene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Fluoranthene	61.4		25.9	7.77	ug/Kg	1		11/10/17 17:06
Fluorene	46.4		25.9	7.77	ug/Kg	1		11/10/17 17:06
Indeno[1,2,3-c,d] pyrene	25.9	U	25.9	7.77	ug/Kg	1		11/10/17 17:06
Naphthalene	20.7	U	20.7	6.22	ug/Kg	1		11/10/17 17:06
Phenanthrene	149		25.9	7.77	ug/Kg	1		11/10/17 17:06
Pyrene	40.6		25.9	7.77	ug/Kg	1		11/10/17 17:06
Surrogates								
2-Methylnaphthalene-d10 (surr)	78.6		50-150		%	1		11/10/17 17:06
Fluoranthene-d10 (surr)	77.4		50-150		%	1		11/10/17 17:06

Batch Information

Analytical Batch: XMS10538
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 11/10/17 17:06
Container ID: 1179324006-A

Prep Batch: XXX38755
Prep Method: SW3550C
Prep Date/Time: 10/27/17 07:57
Prep Initial Wt./Vol.: 22.689 g
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X33**

Client Sample ID: **X33**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324006
Lab Project ID: 1179324

Collection Date: 10/22/17 17:52
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	20.7	U	20.7	6.41	mg/Kg	1		10/31/17 22:27
Surrogates								
5a Androstane (surr)	94.2		50-150		%	1		10/31/17 22:27

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 22:27
Container ID: 1179324006-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.353 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X33**

Client Sample ID: **X33**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324006
Lab Project ID: 1179324

Collection Date: 10/22/17 17:52
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.61	U	1.61	0.482	mg/Kg	1		11/03/17 04:56
Surrogates								
4-Bromofluorobenzene (surr)	80.7		50-150		%	1		11/03/17 04:56

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 04:56
Container ID: 1179324006-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:52
Prep Initial Wt./Vol.: 94.649 g
Prep Extract Vol: 29.0956 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X33**

Client Sample ID: **X33**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324006
Lab Project ID: 1179324

Collection Date: 10/22/17 17:52
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.7
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	70.2		32.1	9.64	ug/Kg	1		10/31/17 15:15
1,2-Dibromoethane	6.43 U		6.43	1.99	ug/Kg	1		10/31/17 15:15
1,2-Dichloroethane	6.43 U		6.43	1.99	ug/Kg	1		10/31/17 15:15
1,3,5-Trimethylbenzene	40.0		16.1	5.01	ug/Kg	1		10/31/17 15:15
Benzene	9.96		8.03	2.51	ug/Kg	1		10/31/17 15:15
Ethylbenzene	16.1 U		16.1	5.01	ug/Kg	1		10/31/17 15:15
Isopropylbenzene (Cumene)	16.1 U		16.1	5.01	ug/Kg	1		10/31/17 15:15
Methyl-t-butyl ether	64.3 U		64.3	19.9	ug/Kg	1		10/31/17 15:15
Naphthalene	16.1 U		16.1	5.01	ug/Kg	1		10/31/17 15:15
n-Butylbenzene	16.1 U		16.1	5.01	ug/Kg	1		10/31/17 15:15
o-Xylene	21.4		16.1	5.01	ug/Kg	1		10/31/17 15:15
P & M -Xylene	32.1 U		32.1	9.64	ug/Kg	1		10/31/17 15:15
sec-Butylbenzene	16.1 U		16.1	5.01	ug/Kg	1		10/31/17 15:15
tert-Butylbenzene	16.1 U		16.1	5.01	ug/Kg	1		10/31/17 15:15
Toluene	16.1 U		16.1	5.01	ug/Kg	1		10/31/17 15:15
Surrogates								
1,2-Dichloroethane-D4 (surr)	107		71-136		%	1		10/31/17 15:15
4-Bromofluorobenzene (surr)	127		55-151		%	1		10/31/17 15:15
Toluene-d8 (surr)	102		85-116		%	1		10/31/17 15:15

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 15:15
Container ID: 1179324006-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:52
Prep Initial Wt./Vol.: 94.649 g
Prep Extract Vol: 29.0956 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X50**

Client Sample ID: **X50**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324007
Lab Project ID: 1179324

Collection Date: 10/22/17 17:59
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	105	U	105	32.5	mg/Kg	1		10/31/17 22:37
Surrogates								
5a Androstane (surr)	100		50-150		%	1		10/31/17 22:37

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 22:37
Container ID: 1179324007-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.463 g
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X50**

Client Sample ID: **X50**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324007
Lab Project ID: 1179324

Collection Date: 10/22/17 17:59
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.60	U	1.60	0.481	mg/Kg	1		11/03/17 05:14
Surrogates								
4-Bromofluorobenzene (surr)	84.1		50-150		%	1		11/03/17 05:14

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 05:14
Container ID: 1179324007-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:59
Prep Initial Wt./Vol.: 104.222 g
Prep Extract Vol: 31.3911 mL

Print Date: 11/17/2017 11:25:21AM

Results of **X50**

Client Sample ID: **X50**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324007
Lab Project ID: 1179324

Collection Date: 10/22/17 17:59
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	34.2		32.1	9.63	ug/Kg	1		10/31/17 15:31
1,2-Dibromoethane	6.42	U	6.42	1.99	ug/Kg	1		10/31/17 15:31
1,2-Dichloroethane	6.42	U	6.42	1.99	ug/Kg	1		10/31/17 15:31
1,3,5-Trimethylbenzene	20.5		16.0	5.01	ug/Kg	1		10/31/17 15:31
Benzene	55.5		8.02	2.50	ug/Kg	1		10/31/17 15:31
Ethylbenzene	18.9		16.0	5.01	ug/Kg	1		10/31/17 15:31
Isopropylbenzene (Cumene)	16.0	U	16.0	5.01	ug/Kg	1		10/31/17 15:31
Methyl-t-butyl ether	64.2	U	64.2	19.9	ug/Kg	1		10/31/17 15:31
Naphthalene	16.0	U	16.0	5.01	ug/Kg	1		10/31/17 15:31
n-Butylbenzene	16.0	U	16.0	5.01	ug/Kg	1		10/31/17 15:31
o-Xylene	38.5		16.0	5.01	ug/Kg	1		10/31/17 15:31
P & M -Xylene	65.5		32.1	9.63	ug/Kg	1		10/31/17 15:31
sec-Butylbenzene	16.0	U	16.0	5.01	ug/Kg	1		10/31/17 15:31
tert-Butylbenzene	16.0	U	16.0	5.01	ug/Kg	1		10/31/17 15:31
Toluene	50.4		16.0	5.01	ug/Kg	1		10/31/17 15:31
Surrogates								
1,2-Dichloroethane-D4 (surr)	92.9		71-136		%	1		10/31/17 15:31
4-Bromofluorobenzene (surr)	131		55-151		%	1		10/31/17 15:31
Toluene-d8 (surr)	97.1		85-116		%	1		10/31/17 15:31

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 15:31
Container ID: 1179324007-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:59
Prep Initial Wt./Vol.: 104.222 g
Prep Extract Vol: 31.3911 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR01**

Client Sample ID: **SR01**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324008
Lab Project ID: 1179324

Collection Date: 10/22/17 18:21
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	836		84.7	26.3	mg/Kg	4		11/01/17 01:04
Surrogates								
5a Androstane (surr)	125		50-150		%	4		11/01/17 01:04

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 01:04
Container ID: 1179324008-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.186 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR01**

Client Sample ID: **SR01**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324008
Lab Project ID: 1179324

Collection Date: 10/22/17 18:21
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	5.21		1.51	0.452	mg/Kg	1		11/13/17 19:08
Surrogates								
4-Bromofluorobenzene (surr)	74.7		50-150		%	1		11/13/17 19:08

Batch Information

Analytical Batch: VFC13989
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/13/17 19:08
Container ID: 1179324008-B

Prep Batch: VXX31718
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:21
Prep Initial Wt./Vol.: 112.76 g
Prep Extract Vol: 31.917 mL

Results of **SR01**

Client Sample ID: **SR01**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324008
Lab Project ID: 1179324

Collection Date: 10/22/17 18:21
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):93.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	813		151	45.2	ug/Kg	5		10/31/17 15:47
1,2-Dibromoethane	30.2 U		30.2	9.35	ug/Kg	5		10/31/17 15:47
1,2-Dichloroethane	36.2		30.2	9.35	ug/Kg	5		10/31/17 15:47
1,3,5-Trimethylbenzene	420		75.4	23.5	ug/Kg	5		10/31/17 15:47
Benzene	787		37.7	11.8	ug/Kg	5		10/31/17 15:47
Ethylbenzene	1380		75.4	23.5	ug/Kg	5		10/31/17 15:47
Isopropylbenzene (Cumene)	152		75.4	23.5	ug/Kg	5		10/31/17 15:47
Methyl-t-butyl ether	302 U		302	93.5	ug/Kg	5		10/31/17 15:47
Naphthalene	190		75.4	23.5	ug/Kg	5		10/31/17 15:47
n-Butylbenzene	75.4 U		75.4	23.5	ug/Kg	5		10/31/17 15:47
o-Xylene	1120		75.4	23.5	ug/Kg	5		10/31/17 15:47
P & M -Xylene	3570		151	45.2	ug/Kg	5		10/31/17 15:47
sec-Butylbenzene	75.4 U		75.4	23.5	ug/Kg	5		10/31/17 15:47
tert-Butylbenzene	75.4 U		75.4	23.5	ug/Kg	5		10/31/17 15:47
Toluene	4420		75.4	23.5	ug/Kg	5		10/31/17 15:47
Surrogates								
1,2-Dichloroethane-D4 (surr)	96.6		71-136		%	5		10/31/17 15:47
4-Bromofluorobenzene (surr)	160	*	55-151		%	5		10/31/17 15:47
Toluene-d8 (surr)	105		85-116		%	5		10/31/17 15:47

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 15:47
Container ID: 1179324008-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:21
Prep Initial Wt./Vol.: 112.76 g
Prep Extract Vol: 31.917 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **SR09**

Client Sample ID: **SR09**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324009
Lab Project ID: 1179324

Collection Date: 10/22/17 18:09
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.2
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	2890		413	128	mg/Kg	20		11/01/17 16:59
Surrogates								
5a Androstane (surr)	0	*	50-150		%	20		11/01/17 16:59

Batch Information

Analytical Batch: XFC13939
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 16:59
Container ID: 1179324009-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.186 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR09**

Client Sample ID: **SR09**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324009
Lab Project ID: 1179324

Collection Date: 10/22/17 18:09
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.2
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3240		631	189	mg/Kg	500		11/03/17 05:51
Surrogates								
4-Bromofluorobenzene (surr)	12200	*	50-150		%	500		11/03/17 05:51

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 05:51
Container ID: 1179324009-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:09
Prep Initial Wt./Vol.: 121.749 g
Prep Extract Vol: 29.5753 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR09**

Client Sample ID: **SR09**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324009
Lab Project ID: 1179324

Collection Date: 10/22/17 18:09
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.2
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	127000		12600	3790	ug/Kg	500		11/01/17 20:57
1,2-Dibromoethane	50.5 U		50.5	15.6	ug/Kg	10		10/31/17 16:03
1,2-Dichloroethane	50.5 U		50.5	15.6	ug/Kg	10		10/31/17 16:03
1,3,5-Trimethylbenzene	35300		6310	1970	ug/Kg	500		11/01/17 20:57
Benzene	46600		3160	984	ug/Kg	500		11/01/17 20:57
Ethylbenzene	116000		6310	1970	ug/Kg	500		11/01/17 20:57
Isopropylbenzene (Cumene)	23700		126	39.4	ug/Kg	10		10/31/17 16:03
Methyl-t-butyl ether	505 U		505	156	ug/Kg	10		10/31/17 16:03
Naphthalene	15700		126	39.4	ug/Kg	10		10/31/17 16:03
n-Butylbenzene	126 U		126	39.4	ug/Kg	10		10/31/17 16:03
o-Xylene	135000		6310	1970	ug/Kg	500		11/01/17 20:57
P & M -Xylene	327000		12600	3790	ug/Kg	500		11/01/17 20:57
sec-Butylbenzene	7110		126	39.4	ug/Kg	10		10/31/17 16:03
tert-Butylbenzene	126 U		126	39.4	ug/Kg	10		10/31/17 16:03
Toluene	369000		6310	1970	ug/Kg	500		11/01/17 20:57
Surrogates								
1,2-Dichloroethane-D4 (surr)	89		71-136		%	10		10/31/17 16:03
4-Bromofluorobenzene (surr)	241	*	55-151		%	10		10/31/17 16:03
Toluene-d8 (surr)	99.8		85-116		%	10		10/31/17 16:03

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 16:03
Container ID: 1179324009-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:09
Prep Initial Wt./Vol.: 121.749 g
Prep Extract Vol: 29.5753 mL

Analytical Batch: VMS17407
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/01/17 20:57
Container ID: 1179324009-B

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:09
Prep Initial Wt./Vol.: 121.749 g
Prep Extract Vol: 29.5753 mL

Results of **SR11**

Client Sample ID: **SR11**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324010
Lab Project ID: 1179324

Collection Date: 10/22/17 18:15
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):97.2
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	4060		410	127	mg/Kg	20		11/01/17 17:09
Surrogates								
5a Androstane (surr)	0	*	50-150		%	20		11/01/17 17:09

Batch Information

Analytical Batch: XFC13939
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 17:09
Container ID: 1179324010-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.083 g
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **SR11**

Client Sample ID: **SR11**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324010
Lab Project ID: 1179324

Collection Date: 10/22/17 18:15
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):97.2
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1290		145	43.4	mg/Kg	100		11/03/17 06:10
Surrogates								
4-Bromofluorobenzene (surr)	2820	*	50-150		%	100		11/03/17 06:10

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 06:10
Container ID: 1179324010-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:15
Prep Initial Wt./Vol.: 98.87 g
Prep Extract Vol: 27.7905 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR11**

Client Sample ID: **SR11**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324010
Lab Project ID: 1179324

Collection Date: 10/22/17 18:15
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):97.2
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	96500		2890	868	ug/Kg	100		11/01/17 21:29
1,2-Dibromoethane	57.8 U		57.8	17.9	ug/Kg	10		10/31/17 16:19
1,2-Dichloroethane	57.8 U		57.8	17.9	ug/Kg	10		10/31/17 16:19
1,3,5-Trimethylbenzene	25700		1450	451	ug/Kg	100		11/01/17 21:29
Benzene	6820		72.3	22.6	ug/Kg	10		10/31/17 16:19
Ethylbenzene	22200		145	45.1	ug/Kg	10		10/31/17 16:19
Isopropylbenzene (Cumene)	6340		145	45.1	ug/Kg	10		10/31/17 16:19
Methyl-t-butyl ether	578 U		578	179	ug/Kg	10		10/31/17 16:19
Naphthalene	50100		1450	451	ug/Kg	100		11/01/17 21:29
n-Butylbenzene	145 U		145	45.1	ug/Kg	10		10/31/17 16:19
o-Xylene	63300		1450	451	ug/Kg	100		11/01/17 21:29
P & M -Xylene	115000		2890	868	ug/Kg	100		11/01/17 21:29
sec-Butylbenzene	2290		145	45.1	ug/Kg	10		10/31/17 16:19
tert-Butylbenzene	145 U		145	45.1	ug/Kg	10		10/31/17 16:19
Toluene	71800		1450	451	ug/Kg	100		11/01/17 21:29
Surrogates								
1,2-Dichloroethane-D4 (surr)	88.3		71-136		%	10		10/31/17 16:19
4-Bromofluorobenzene (surr)	211	*	55-151		%	10		10/31/17 16:19
Toluene-d8 (surr)	105		85-116		%	10		10/31/17 16:19

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 16:19
Container ID: 1179324010-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:15
Prep Initial Wt./Vol.: 98.87 g
Prep Extract Vol: 27.7905 mL

Analytical Batch: VMS17407
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/01/17 21:29
Container ID: 1179324010-B

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:15
Prep Initial Wt./Vol.: 98.87 g
Prep Extract Vol: 27.7905 mL

Results of **SR20**

Client Sample ID: **SR20**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324011
Lab Project ID: 1179324

Collection Date: 10/22/17 18:09
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1390		83.0	25.7	mg/Kg	4		11/01/17 01:33
Surrogates								
5a Androstane (surr)	153	*	50-150		%	4		11/01/17 01:33

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 01:33
Container ID: 1179324011-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.116 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR20**

Client Sample ID: **SR20**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324011
Lab Project ID: 1179324

Collection Date: 10/22/17 18:09
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.0
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1590		292	87.6	mg/Kg	200		11/03/17 06:28
Surrogates								
4-Bromofluorobenzene (surr)	5020	*	50-150		%	200		11/03/17 06:28

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 06:28
Container ID: 1179324011-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:09
Prep Initial Wt./Vol.: 104.266 g
Prep Extract Vol: 29.2069 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR20**

Client Sample ID: **SR20**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324011
Lab Project ID: 1179324

Collection Date: 10/22/17 18:09
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):96.0
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	71500		5840	1750	ug/Kg	200		11/01/17 21:13
1,2-Dibromoethane	58.4 U		58.4	18.1	ug/Kg	10		10/31/17 16:35
1,2-Dichloroethane	58.4 U		58.4	18.1	ug/Kg	10		10/31/17 16:35
1,3,5-Trimethylbenzene	25900		146	45.5	ug/Kg	10		10/31/17 16:35
Benzene	28700		1460	455	ug/Kg	200		11/01/17 21:13
Ethylbenzene	64800		2920	911	ug/Kg	200		11/01/17 21:13
Isopropylbenzene (Cumene)	12500		146	45.5	ug/Kg	10		10/31/17 16:35
Methyl-t-butyl ether	584 U		584	181	ug/Kg	10		10/31/17 16:35
Naphthalene	10500		146	45.5	ug/Kg	10		10/31/17 16:35
n-Butylbenzene	146 U		146	45.5	ug/Kg	10		10/31/17 16:35
o-Xylene	70600		2920	911	ug/Kg	200		11/01/17 21:13
P & M -Xylene	178000		5840	1750	ug/Kg	200		11/01/17 21:13
sec-Butylbenzene	3760		146	45.5	ug/Kg	10		10/31/17 16:35
tert-Butylbenzene	146 U		146	45.5	ug/Kg	10		10/31/17 16:35
Toluene	178000		2920	911	ug/Kg	200		11/01/17 21:13
Surrogates								
1,2-Dichloroethane-D4 (surr)	90.8		71-136		%	10		10/31/17 16:35
4-Bromofluorobenzene (surr)	198	*	55-151		%	10		10/31/17 16:35
Toluene-d8 (surr)	99.5		85-116		%	10		10/31/17 16:35

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 16:35
Container ID: 1179324011-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:09
Prep Initial Wt./Vol.: 104.266 g
Prep Extract Vol: 29.2069 mL

Analytical Batch: VMS17407
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/01/17 21:13
Container ID: 1179324011-B

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:09
Prep Initial Wt./Vol.: 104.266 g
Prep Extract Vol: 29.2069 mL

Results of **SR24**

Client Sample ID: **SR24**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324012
Lab Project ID: 1179324

Collection Date: 10/22/17 18:23
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.7
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	281		21.1	6.54	mg/Kg	1		10/31/17 22:47
Surrogates								
5a Androstane (surr)	131		50-150		%	1		10/31/17 22:47

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 22:47
Container ID: 1179324012-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.057 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR24**

Client Sample ID: **SR24**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324012
Lab Project ID: 1179324

Collection Date: 10/22/17 18:23
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.7
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	435		17.8	5.34	mg/Kg	10		11/03/17 06:47
Surrogates								
4-Bromofluorobenzene (surr)	1720	*	50-150		%	10		11/03/17 06:47

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 06:47
Container ID: 1179324012-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:23
Prep Initial Wt./Vol.: 88.055 g
Prep Extract Vol: 29.6817 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **SR24**

Client Sample ID: **SR24**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324012
Lab Project ID: 1179324

Collection Date: 10/22/17 18:23
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.7
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	26800		356	107	ug/Kg	10		10/31/17 16:51
1,2-Dibromoethane	71.2 U		71.2	22.1	ug/Kg	10		10/31/17 16:51
1,2-Dichloroethane	71.2 U		71.2	22.1	ug/Kg	10		10/31/17 16:51
1,3,5-Trimethylbenzene	9280		178	55.5	ug/Kg	10		10/31/17 16:51
Benzene	623		89.0	27.8	ug/Kg	10		10/31/17 16:51
Ethylbenzene	14600		178	55.5	ug/Kg	10		10/31/17 16:51
Isopropylbenzene (Cumene)	4700		178	55.5	ug/Kg	10		10/31/17 16:51
Methyl-t-butyl ether	712 U		712	221	ug/Kg	10		10/31/17 16:51
Naphthalene	4050		178	55.5	ug/Kg	10		10/31/17 16:51
n-Butylbenzene	178 U		178	55.5	ug/Kg	10		10/31/17 16:51
o-Xylene	3660		178	55.5	ug/Kg	10		10/31/17 16:51
P & M -Xylene	26500		356	107	ug/Kg	10		10/31/17 16:51
sec-Butylbenzene	1330		178	55.5	ug/Kg	10		10/31/17 16:51
tert-Butylbenzene	178 U		178	55.5	ug/Kg	10		10/31/17 16:51
Toluene	4690		178	55.5	ug/Kg	10		10/31/17 16:51
Surrogates								
1,2-Dichloroethane-D4 (surr)	92.2		71-136		%	10		10/31/17 16:51
4-Bromofluorobenzene (surr)	180	*	55-151		%	10		10/31/17 16:51
Toluene-d8 (surr)	97.3		85-116		%	10		10/31/17 16:51

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 16:51
Container ID: 1179324012-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:23
Prep Initial Wt./Vol.: 88.055 g
Prep Extract Vol: 29.6817 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR27**

Client Sample ID: **SR27**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324013
Lab Project ID: 1179324

Collection Date: 10/22/17 17:53
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1570		416	129	mg/Kg	4		11/01/17 01:43
Surrogates								
5a Androstane (surr)	0	*	50-150		%	4		11/01/17 01:43

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 01:43
Container ID: 1179324013-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.276 g
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR27**

Client Sample ID: **SR27**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324013
Lab Project ID: 1179324

Collection Date: 10/22/17 17:53
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	92.4		7.82	2.34	mg/Kg	5		11/03/17 07:05
Surrogates								
4-Bromofluorobenzene (surr)	539	*	50-150		%	5		11/03/17 07:05

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 07:05
Container ID: 1179324013-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:53
Prep Initial Wt./Vol.: 99.799 g
Prep Extract Vol: 29.7232 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **SR27**

Client Sample ID: **SR27**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324013
Lab Project ID: 1179324

Collection Date: 10/22/17 17:53
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.3
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	3340		156	46.9	ug/Kg	5		11/01/17 21:45
1,2-Dibromoethane	6.25 U		6.25	1.94	ug/Kg	1		10/31/17 17:07
1,2-Dichloroethane	6.25 U		6.25	1.94	ug/Kg	1		10/31/17 17:07
1,3,5-Trimethylbenzene	1570		15.6	4.88	ug/Kg	1		10/31/17 17:07
Benzene	134		7.82	2.44	ug/Kg	1		10/31/17 17:07
Ethylbenzene	4040		78.2	24.4	ug/Kg	5		11/01/17 21:45
Isopropylbenzene (Cumene)	731		15.6	4.88	ug/Kg	1		10/31/17 17:07
Methyl-t-butyl ether	62.5 U		62.5	19.4	ug/Kg	1		10/31/17 17:07
Naphthalene	306		15.6	4.88	ug/Kg	1		10/31/17 17:07
n-Butylbenzene	15.6 U		15.6	4.88	ug/Kg	1		10/31/17 17:07
o-Xylene	50.5		15.6	4.88	ug/Kg	1		10/31/17 17:07
P & M -Xylene	3390		31.3	9.38	ug/Kg	1		10/31/17 17:07
sec-Butylbenzene	158		15.6	4.88	ug/Kg	1		10/31/17 17:07
tert-Butylbenzene	15.6 U		15.6	4.88	ug/Kg	1		10/31/17 17:07
Toluene	84.1		15.6	4.88	ug/Kg	1		10/31/17 17:07
Surrogates								
1,2-Dichloroethane-D4 (surr)	91.5		71-136		%	1		10/31/17 17:07
4-Bromofluorobenzene (surr)	141		55-151		%	1		10/31/17 17:07
Toluene-d8 (surr)	104		85-116		%	1		10/31/17 17:07

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 17:07
Container ID: 1179324013-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:53
Prep Initial Wt./Vol.: 99.799 g
Prep Extract Vol: 29.7232 mL

Analytical Batch: VMS17407
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/01/17 21:45
Container ID: 1179324013-B

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:53
Prep Initial Wt./Vol.: 99.799 g
Prep Extract Vol: 29.7232 mL

Results of **SR30**

Client Sample ID: **SR30**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324014
Lab Project ID: 1179324

Collection Date: 10/22/17 17:47
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	20.6	U	20.6	6.37	mg/Kg	1		10/31/17 22:57
Surrogates								
5a Androstane (surr)	87.8		50-150		%	1		10/31/17 22:57

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 22:57
Container ID: 1179324014-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.433 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR30**

Client Sample ID: **SR30**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324014
Lab Project ID: 1179324

Collection Date: 10/22/17 17:47
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.55	U	1.55	0.466	mg/Kg	1		11/03/17 07:24
Surrogates								
4-Bromofluorobenzene (surr)	81.7		50-150		%	1		11/03/17 07:24

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 07:24
Container ID: 1179324014-B

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:47
Prep Initial Wt./Vol.: 97.42 g
Prep Extract Vol: 29.0215 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **SR30**

Client Sample ID: **SR30**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324014
Lab Project ID: 1179324

Collection Date: 10/22/17 17:47
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):95.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	31.1	U	31.1	9.32	ug/Kg	1		11/01/17 20:25
1,2-Dibromoethane	6.21	U	6.21	1.93	ug/Kg	1		10/31/17 17:23
1,2-Dichloroethane	6.21	U	6.21	1.93	ug/Kg	1		10/31/17 17:23
1,3,5-Trimethylbenzene	15.5	U	15.5	4.85	ug/Kg	1		11/01/17 20:25
Benzene	11.8		7.77	2.42	ug/Kg	1		10/31/17 17:23
Ethylbenzene	15.5	U	15.5	4.85	ug/Kg	1		11/01/17 20:25
Isopropylbenzene (Cumene)	15.5	U	15.5	4.85	ug/Kg	1		11/01/17 20:25
Methyl-t-butyl ether	62.1	U	62.1	19.3	ug/Kg	1		10/31/17 17:23
Naphthalene	15.5	U	15.5	4.85	ug/Kg	1		11/01/17 20:25
n-Butylbenzene	15.5	U	15.5	4.85	ug/Kg	1		10/31/17 17:23
o-Xylene	15.5	U	15.5	4.85	ug/Kg	1		11/01/17 20:25
P & M -Xylene	31.1	U	31.1	9.32	ug/Kg	1		11/01/17 20:25
sec-Butylbenzene	15.5	U	15.5	4.85	ug/Kg	1		10/31/17 17:23
tert-Butylbenzene	15.5	U	15.5	4.85	ug/Kg	1		10/31/17 17:23
Toluene	15.5	U	15.5	4.85	ug/Kg	1		10/31/17 17:23
Surrogates								
1,2-Dichloroethane-D4 (surr)	106		71-136		%	1		10/31/17 17:23
4-Bromofluorobenzene (surr)	127		55-151		%	1		10/31/17 17:23
Toluene-d8 (surr)	97.9		85-116		%	1		10/31/17 17:23

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 17:23
Container ID: 1179324014-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:47
Prep Initial Wt./Vol.: 97.42 g
Prep Extract Vol: 29.0215 mL

Analytical Batch: VMS17407
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/01/17 20:25
Container ID: 1179324014-B

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:47
Prep Initial Wt./Vol.: 97.42 g
Prep Extract Vol: 29.0215 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR36**

Client Sample ID: **SR36**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324015
Lab Project ID: 1179324

Collection Date: 10/22/17 18:28
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	20.9	U	20.9	6.49	mg/Kg	1		10/31/17 23:07
Surrogates								
5a Androstane (surr)	92.6		50-150		%	1		10/31/17 23:07

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 23:07
Container ID: 1179324015-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.38 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **SR36**

Client Sample ID: **SR36**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324015
Lab Project ID: 1179324

Collection Date: 10/22/17 18:28
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.47	U	1.47	0.442	mg/Kg	1		11/14/17 23:15
Surrogates								
4-Bromofluorobenzene (surr)	81.4		50-150		%	1		11/14/17 23:15

Batch Information

Analytical Batch: VFC13990
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/14/17 23:15
Container ID: 1179324015-B

Prep Batch: VXX31723
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:28
Prep Initial Wt./Vol.: 113.176 g
Prep Extract Vol: 31.451 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **SR36**

Client Sample ID: **SR36**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324015
Lab Project ID: 1179324

Collection Date: 10/22/17 18:28
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	29.5	U	29.5	8.84	ug/Kg	1		10/31/17 17:39
1,2-Dibromoethane	5.89	U	5.89	1.83	ug/Kg	1		10/31/17 17:39
1,2-Dichloroethane	5.89	U	5.89	1.83	ug/Kg	1		10/31/17 17:39
1,3,5-Trimethylbenzene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
Benzene	15.3		7.37	2.30	ug/Kg	1		10/31/17 17:39
Ethylbenzene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
Isopropylbenzene (Cumene)	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
Methyl-t-butyl ether	58.9	U	58.9	18.3	ug/Kg	1		10/31/17 17:39
Naphthalene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
n-Butylbenzene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
o-Xylene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
P & M -Xylene	29.5	U	29.5	8.84	ug/Kg	1		10/31/17 17:39
sec-Butylbenzene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
tert-Butylbenzene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
Toluene	14.7	U	14.7	4.60	ug/Kg	1		10/31/17 17:39
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		71-136		%	1		10/31/17 17:39
4-Bromofluorobenzene (surr)	144		55-151		%	1		10/31/17 17:39
Toluene-d8 (surr)	99.4		85-116		%	1		10/31/17 17:39

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 17:39
Container ID: 1179324015-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 18:28
Prep Initial Wt./Vol.: 113.176 g
Prep Extract Vol: 31.451 mL

Results of **BR15**

Client Sample ID: **BR15**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324016
Lab Project ID: 1179324

Collection Date: 10/22/17 16:59
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):43.5
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
2-Methylnaphthalene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Acenaphthene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Acenaphthylene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Anthracene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Benzo(a)Anthracene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Benzo[a]pyrene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Benzo[b]Fluoranthene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Benzo[g,h,i]perylene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Benzo[k]fluoranthene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Chrysene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Dibenzo[a,h]anthracene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Fluoranthene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Fluorene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Indeno[1,2,3-c,d] pyrene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Naphthalene	183	U	183	54.8	ug/Kg	4		11/10/17 17:26
Phenanthrene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Pyrene	228	U	228	68.5	ug/Kg	4		11/10/17 17:26
Surrogates								
2-Methylnaphthalene-d10 (surr)	77.9		50-150		%	4		11/10/17 17:26
Fluoranthene-d10 (surr)	73.3		50-150		%	4		11/10/17 17:26

Batch Information

Analytical Batch: XMS10538
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 11/10/17 17:26
Container ID: 1179324016-A

Prep Batch: XXX38755
Prep Method: SW3550C
Prep Date/Time: 10/27/17 07:57
Prep Initial Wt./Vol.: 22.673 g
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR15**

Client Sample ID: **BR15**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324016
Lab Project ID: 1179324

Collection Date: 10/22/17 16:59
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):43.5
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	528		230	71.2	mg/Kg	1		10/31/17 23:16
Surrogates								
5a Androstane (surr)	85.8		50-150		%	1		10/31/17 23:16

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 23:16
Container ID: 1179324016-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.054 g
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR15**

Client Sample ID: **BR15**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324016
Lab Project ID: 1179324

Collection Date: 10/22/17 16:59
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):43.5
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	348		131	39.2	mg/Kg	10		11/15/17 05:42
Surrogates								
4-Bromofluorobenzene (surr)	30.2	*	50-150		%	10		11/15/17 05:42

Batch Information

Analytical Batch: VFC13990
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/15/17 05:42
Container ID: 1179324016-B

Prep Batch: VXX31724
Prep Method: SW5035A
Prep Date/Time: 10/22/17 16:59
Prep Initial Wt./Vol.: 43.685 g
Prep Extract Vol: 49.6917 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR15**

Client Sample ID: **BR15**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324016
Lab Project ID: 1179324

Collection Date: 10/22/17 16:59
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):43.5
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	262	U	262	78.5	ug/Kg	1		10/31/17 17:55
1,2-Dibromoethane	52.3	U	52.3	16.2	ug/Kg	1		10/31/17 17:55
1,2-Dichloroethane	161		52.3	16.2	ug/Kg	1		10/31/17 17:55
1,3,5-Trimethylbenzene	131	U	131	40.8	ug/Kg	1		10/31/17 17:55
Benzene	23700		65.4	20.4	ug/Kg	1		10/31/17 17:55
Ethylbenzene	15400		131	40.8	ug/Kg	1		10/31/17 17:55
Isopropylbenzene (Cumene)	131	U	131	40.8	ug/Kg	1		10/31/17 17:55
Methyl-t-butyl ether	523	U	523	162	ug/Kg	1		10/31/17 17:55
Naphthalene	131	U	131	40.8	ug/Kg	1		10/31/17 17:55
n-Butylbenzene	131	U	131	40.8	ug/Kg	1		10/31/17 17:55
o-Xylene	17100		131	40.8	ug/Kg	1		10/31/17 17:55
P & M -Xylene	32300		262	78.5	ug/Kg	1		10/31/17 17:55
sec-Butylbenzene	131	U	131	40.8	ug/Kg	1		10/31/17 17:55
tert-Butylbenzene	131	U	131	40.8	ug/Kg	1		10/31/17 17:55
Toluene	34800		1310	408	ug/Kg	10		11/01/17 22:01
Surrogates								
1,2-Dichloroethane-D4 (surr)	92.4		71-136		%	1		10/31/17 17:55
4-Bromofluorobenzene (surr)	69.5		55-151		%	1		10/31/17 17:55
Toluene-d8 (surr)	100		85-116		%	1		10/31/17 17:55

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 17:55
Container ID: 1179324016-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 16:59
Prep Initial Wt./Vol.: 43.685 g
Prep Extract Vol: 49.6917 mL

Analytical Batch: VMS17407
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/01/17 22:01
Container ID: 1179324016-B

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 10/22/17 16:59
Prep Initial Wt./Vol.: 43.685 g
Prep Extract Vol: 49.6917 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **BR45**

Client Sample ID: **BR45**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324017
Lab Project ID: 1179324

Collection Date: 10/22/17 17:25
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):83.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	24.0	U	24.0	7.44	mg/Kg	1		10/31/17 23:26
Surrogates								
5a Androstane (surr)	93.7		50-150		%	1		10/31/17 23:26

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 23:26
Container ID: 1179324017-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.037 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR45**

Client Sample ID: **BR45**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324017
Lab Project ID: 1179324

Collection Date: 10/22/17 17:25
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):83.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	7.52		2.36	0.707	mg/Kg	1		11/03/17 03:53
Surrogates								
4-Bromofluorobenzene (surr)	71.2		50-150		%	1		11/03/17 03:53

Batch Information

Analytical Batch: VFC13981
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 03:53
Container ID: 1179324017-B

Prep Batch: VXX31680
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:25
Prep Initial Wt./Vol.: 111.122 g
Prep Extract Vol: 43.5931 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR45**

Client Sample ID: **BR45**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324017
Lab Project ID: 1179324

Collection Date: 10/22/17 17:25
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):83.3
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	47.1 U		47.1	14.1	ug/Kg	1		10/31/17 18:11
1,2-Dibromoethane	9.42 U		9.42	2.92	ug/Kg	1		10/31/17 18:11
1,2-Dichloroethane	9.42 U		9.42	2.92	ug/Kg	1		10/31/17 18:11
1,3,5-Trimethylbenzene	23.6 U		23.6	7.35	ug/Kg	1		10/31/17 18:11
Benzene	3300		11.8	3.67	ug/Kg	1		10/31/17 18:11
Ethylbenzene	23.6 U		23.6	7.35	ug/Kg	1		11/01/17 20:41
Isopropylbenzene (Cumene)	23.6 U		23.6	7.35	ug/Kg	1		10/31/17 18:11
Methyl-t-butyl ether	94.2 U		94.2	29.2	ug/Kg	1		10/31/17 18:11
Naphthalene	23.6 U		23.6	7.35	ug/Kg	1		10/31/17 18:11
n-Butylbenzene	23.6 U		23.6	7.35	ug/Kg	1		10/31/17 18:11
o-Xylene	23.6 U		23.6	7.35	ug/Kg	1		11/01/17 20:41
P & M -Xylene	47.1 U		47.1	14.1	ug/Kg	1		11/01/17 20:41
sec-Butylbenzene	23.6 U		23.6	7.35	ug/Kg	1		10/31/17 18:11
tert-Butylbenzene	23.6 U		23.6	7.35	ug/Kg	1		10/31/17 18:11
Toluene	23.6 U		23.6	7.35	ug/Kg	1		11/03/17 21:30
Surrogates								
1,2-Dichloroethane-D4 (surr)	97.6		71-136		%	1		10/31/17 18:11
4-Bromofluorobenzene (surr)	197	*	55-151		%	1		10/31/17 18:11
Toluene-d8 (surr)	98.5		85-116		%	1		10/31/17 18:11

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 18:11
Container ID: 1179324017-B

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:25
Prep Initial Wt./Vol.: 111.122 g
Prep Extract Vol: 43.5931 mL

Analytical Batch: VMS17407
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/01/17 20:41
Container ID: 1179324017-B

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:25
Prep Initial Wt./Vol.: 111.122 g
Prep Extract Vol: 43.5931 mL

Analytical Batch: VMS17420
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/03/17 21:30
Container ID: 1179324017-B

Prep Batch: VXX31675
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:25
Prep Initial Wt./Vol.: 111.122 g
Prep Extract Vol: 43.5931 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR46**

Client Sample ID: **BR46**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324018
Lab Project ID: 1179324

Collection Date: 10/22/17 17:30
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):81.7
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	35.4		24.3	7.54	mg/Kg	1		11/01/17 17:19
Surrogates								
5a Androstane (surr)	103		50-150		%	1		11/01/17 17:19

Batch Information

Analytical Batch: XFC13939
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 17:19
Container ID: 1179324018-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.216 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR46**

Client Sample ID: **BR46**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324018
Lab Project ID: 1179324

Collection Date: 10/22/17 17:30
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):81.7
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	8.16		2.58	0.775	mg/Kg	1		11/03/17 04:12
Surrogates								
4-Bromofluorobenzene (surr)	73.5		50-150		%	1		11/03/17 04:12

Batch Information

Analytical Batch: VFC13981
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 04:12
Container ID: 1179324018-B

Prep Batch: VXX31680
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:30
Prep Initial Wt./Vol.: 104.824 g
Prep Extract Vol: 44.2136 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR46**

Client Sample ID: **BR46**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324018
Lab Project ID: 1179324

Collection Date: 10/22/17 17:30
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):81.7
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	51.6 U		51.6	15.5	ug/Kg	1		10/31/17 22:50
1,2-Dibromoethane	10.3 U		10.3	3.20	ug/Kg	1		10/31/17 22:50
1,2-Dichloroethane	10.3 U		10.3	3.20	ug/Kg	1		10/31/17 22:50
1,3,5-Trimethylbenzene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
Benzene	3590		12.9	4.03	ug/Kg	1		10/31/17 22:50
Ethylbenzene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
Isopropylbenzene (Cumene)	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
Methyl-t-butyl ether	103 U		103	32.0	ug/Kg	1		10/31/17 22:50
Naphthalene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
n-Butylbenzene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
o-Xylene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
P & M -Xylene	51.6 U		51.6	15.5	ug/Kg	1		10/31/17 22:50
sec-Butylbenzene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
tert-Butylbenzene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
Toluene	25.8 U		25.8	8.06	ug/Kg	1		10/31/17 22:50
Surrogates								
1,2-Dichloroethane-D4 (surr)	97.2		71-136		%	1		10/31/17 22:50
4-Bromofluorobenzene (surr)	239	*	55-151		%	1		10/31/17 22:50
Toluene-d8 (surr)	94.6		85-116		%	1		10/31/17 22:50

Batch Information

Analytical Batch: VMS17404
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 22:50
Container ID: 1179324018-B

Prep Batch: VXX31659
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:30
Prep Initial Wt./Vol.: 104.824 g
Prep Extract Vol: 44.2136 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR47**

Client Sample ID: **BR47**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324019
Lab Project ID: 1179324

Collection Date: 10/22/17 17:07
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):44.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	557		226	70.1	mg/Kg	1		10/31/17 23:36
Surrogates								
5a Androstane (surr)	129		50-150		%	1		10/31/17 23:36

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 23:36
Container ID: 1179324019-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.125 g
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR47**

Client Sample ID: **BR47**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324019
Lab Project ID: 1179324

Collection Date: 10/22/17 17:07
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):44.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	266		12.3	3.68	mg/Kg	1		11/03/17 04:31
Surrogates								
4-Bromofluorobenzene (surr)	32.7	*	50-150		%	1		11/03/17 04:31

Batch Information

Analytical Batch: VFC13981
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 04:31
Container ID: 1179324019-B

Prep Batch: VXX31680
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:07
Prep Initial Wt./Vol.: 47.995 g
Prep Extract Vol: 51.8477 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR47**

Client Sample ID: **BR47**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324019
Lab Project ID: 1179324

Collection Date: 10/22/17 17:07
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):44.1
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	1260		245	73.6	ug/Kg	1		10/31/17 23:06
1,2-Dibromoethane	49.0 U		49.0	15.2	ug/Kg	1		10/31/17 23:06
1,2-Dichloroethane	832		49.0	15.2	ug/Kg	1		10/31/17 23:06
1,3,5-Trimethylbenzene	326		123	38.2	ug/Kg	1		10/31/17 23:06
Benzene	28700		3060	956	ug/Kg	50		11/04/17 00:36
Ethylbenzene	13900		123	38.2	ug/Kg	1		10/31/17 23:06
Isopropylbenzene (Cumene)	392		123	38.2	ug/Kg	1		10/31/17 23:06
Methyl-t-butyl ether	490 U		490	152	ug/Kg	1		10/31/17 23:06
Naphthalene	123 U		123	38.2	ug/Kg	1		10/31/17 23:06
n-Butylbenzene	123 U		123	38.2	ug/Kg	1		10/31/17 23:06
o-Xylene	13500		123	38.2	ug/Kg	1		10/31/17 23:06
P & M -Xylene	30100		245	73.6	ug/Kg	1		10/31/17 23:06
sec-Butylbenzene	123 U		123	38.2	ug/Kg	1		10/31/17 23:06
tert-Butylbenzene	123 U		123	38.2	ug/Kg	1		10/31/17 23:06
Toluene	59500		6130	1910	ug/Kg	50		11/04/17 00:36
Surrogates								
1,2-Dichloroethane-D4 (surr)	89.5		71-136		%	1		10/31/17 23:06
4-Bromofluorobenzene (surr)	86.6		55-151		%	1		10/31/17 23:06
Toluene-d8 (surr)	102		85-116		%	1		10/31/17 23:06

Batch Information

Analytical Batch: VMS17419
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/04/17 00:36
Container ID: 1179324019-B

Prep Batch: VXX31673
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:07
Prep Initial Wt./Vol.: 47.995 g
Prep Extract Vol: 51.8477 mL

Analytical Batch: VMS17404
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 23:06
Container ID: 1179324019-B

Prep Batch: VXX31659
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:07
Prep Initial Wt./Vol.: 47.995 g
Prep Extract Vol: 51.8477 mL

Results of **BR49**

Client Sample ID: **BR49**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324020
Lab Project ID: 1179324

Collection Date: 10/22/17 17:15
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):80.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	35.5		24.8	7.69	mg/Kg	1		10/31/17 23:45
Surrogates								
5a Androstane (surr)	99.8		50-150		%	1		10/31/17 23:45

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/17 23:45
Container ID: 1179324020-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.199 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR49**

Client Sample ID: **BR49**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324020
Lab Project ID: 1179324

Collection Date: 10/22/17 17:15
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):80.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	27.6		2.91	0.874	mg/Kg	1		11/03/17 04:50
Surrogates								
4-Bromofluorobenzene (surr)	57.5		50-150		%	1		11/03/17 04:50

Batch Information

Analytical Batch: VFC13981
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 04:50
Container ID: 1179324020-B

Prep Batch: VXX31680
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:15
Prep Initial Wt./Vol.: 93.214 g
Prep Extract Vol: 43.5183 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR49**

Client Sample ID: **BR49**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324020
Lab Project ID: 1179324

Collection Date: 10/22/17 17:15
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):80.1
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	134		58.3	17.5	ug/Kg	1		10/31/17 23:22
1,2-Dibromoethane	11.7	U	11.7	3.61	ug/Kg	1		10/31/17 23:22
1,2-Dichloroethane	50.7		11.7	3.61	ug/Kg	1		10/31/17 23:22
1,3,5-Trimethylbenzene	29.4		29.1	9.09	ug/Kg	1		10/31/17 23:22
Benzene	11000		146	45.4	ug/Kg	10		11/04/17 00:52
Ethylbenzene	597		29.1	9.09	ug/Kg	1		10/31/17 23:22
Isopropylbenzene (Cumene)	118		29.1	9.09	ug/Kg	1		10/31/17 23:22
Methyl-t-butyl ether	117	U	117	36.1	ug/Kg	1		10/31/17 23:22
Naphthalene	211		29.1	9.09	ug/Kg	1		10/31/17 23:22
n-Butylbenzene	29.1	U	29.1	9.09	ug/Kg	1		10/31/17 23:22
o-Xylene	64.7		29.1	9.09	ug/Kg	1		10/31/17 23:22
P & M -Xylene	410		58.3	17.5	ug/Kg	1		10/31/17 23:22
sec-Butylbenzene	35.8		29.1	9.09	ug/Kg	1		10/31/17 23:22
tert-Butylbenzene	29.1	U	29.1	9.09	ug/Kg	1		10/31/17 23:22
Toluene	281		29.1	9.09	ug/Kg	1		10/31/17 23:22
Surrogates								
1,2-Dichloroethane-D4 (surr)	93.3		71-136		%	1		10/31/17 23:22
4-Bromofluorobenzene (surr)	109		55-151		%	1		10/31/17 23:22
Toluene-d8 (surr)	98.1		85-116		%	1		10/31/17 23:22

Batch Information

Analytical Batch: VMS17419
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/04/17 00:52
Container ID: 1179324020-B

Prep Batch: VXX31673
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:15
Prep Initial Wt./Vol.: 93.214 g
Prep Extract Vol: 43.5183 mL

Analytical Batch: VMS17404
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 23:22
Container ID: 1179324020-B

Prep Batch: VXX31659
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:15
Prep Initial Wt./Vol.: 93.214 g
Prep Extract Vol: 43.5183 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **BR50**

Client Sample ID: **BR50**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324021
Lab Project ID: 1179324

Collection Date: 10/22/17 17:39
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):53.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	331		187	58.0	mg/Kg	1		11/01/17 00:14
Surrogates								
5a Androstane (surr)	139		50-150		%	1		11/01/17 00:14

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 00:14
Container ID: 1179324021-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.159 g
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **BR50**

Client Sample ID: **BR50**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324021
Lab Project ID: 1179324

Collection Date: 10/22/17 17:39
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):53.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	11.3		8.89	2.67	mg/Kg	1		11/14/17 23:52
Surrogates								
4-Bromofluorobenzene (surr)	183	*	50-150		%	1		11/14/17 23:52

Batch Information

Analytical Batch: VFC13990
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/14/17 23:52
Container ID: 1179324021-B

Prep Batch: VXX31723
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:39
Prep Initial Wt./Vol.: 52.541 g
Prep Extract Vol: 49.6259 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BR50**

Client Sample ID: **BR50**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324021
Lab Project ID: 1179324

Collection Date: 10/22/17 17:39
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):53.1
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	178	U	178	53.3	ug/Kg	1		10/31/17 23:38
1,2-Dibromoethane	35.6	U	35.6	11.0	ug/Kg	1		10/31/17 23:38
1,2-Dichloroethane	35.6	U	35.6	11.0	ug/Kg	1		10/31/17 23:38
1,3,5-Trimethylbenzene	88.9	U	88.9	27.7	ug/Kg	1		10/31/17 23:38
Benzene	7370		44.4	13.9	ug/Kg	1		10/31/17 23:38
Ethylbenzene	2520		88.9	27.7	ug/Kg	1		10/31/17 23:38
Isopropylbenzene (Cumene)	88.9	U	88.9	27.7	ug/Kg	1		10/31/17 23:38
Methyl-t-butyl ether	356	U	356	110	ug/Kg	1		10/31/17 23:38
Naphthalene	88.9	U	88.9	27.7	ug/Kg	1		10/31/17 23:38
n-Butylbenzene	88.9	U	88.9	27.7	ug/Kg	1		10/31/17 23:38
o-Xylene	88.9	U	88.9	27.7	ug/Kg	1		10/31/17 23:38
P & M -Xylene	1450		178	53.3	ug/Kg	1		10/31/17 23:38
sec-Butylbenzene	88.9	U	88.9	27.7	ug/Kg	1		10/31/17 23:38
tert-Butylbenzene	88.9	U	88.9	27.7	ug/Kg	1		10/31/17 23:38
Toluene	88.9	U	88.9	27.7	ug/Kg	1		11/03/17 21:48
Surrogates								
1,2-Dichloroethane-D4 (surr)	97.3		71-136		%	1		10/31/17 23:38
4-Bromofluorobenzene (surr)	77.5		55-151		%	1		10/31/17 23:38
Toluene-d8 (surr)	99.1		85-116		%	1		10/31/17 23:38

Batch Information

Analytical Batch: VMS17420
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/03/17 21:48
Container ID: 1179324021-B

Prep Batch: VXX31675
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:39
Prep Initial Wt./Vol.: 52.541 g
Prep Extract Vol: 49.6259 mL

Analytical Batch: VMS17404
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 23:38
Container ID: 1179324021-B

Prep Batch: VXX31659
Prep Method: SW5035A
Prep Date/Time: 10/22/17 17:39
Prep Initial Wt./Vol.: 52.541 g
Prep Extract Vol: 49.6259 mL

Results of **BK04**

Client Sample ID: **BK04**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324022
Lab Project ID: 1179324

Collection Date: 10/21/17 17:13
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):77.5
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	25.4	U	25.4	7.88	mg/Kg	1		11/01/17 00:24
Surrogates								
5a Androstane (surr)	79.6		50-150		%	1		11/01/17 00:24

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 00:24
Container ID: 1179324022-A

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/17 13:29
Prep Initial Wt./Vol.: 30.432 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BK04**

Client Sample ID: **BK04**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324022
Lab Project ID: 1179324

Collection Date: 10/21/17 17:13
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):77.5
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	6.65		3.23	0.969	mg/Kg	1		11/12/17 18:51
Surrogates								
4-Bromofluorobenzene (surr)	75.3		50-150		%	1		11/12/17 18:51

Batch Information

Analytical Batch: VFC13987
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/12/17 18:51
Container ID: 1179324022-B

Prep Batch: VXX31708
Prep Method: SW5035A
Prep Date/Time: 10/21/17 17:13
Prep Initial Wt./Vol.: 90.65 g
Prep Extract Vol: 45.3756 mL

Print Date: 11/17/2017 11:25:21AM

Results of **BK04**

Client Sample ID: **BK04**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324022
Lab Project ID: 1179324

Collection Date: 10/21/17 17:13
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):77.5
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	64.6	U	64.6	19.4	ug/Kg	1		10/31/17 23:54
1,2-Dibromoethane	12.9	U	12.9	4.00	ug/Kg	1		10/31/17 23:54
1,2-Dichloroethane	39.7		12.9	4.00	ug/Kg	1		10/31/17 23:54
1,3,5-Trimethylbenzene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
Benzene	5050		16.1	5.04	ug/Kg	1		10/31/17 23:54
Ethylbenzene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
Isopropylbenzene (Cumene)	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
Methyl-t-butyl ether	129	U	129	40.0	ug/Kg	1		10/31/17 23:54
Naphthalene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
n-Butylbenzene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
o-Xylene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
P & M -Xylene	64.6	U	64.6	19.4	ug/Kg	1		10/31/17 23:54
sec-Butylbenzene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
tert-Butylbenzene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
Toluene	32.3	U	32.3	10.1	ug/Kg	1		10/31/17 23:54
Surrogates								
1,2-Dichloroethane-D4 (surr)	98.8		71-136		%	1		10/31/17 23:54
4-Bromofluorobenzene (surr)	146		55-151		%	1		10/31/17 23:54
Toluene-d8 (surr)	100		85-116		%	1		10/31/17 23:54

Batch Information

Analytical Batch: VMS17404
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 23:54
Container ID: 1179324022-B

Prep Batch: VXX31659
Prep Method: SW5035A
Prep Date/Time: 10/21/17 17:13
Prep Initial Wt./Vol.: 90.65 g
Prep Extract Vol: 45.3756 mL

Print Date: 11/17/2017 11:25:21AM

Results of **VW8-91-42**

Client Sample ID: **VW8-91-42**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324023
Lab Project ID: 1179324

Collection Date: 10/20/17 17:00
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.54	U	2.54	0.761	mg/Kg	1		11/03/17 01:51
Surrogates								
4-Bromofluorobenzene (surr)	78.4		50-150		%	1		11/03/17 01:51

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 11/03/17 01:51
Container ID: 1179324023-A

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 10/20/17 17:00
Prep Initial Wt./Vol.: 49.265 g
Prep Extract Vol: 25 mL

Print Date: 11/17/2017 11:25:21AM

Results of **VW8-91-42**

Client Sample ID: **VW8-91-42**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324023
Lab Project ID: 1179324

Collection Date: 10/20/17 17:00
Received Date: 10/24/17 09:50
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	50.7	U	50.7	15.2	ug/Kg	1		10/31/17 13:07
1,2-Dibromoethane	10.1	U	10.1	3.15	ug/Kg	1		10/31/17 13:07
1,2-Dichloroethane	10.1	U	10.1	3.15	ug/Kg	1		10/31/17 13:07
1,3,5-Trimethylbenzene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
Benzene	12.7	U	12.7	3.96	ug/Kg	1		11/02/17 21:45
Ethylbenzene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
Isopropylbenzene (Cumene)	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
Methyl-t-butyl ether	101	U	101	31.5	ug/Kg	1		10/31/17 13:07
Naphthalene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
n-Butylbenzene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
o-Xylene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
P & M -Xylene	50.7	U	50.7	15.2	ug/Kg	1		10/31/17 13:07
sec-Butylbenzene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
tert-Butylbenzene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
Toluene	25.4	U	25.4	7.92	ug/Kg	1		10/31/17 13:07
Surrogates								
1,2-Dichloroethane-D4 (surr)	107		71-136		%	1		10/31/17 13:07
4-Bromofluorobenzene (surr)	122		55-151		%	1		10/31/17 13:07
Toluene-d8 (surr)	98.5		85-116		%	1		10/31/17 13:07

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 10/31/17 13:07
Container ID: 1179324023-A

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/20/17 17:00
Prep Initial Wt./Vol.: 49.265 g
Prep Extract Vol: 25 mL

Analytical Batch: VMS17410
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/02/17 21:45
Container ID: 1179324023-A

Prep Batch: VXX31663
Prep Method: SW5035A
Prep Date/Time: 10/20/17 17:00
Prep Initial Wt./Vol.: 49.265 g
Prep Extract Vol: 25 mL

Results of **W-01**

Client Sample ID: **W-01**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324024
Lab Project ID: 1179324

Collection Date: 10/21/17 18:17
Received Date: 10/24/17 09:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.620	U	0.620	0.186	mg/L	1		11/01/17 16:50
Surrogates								
5a Androstane (surr)	77		50-150		%	1		11/01/17 16:50

Batch Information

Analytical Batch: XFC13940
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 11/01/17 16:50
Container ID: 1179324024-G

Prep Batch: XXX38763
Prep Method: SW3520C
Prep Date/Time: 10/30/17 08:10
Prep Initial Wt./Vol.: 242 mL
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:25:21AM

Results of **W-01**

Client Sample ID: **W-01**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324024
Lab Project ID: 1179324

Collection Date: 10/21/17 18:17
Received Date: 10/24/17 09:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	4.02		1.00	0.310	ug/L	1		11/03/17 15:21
1,2-Dibromoethane	0.0750 U		0.0750	0.0180	ug/L	1		11/03/17 15:21
1,2-Dichloroethane	1.62		0.500	0.150	ug/L	1		11/03/17 15:21
1,3,5-Trimethylbenzene	1.30		1.00	0.310	ug/L	1		11/03/17 15:21
Benzene	19.4		0.400	0.120	ug/L	1		11/03/17 15:21
Ethylbenzene	6.91		1.00	0.310	ug/L	1		11/03/17 15:21
Isopropylbenzene (Cumene)	1.39		1.00	0.310	ug/L	1		11/03/17 15:21
Methyl-t-butyl ether	10.0 U		10.0	3.10	ug/L	1		11/03/17 15:21
Naphthalene	2.82		1.00	0.310	ug/L	1		11/03/17 15:21
n-Butylbenzene	1.00 U		1.00	0.310	ug/L	1		11/03/17 15:21
o-Xylene	1.00 U		1.00	0.310	ug/L	1		11/03/17 15:21
P & M -Xylene	8.38		2.00	0.620	ug/L	1		11/03/17 15:21
sec-Butylbenzene	1.00 U		1.00	0.310	ug/L	1		11/03/17 15:21
tert-Butylbenzene	1.00 U		1.00	0.310	ug/L	1		11/03/17 15:21
Toluene	1.00 U		1.00	0.310	ug/L	1		11/03/17 15:21
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		11/03/17 15:21
4-Bromofluorobenzene (surr)	103		85-114		%	1		11/03/17 15:21
Toluene-d8 (surr)	98.4		89-112		%	1		11/03/17 15:21

Batch Information

Analytical Batch: VMS17409
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/03/17 15:21
Container ID: 1179324024-A

Prep Batch: VXX31666
Prep Method: SW5030B
Prep Date/Time: 11/03/17 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Results of **VLP**

Client Sample ID: **VLP**
Client Project ID: **Hub Release Investigation17875**
Lab Sample ID: 1179324025
Lab Project ID: 1179324

Collection Date: 10/20/17 17:00
Received Date: 10/24/17 09:50
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
1,2-Dibromoethane	0.0750	U	0.0750	0.0180	ug/L	1		11/02/17 20:00
1,2-Dichloroethane	0.500	U	0.500	0.150	ug/L	1		11/02/17 20:00
1,3,5-Trimethylbenzene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
Benzene	0.400	U	0.400	0.120	ug/L	1		11/02/17 20:00
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
Isopropylbenzene (Cumene)	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
Methyl-t-butyl ether	10.0	U	10.0	3.10	ug/L	1		11/02/17 20:00
Naphthalene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
n-Butylbenzene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
o-Xylene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		11/02/17 20:00
sec-Butylbenzene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
tert-Butylbenzene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
Toluene	1.00	U	1.00	0.310	ug/L	1		11/02/17 20:00
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		81-118		%	1		11/02/17 20:00
4-Bromofluorobenzene (surr)	107		85-114		%	1		11/02/17 20:00
Toluene-d8 (surr)	93.6		89-112		%	1		11/02/17 20:00

Batch Information

Analytical Batch: VMS17405
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/02/17 20:00
Container ID: 1179324025-A

Prep Batch: VXX31662
Prep Method: SW5030B
Prep Date/Time: 11/02/17 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/17/2017 11:25:21AM

Method Blank

Blank ID: MB for HBN 1770873 [SPT/10354]
Blank Lab ID: 1422064

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324015, 1179324016, 1179324017, 1179324018, 1179324019, 1179324020, 1179324021, 1179324022

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10354
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB
Analytical Date/Time: 10/24/2017 3:39:00PM

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Duplicate Sample Summary

Original Sample ID: 1179303011
Duplicate Sample ID: 1422065

Analysis Date: 10/24/2017 15:39
Matrix: Soil/Solid (dry weight)

QC for Samples:

1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	87.6	86.8	%	0.98	(< 15)

Batch Information

Analytical Batch: SPT10354
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB

Print Date: 11/17/2017 11:25:27AM

Duplicate Sample Summary

Original Sample ID: 1179324011
Duplicate Sample ID: 1422066

Analysis Date: 10/24/2017 15:39
Matrix: Soil/Solid (dry weight)

QC for Samples:

1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	96.0	96.0	%	0.02	(< 15)

Batch Information

Analytical Batch: SPT10354
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB

Print Date: 11/17/2017 11:25:27AM

Duplicate Sample Summary

Original Sample ID: 1179324013
Duplicate Sample ID: 1422067

Analysis Date: 10/24/2017 15:39
Matrix: Soil/Solid (dry weight)

QC for Samples:

1179324012, 1179324013, 1179324014, 1179324015, 1179324016, 1179324017, 1179324018, 1179324019, 1179324020, 1179324021, 1179324022

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	95.3	95.9	%	0.63	(< 15)

Batch Information

Analytical Batch: SPT10354
Analytical Method: SM21 2540G
Instrument:
Analyst: CNB

Print Date: 11/17/2017 11:25:27AM

Method Blank

Blank ID: MB for HBN 1771448 [VXX/31657]
Blank Lab ID: 1423938

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324015, 1179324016, 1179324017, 1179324023

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	109	71-136		%
4-Bromofluorobenzene (surr)	98.3	55-151		%
Toluene-d8 (surr)	104	85-116		%

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 10/31/2017 10:28:00AM

Prep Batch: VXX31657
Prep Method: SW5035A
Prep Date/Time: 10/31/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31657]
Blank Spike Lab ID: 1423939
Date Analyzed: 10/31/2017 10:44

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324015, 1179324016, 1179324017, 1179324023

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,2,4-Trimethylbenzene	750	752	100	(75-123)
1,2-Dibromoethane	750	800	107	(78-122)
1,2-Dichloroethane	750	701	94	(73-128)
1,3,5-Trimethylbenzene	750	761	101	(73-124)
Benzene	750	807	108	(77-121)
Ethylbenzene	750	793	106	(76-122)
Isopropylbenzene (Cumene)	750	779	104	(68-134)
Methyl-t-butyl ether	1130	1160	103	(73-125)
Naphthalene	750	731	98	(62-129)
n-Butylbenzene	750	706	94	(70-128)
o-Xylene	750	774	103	(77-123)
P & M -Xylene	1500	1570	105	(77-124)
sec-Butylbenzene	750	789	105	(73-126)
tert-Butylbenzene	750	776	103	(73-125)
Toluene	750	779	104	(77-121)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	96.3	96	(71-136)
4-Bromofluorobenzene (surr)	750	88.6	89	(55-151)
Toluene-d8 (surr)	750	102	102	(85-116)

Batch Information

Analytical Batch: **VMS17402**
Analytical Method: **SW8260C**
Instrument: **VQA 7890/5975 GC/MS**
Analyst: **NRO**

Prep Batch: **VXX31657**
Prep Method: **SW5035A**
Prep Date/Time: **10/31/2017 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1179324001
MS Sample ID: 1423940 MS
MSD Sample ID: 1423941 MSD

Analysis Date: 10/31/2017 13:55
Analysis Date: 10/31/2017 12:03
Analysis Date: 10/31/2017 12:19
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324015, 1179324016, 1179324017, 1179324023

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	45.4	544	558	94	544	576	98	75-123	3.30	(< 20)
1,2-Dibromoethane	7.26U	544	559	103	544	557	102	78-122	0.52	(< 20)
1,2-Dichloroethane	7.26U	544	472	87	544	585	108	73-128	21.50 *	(< 20)
1,3,5-Trimethylbenzene	24.9	544	539	95	544	560	98	73-124	3.80	(< 20)
Benzene	11.1	544	558	100	544	754	137 *	77-121	30.00 *	(< 20)
Ethylbenzene	18.1U	544	571	102	544	552	98	76-122	3.10	(< 20)
Isopropylbenzene (Cumene)	18.1U	544	561	103	544	544	100	68-134	3.00	(< 20)
Methyl-t-butyl ether	72.6U	817	794	97	817	1188	145 *	73-125	39.50 *	(< 20)
Naphthalene	18.1U	544	439	81	544	529	97	62-129	18.50	(< 20)
n-Butylbenzene	18.1U	544	515	95	544	527	97	70-128	2.20	(< 20)
o-Xylene	49.5	544	580	98	544	569	96	77-123	1.90	(< 20)
P & M -Xylene	81.6	1092	1177	101	1092	1145	98	77-124	3.10	(< 20)
sec-Butylbenzene	18.1U	544	560	103	544	561	103	73-126	0.16	(< 20)
tert-Butylbenzene	18.1U	544	546	100	544	549	101	73-125	0.46	(< 20)
Toluene	18.5	544	549	98	544	575	102	77-121	4.60	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		544	532	98	544	663	122	71-136	21.90	
4-Bromofluorobenzene (surr)		756	938	124	756	959	127	55-151	2.10	
Toluene-d8 (surr)		544	558	103	544	568	105	85-116	1.90	

Batch Information

Analytical Batch: VMS17402
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 10/31/2017 12:03:00PM

Prep Batch: VXX31657
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 10/31/2017 6:00:00AM
Prep Initial Wt./Vol.: 87.71g
Prep Extract Vol: 30.01mL

Print Date: 11/17/2017 11:25:34AM

Method Blank

Blank ID: MB for HBN 1771458 [VXX/31659]
Blank Lab ID: 1423969

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324018, 1179324019, 1179324020, 1179324021, 1179324022

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	108	71-136		%
4-Bromofluorobenzene (surr)	94.5	55-151		%
Toluene-d8 (surr)	97.1	85-116		%

Batch Information

Analytical Batch: VMS17404
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 10/31/2017 8:37:00PM

Prep Batch: VXX31659
Prep Method: SW5035A
Prep Date/Time: 10/31/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31659]
Blank Spike Lab ID: 1423970
Date Analyzed: 10/31/2017 20:54

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324018, 1179324019, 1179324020, 1179324021, 1179324022

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,2,4-Trimethylbenzene	750	737	98	(75-123)
1,2-Dibromoethane	750	782	104	(78-122)
1,2-Dichloroethane	750	685	91	(73-128)
1,3,5-Trimethylbenzene	750	749	100	(73-124)
Benzene	750	795	106	(77-121)
Ethylbenzene	750	797	106	(76-122)
Isopropylbenzene (Cumene)	750	833	111	(68-134)
Methyl-t-butyl ether	1130	1150	102	(73-125)
Naphthalene	750	725	97	(62-129)
n-Butylbenzene	750	710	95	(70-128)
o-Xylene	750	788	105	(77-123)
P & M -Xylene	1500	1580	105	(77-124)
sec-Butylbenzene	750	777	104	(73-126)
tert-Butylbenzene	750	762	102	(73-125)
Toluene	750	769	103	(77-121)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	95.7	96	(71-136)
4-Bromofluorobenzene (surr)	750	92.8	93	(55-151)
Toluene-d8 (surr)	750	102	102	(85-116)

Batch Information

Analytical Batch: **VMS17404**
Analytical Method: **SW8260C**
Instrument: **VQA 7890/5975 GC/MS**
Analyst: **NRO**

Prep Batch: **VXX31659**
Prep Method: **SW5035A**
Prep Date/Time: **10/31/2017 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1179324018
MS Sample ID: 1423971 MS
MSD Sample ID: 1423972 MSD

Analysis Date: 10/31/2017 22:50
Analysis Date: 10/31/2017 21:30
Analysis Date: 10/31/2017 21:45
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324018, 1179324019, 1179324020, 1179324021, 1179324022

Results by **SW8260C**

		Matrix Spike (ug/Kg)				Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	51.6U	776	722	93		776	794	102		75-123	9.60	(< 20)
1,2-Dibromoethane	10.3U	776	830	107		776	830	107		78-122	0.03	(< 20)
1,2-Dichloroethane	10.3U	776	700	90		776	693	89		73-128	0.93	(< 20)
1,3,5-Trimethylbenzene	25.8U	776	726	94		776	771	99		73-124	5.90	(< 20)
Benzene	3590	776	4051	60	*	776	4272	88		77-121	5.30	(< 20)
Ethylbenzene	25.8U	776	786	99		776	829	105		76-122	5.30	(< 20)
Isopropylbenzene (Cumene)	25.8U	776	758	98		776	803	103		68-134	5.90	(< 20)
Methyl-t-butyl ether	103U	1165	1169	100		1165	1186	102		73-125	1.40	(< 20)
Naphthalene	25.8U	776	922	119		776	859	111		62-129	7.00	(< 20)
n-Butylbenzene	25.8U	776	732	94		776	718	93		70-128	1.90	(< 20)
o-Xylene	25.8U	776	760	97		776	857	109		77-123	11.90	(< 20)
P & M -Xylene	51.6U	1554	1518	97		1554	1616	103		77-124	6.20	(< 20)
sec-Butylbenzene	25.8U	776	763	98		776	809	104		73-126	5.90	(< 20)
tert-Butylbenzene	25.8U	776	758	98		776	826	106		73-125	8.60	(< 20)
Toluene	25.8U	776	758	96		776	783	99		77-121	3.30	(< 20)
Surrogates												
1,2-Dichloroethane-D4 (surr)		776	742	96		776	715	92		71-136	3.70	
4-Bromofluorobenzene (surr)		729	1359	185	*	729	1530	209	*	55-151	12.10	
Toluene-d8 (surr)		776	775	100		776	782	101		85-116	1.10	

Batch Information

Analytical Batch: VMS17404
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 10/31/2017 9:30:00PM

Prep Batch: VXX31659
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 10/31/2017 6:00:00AM
Prep Initial Wt./Vol.: 104.82g
Prep Extract Vol: 44.21mL

Print Date: 11/17/2017 11:25:39AM

Method Blank

Blank ID: MB for HBN 1771460 [VXX/31661]
Blank Lab ID: 1423977

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324009, 1179324010, 1179324011, 1179324013, 1179324014, 1179324016, 1179324017

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	71-136		%
4-Bromofluorobenzene (surr)	90.3	55-151		%
Toluene-d8 (surr)	97.7	85-116		%

Batch Information

Analytical Batch: VMS17407
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/1/2017 2:37:00PM

Prep Batch: VXX31661
Prep Method: SW5035A
Prep Date/Time: 11/1/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31661]
Blank Spike Lab ID: 1423978
Date Analyzed: 11/01/2017 14:53

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324009, 1179324010, 1179324011, 1179324013, 1179324014, 1179324016, 1179324017

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,2,4-Trimethylbenzene	750	758	101	(75-123)
1,3,5-Trimethylbenzene	750	768	102	(73-124)
Benzene	750	805	107	(77-121)
Ethylbenzene	750	781	104	(76-122)
Isopropylbenzene (Cumene)	750	778	104	(68-134)
Naphthalene	750	702	94	(62-129)
o-Xylene	750	763	102	(77-123)
P & M -Xylene	1500	1550	103	(77-124)
Toluene	750	762	102	(77-121)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	96.6	97	(71-136)
4-Bromofluorobenzene (surr)	750	91.9	92	(55-151)
Toluene-d8 (surr)	750	101	101	(85-116)

Batch Information

Analytical Batch: **VMS17407**
Analytical Method: **SW8260C**
Instrument: **VQA 7890/5975 GC/MS**
Analyst: **NRO**

Prep Batch: **VXX31661**
Prep Method: **SW5035A**
Prep Date/Time: **11/01/2017 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1178572021
MS Sample ID: 1423979 MS
MSD Sample ID: 1423980 MSD

Analysis Date: 11/01/2017 16:57
Analysis Date: 11/01/2017 15:53
Analysis Date: 11/01/2017 16:09
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324009, 1179324010, 1179324011, 1179324013, 1179324014, 1179324016, 1179324017

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	35.7U	1073	1016	95	1073	1087	101	75-123	6.80	(< 20)
1,3,5-Trimethylbenzene	17.9U	1073	1031	96	1073	1096	102	73-124	6.20	(< 20)
Benzene	21.1	1073	1151	105	1073	1182	108	77-121	2.60	(< 20)
Ethylbenzene	17.9U	1073	1116	104	1073	1154	108	76-122	3.40	(< 20)
Isopropylbenzene (Cumene)	17.9U	1073	1093	102	1073	1143	107	68-134	4.40	(< 20)
Naphthalene	17.9U	1073	828	77	1073	1038	97	62-129	22.50	* (< 20)
o-Xylene	13.6J	1073	1097	102	1073	1133	106	77-123	3.30	(< 20)
P & M -Xylene	37.5J	2140	2226	104	2140	2300	108	77-124	3.40	(< 20)
Toluene	356	1073	1402	98	1073	1464	104	77-121	4.30	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		1073	1030	96	1073	1025	96	71-136	0.49	
4-Bromofluorobenzene (surr)		1208	1599	133	1208	1673	139	55-151	4.30	
Toluene-d8 (surr)		1073	1084	101	1073	1082	101	85-116	0.16	

Batch Information

Analytical Batch: VMS17407
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/1/2017 3:53:00PM

Prep Batch: VXX31661
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 11/1/2017 6:00:00AM
Prep Initial Wt./Vol.: 63.66g
Prep Extract Vol: 36.94mL

Print Date: 11/17/2017 11:25:44AM

Method Blank

Blank ID: MB for HBN 1771513 [VXX/31662]
Blank Lab ID: 1424038

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1179324025

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	107	81-118		%
4-Bromofluorobenzene (surr)	105	85-114		%
Toluene-d8 (surr)	96.9	89-112		%

Batch Information

Analytical Batch: VMS17405
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: FDR
Analytical Date/Time: 11/2/2017 12:00:00PM

Prep Batch: VXX31662
Prep Method: SW5030B
Prep Date/Time: 11/2/2017 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31662]
Blank Spike Lab ID: 1424039
Date Analyzed: 11/02/2017 12:23

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31662]
Spike Duplicate Lab ID: 1424040
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1179324025

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	28.2	94	30	28.6	95	(79-124)	1.30	(< 20)
1,2-Dibromoethane	30	29.7	99	30	29.8	99	(77-121)	0.34	(< 20)
1,2-Dichloroethane	30	30.3	101	30	30.1	100	(73-128)	0.63	(< 20)
1,3,5-Trimethylbenzene	30	29.0	97	30	29.7	99	(75-124)	2.40	(< 20)
Benzene	30	29.6	99	30	29.4	98	(79-120)	0.92	(< 20)
Ethylbenzene	30	28.8	96	30	29.1	97	(79-121)	1.20	(< 20)
Isopropylbenzene (Cumene)	30	31.2	104	30	31.5	105	(72-131)	1.20	(< 20)
Methyl-t-butyl ether	45	45.8	102	45	46.0	102	(71-124)	0.46	(< 20)
Naphthalene	30	32.2	107	30	33.9	113	(61-128)	5.20	(< 20)
n-Butylbenzene	30	29.7	99	30	30.1	100	(75-128)	1.50	(< 20)
o-Xylene	30	28.7	96	30	29.0	97	(78-122)	0.97	(< 20)
P & M -Xylene	60	56.8	95	60	58.4	97	(80-121)	2.70	(< 20)
sec-Butylbenzene	30	31.0	103	30	30.8	103	(77-126)	0.52	(< 20)
tert-Butylbenzene	30	30.8	103	30	30.8	103	(78-124)	0.10	(< 20)
Toluene	30	28.9	96	30	29.4	98	(80-121)	1.70	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	94.9	95	30	93.2	93	(81-118)	1.80	
4-Bromofluorobenzene (surr)	30	97.6	98	30	95.7	96	(85-114)	2.00	
Toluene-d8 (surr)	30	103	103	30	103	103	(89-112)	0.29	

Batch Information

Analytical Batch: **VMS17405**
Analytical Method: **SW8260C**
Instrument: **VSA Agilent GC/MS 7890B/5977A**
Analyst: **FDR**

Prep Batch: **VXX31662**
Prep Method: **SW5030B**
Prep Date/Time: **11/02/2017 00:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1771550 [VXX/31663]
Blank Lab ID: 1424173

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324023

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Benzene	6.25U	12.5	3.90	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	100	71-136		%
4-Bromofluorobenzene (surr)	103	55-151		%
Toluene-d8 (surr)	99.7	85-116		%

Batch Information

Analytical Batch: VMS17410
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 11/2/2017 7:24:00PM

Prep Batch: VXX31663
Prep Method: SW5035A
Prep Date/Time: 11/2/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31663]
Blank Spike Lab ID: 1424174
Date Analyzed: 11/02/2017 19:42

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324023

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Benzene	750	786	105	(77-121)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	98.6	99	(71-136)
4-Bromofluorobenzene (surr)	750	102	102	(55-151)
Toluene-d8 (surr)	750	101	101	(85-116)

Batch Information

Analytical Batch: **VMS17410**
Analytical Method: **SW8260C**
Instrument: **VRA Agilent GC/MS 7890B/5977A**
Analyst: **NRO**

Prep Batch: **VXX31663**
Prep Method: **SW5035A**
Prep Date/Time: **11/02/2017 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1179505001
MS Sample ID: 1424175 MS
MSD Sample ID: 1424176 MSD

Analysis Date: 11/02/2017 23:48
Analysis Date: 11/02/2017 20:34
Analysis Date: 11/02/2017 20:51
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324023

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	9.98U	596	638	107	596	648	109	77-121	1.60	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		596	585	98	596	607	102	71-136	3.70	
4-Bromofluorobenzene (surr)		784	921	117	784	894	114	55-151	3.10	
Toluene-d8 (surr)		596	599	101	596	603	101	85-116	0.46	

Batch Information

Analytical Batch: VMS17410
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 11/2/2017 8:34:00PM

Prep Batch: VXX31663
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 11/2/2017 6:00:00AM
Prep Initial Wt./Vol.: 86.56g
Prep Extract Vol: 31.82mL

Print Date: 11/17/2017 11:25:54AM

Method Blank

Blank ID: MB for HBN 1771561 [VXX/31666]
Blank Lab ID: 1424206

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1179324024

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	96	89-112		%

Batch Information

Analytical Batch: VMS17409
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 11/3/2017 9:39:00AM

Prep Batch: VXX31666
Prep Method: SW5030B
Prep Date/Time: 11/3/2017 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31666]
Blank Spike Lab ID: 1424207
Date Analyzed: 11/03/2017 10:36

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31666]
Spike Duplicate Lab ID: 1424208
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1179324024

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	28.1	94	30	29.0	97	(79-124)	3.40	(< 20)
1,2-Dibromoethane	30	29.8	99	30	29.9	100	(77-121)	0.30	(< 20)
1,2-Dichloroethane	30	30.6	102	30	30.4	101	(73-128)	0.66	(< 20)
1,3,5-Trimethylbenzene	30	29.3	98	30	30.4	101	(75-124)	3.70	(< 20)
Benzene	30	29.7	99	30	30.6	102	(79-120)	3.00	(< 20)
Ethylbenzene	30	28.7	96	30	29.7	99	(79-121)	3.30	(< 20)
Isopropylbenzene (Cumene)	30	31.2	104	30	32.1	107	(72-131)	3.00	(< 20)
Methyl-t-butyl ether	45	46.6	103	45	46.6	104	(71-124)	0.02	(< 20)
Naphthalene	30	31.4	105	30	35.5	118	(61-128)	12.10	(< 20)
n-Butylbenzene	30	30.7	102	30	30.9	103	(75-128)	0.68	(< 20)
o-Xylene	30	28.4	95	30	29.8	99	(78-122)	5.10	(< 20)
P & M -Xylene	60	57.3	96	60	59.8	100	(80-121)	4.20	(< 20)
sec-Butylbenzene	30	31.2	104	30	32.0	107	(77-126)	2.50	(< 20)
tert-Butylbenzene	30	30.6	102	30	31.8	106	(78-124)	3.70	(< 20)
Toluene	30	28.8	96	30	29.3	98	(80-121)	1.50	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	94.9	95	30	93.2	93	(81-118)	1.80	
4-Bromofluorobenzene (surr)	30	98.2	98	30	97.4	97	(85-114)	0.78	
Toluene-d8 (surr)	30	102	102	30	102	102	(89-112)	0.43	

Batch Information

Analytical Batch: **VMS17409**
Analytical Method: **SW8260C**
Instrument: **VSA Agilent GC/MS 7890B/5977A**
Analyst: **NRO**

Prep Batch: **VXX31666**
Prep Method: **SW5030B**
Prep Date/Time: **11/03/2017 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1771601 [VXX/31673]
Blank Lab ID: 1424375

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324019, 1179324020

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Benzene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	94.3	71-136		%
4-Bromofluorobenzene (surr)	99.5	55-151		%
Toluene-d8 (surr)	101	85-116		%

Batch Information

Analytical Batch: VMS17419
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/3/2017 6:03:00PM

Prep Batch: VXX31673
Prep Method: SW5035A
Prep Date/Time: 11/3/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31673]
Blank Spike Lab ID: 1424376
Date Analyzed: 11/03/2017 18:20

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324019, 1179324020

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Benzene	750	799	107	(77-121)
Toluene	750	753	100	(77-121)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	92	92	(71-136)
4-Bromofluorobenzene (surr)	750	89.1	89	(55-151)
Toluene-d8 (surr)	750	95.7	96	(85-116)

Batch Information

Analytical Batch: **VMS17419**
Analytical Method: **SW8260C**
Instrument: **VQA 7890/5975 GC/MS**
Analyst: **NRO**

Prep Batch: **VXX31673**
Prep Method: **SW5035A**
Prep Date/Time: **11/03/2017 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1178566001
MS Sample ID: 1424377 MS
MSD Sample ID: 1424378 MSD

Analysis Date: 11/03/2017 20:39
Analysis Date: 11/03/2017 18:57
Analysis Date: 11/03/2017 19:14
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324019, 1179324020

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	10.3U	1229	1527	124 *	1229	1278	104	77-121	17.50	(< 20)
Toluene	20.5U	1229	1151	94	1229	1247	102	77-121	8.00	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		1229	1272	103	1229	1147	93	71-136	10.20	
4-Bromofluorobenzene (surr)		1307	1501	114	1307	1384	105	55-151	8.30	
Toluene-d8 (surr)		1229	1129	92	1229	1232	100	85-116	8.60	

Batch Information

Analytical Batch: VMS17419
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/3/2017 6:57:00PM

Prep Batch: VXX31673
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 11/3/2017 6:00:00AM
Prep Initial Wt./Vol.: 61.59g
Prep Extract Vol: 39.00mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1771602 [VXX/31674]
Blank Lab ID: 1424379

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324023

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	85.3	50-150		%

Batch Information

Analytical Batch: VFC13979
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: NRB
Analytical Date/Time: 11/3/2017 12:55:00AM

Prep Batch: VXX31674
Prep Method: SW5035A
Prep Date/Time: 11/2/2017 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31674]
Blank Spike Lab ID: 1424380
Date Analyzed: 11/03/2017 00:00

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31674]
Spike Duplicate Lab ID: 1424381
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324001, 1179324002, 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324023

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	12.5	13.1	105	12.5	13.3	107	(60-120)	1.90	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	87.5	88	1.25	87.7	88	(50-150)	0.14	

Batch Information

Analytical Batch: **VFC13979**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **NRB**

Prep Batch: **VXX31674**
Prep Method: **SW5035A**
Prep Date/Time: **11/02/2017 00:30**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1771605 [VXX/31675]
Blank Lab ID: 1424385

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324017, 1179324021

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	102	71-136		%
4-Bromofluorobenzene (surr)	101	55-151		%
Toluene-d8 (surr)	100	85-116		%

Batch Information

Analytical Batch: VMS17420
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 11/3/2017 5:52:00PM

Prep Batch: VXX31675
Prep Method: SW5035A
Prep Date/Time: 11/3/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31675]
Blank Spike Lab ID: 1424386
Date Analyzed: 11/03/2017 18:10

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324017, 1179324021

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Toluene	750	782	104	(77-121)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	99.9	100	(71-136)
4-Bromofluorobenzene (surr)	750	101	101	(55-151)
Toluene-d8 (surr)	750	101	101	(85-116)

Batch Information

Analytical Batch: **VMS17420**
Analytical Method: **SW8260C**
Instrument: **VRA Agilent GC/MS 7890B/5977A**
Analyst: **NRO**

Prep Batch: **VXX31675**
Prep Method: **SW5035A**
Prep Date/Time: **11/03/2017 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1424393
MS Sample ID: 1424394 MS
MSD Sample ID: 1424395 MSD

Analysis Date: 11/03/2017 21:13
Analysis Date: 11/03/2017 19:09
Analysis Date: 11/03/2017 19:27
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1179324017, 1179324021

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Toluene	7.83J	385	393	100	385	405	103	77-121	3.10	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		385	376	98	385	385	100	71-136	2.50	
4-Bromofluorobenzene (surr)		642	549	86	642	570	89	55-151	3.80	
Toluene-d8 (surr)		385	387	101	385	387	101	85-116	0.00	

Batch Information

Analytical Batch: VMS17420
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 11/3/2017 7:09:00PM

Prep Batch: VXX31675
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 11/3/2017 6:00:00AM
Prep Initial Wt./Vol.: 97.42g
Prep Extract Vol: 25.00mL

Print Date: 11/17/2017 11:26:12AM

Method Blank

Blank ID: MB for HBN 1771615 [VXX/31680]
Blank Lab ID: 1424426

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324017, 1179324018, 1179324019, 1179324020

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	101	50-150		%

Batch Information

Analytical Batch: VFC13981
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: NRB
Analytical Date/Time: 11/2/2017 10:31:00PM

Prep Batch: VXX31680
Prep Method: SW5035A
Prep Date/Time: 11/2/2017 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31680]
Blank Spike Lab ID: 1424427
Date Analyzed: 11/02/2017 21:34

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31680]
Spike Duplicate Lab ID: 1424428
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324017, 1179324018, 1179324019, 1179324020

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	12.5	14.4	115	12.5	13.6	109	(60-120)	5.90	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	104	104	1.25	99.5	100	(50-150)	4.30	

Batch Information

Analytical Batch: **VFC13981**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **NRB**

Prep Batch: **VXX31680**
Prep Method: **SW5035A**
Prep Date/Time: **11/02/2017 00:30**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1772051 [VXX/31708]
Blank Lab ID: 1425493

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324022

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	80.1	50-150		%

Batch Information

Analytical Batch: VFC13987
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: NRB
Analytical Date/Time: 11/12/2017 5:56:00PM

Prep Batch: VXX31708
Prep Method: SW5035A
Prep Date/Time: 11/12/2017 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31708]
Blank Spike Lab ID: 1425494
Date Analyzed: 11/12/2017 16:05

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31708]
Spike Duplicate Lab ID: 1425495
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324022

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	12.5	12.6	101	12.5	12.1	97	(60-120)	3.80	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	93.5	94	1.25	86.1	86	(50-150)	8.30	

Batch Information

Analytical Batch: **VFC13987**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **NRB**

Prep Batch: **VXX31708**
Prep Method: **SW5035A**
Prep Date/Time: **11/12/2017 00:30**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1179639003
MS Sample ID: 1425496 MS
MSD Sample ID: 1425497 MSD

QC for Samples: 1179324022

Analysis Date: 11/12/2017 23:27
Analysis Date: 11/12/2017 16:42
Analysis Date: 11/12/2017 17:01
Matrix: Soil/Solid (dry weight)

Results by **AK101**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	0.900U	7.66	7.07	92	7.66	6.96	91	60-120	1.70	(< 20)
Surrogates										
4-Bromofluorobenzene (surr)		0.766	0.524	68	0.766	0.519	68	50-150	0.94	

Batch Information

Analytical Batch: VFC13987
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: NRB
Analytical Date/Time: 11/12/2017 4:42:00PM

Prep Batch: VXX31708
Prep Method: AK101 Extraction (S)
Prep Date/Time: 11/12/2017 12:30:00AM
Prep Initial Wt./Vol.: 85.84g
Prep Extract Vol: 25.00mL

Print Date: 11/17/2017 11:26:22AM

Method Blank

Blank ID: MB for HBN 1772157 [VXX/31718]
Blank Lab ID: 1425686

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324008

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	88.6	50-150		%

Batch Information

Analytical Batch: VFC13989
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: NRB
Analytical Date/Time: 11/13/2017 6:12:00PM

Prep Batch: VXX31718
Prep Method: SW5035A
Prep Date/Time: 11/13/2017 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31718]
Blank Spike Lab ID: 1425689
Date Analyzed: 11/13/2017 16:22

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31718]
Spike Duplicate Lab ID: 1425690
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324008

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	12.5	11.3	91	12.5	11.6	93	(60-120)	2.30	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	86.5	87	1.25	90.4	90	(50-150)	4.50	

Batch Information

Analytical Batch: **VFC13989**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **NRB**

Prep Batch: **VXX31718**
Prep Method: **SW5035A**
Prep Date/Time: **11/13/2017 00:30**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1772197 [VXX/31723]
Blank Lab ID: 1425841

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324015, 1179324021

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	88.5	50-150		%

Batch Information

Analytical Batch: VFC13990
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: NRB
Analytical Date/Time: 11/14/2017 4:28:00PM

Prep Batch: VXX31723
Prep Method: SW5035A
Prep Date/Time: 11/14/2017 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31723]
Blank Spike Lab ID: 1425844
Date Analyzed: 11/14/2017 14:37

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31723]
Spike Duplicate Lab ID: 1425845
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324015, 1179324021

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	12.5	11.4	92	12.5	11.8	95	(60-120)	3.50	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	89.8	90	1.25	91.9	92	(50-150)	2.40	

Batch Information

Analytical Batch: **VFC13990**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **NRB**

Prep Batch: **VXX31723**
Prep Method: **SW5035A**
Prep Date/Time: **11/14/2017 00:30**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1772202 [VXX/31724]
Blank Lab ID: 1425858

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324016

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	85.7	50-150		%

Batch Information

Analytical Batch: VFC13990
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: NRB
Analytical Date/Time: 11/15/2017 11:39:00AM

Prep Batch: VXX31724
Prep Method: SW5035A
Prep Date/Time: 11/14/2017 12:30:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [VXX31724]
Blank Spike Lab ID: 1425859
Date Analyzed: 11/15/2017 00:29

Spike Duplicate ID: LCSD for HBN 1179324 [VXX31724]
Spike Duplicate Lab ID: 1425860
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324016

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	12.5	10.9	88	12.5	10.9	88	(60-120)	0.08	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	89.7	90	1.25	85.4	85	(50-150)	4.90	

Batch Information

Analytical Batch: **VFC13990**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **NRB**

Prep Batch: **VXX31724**
Prep Method: **SW5035A**
Prep Date/Time: **11/14/2017 00:30**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1770883 [XXX/38741]
Blank Lab ID: 1422106

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324001, 1179324002

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	70.2	60-120		%

Batch Information

Analytical Batch: XFC13924
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 10/28/2017 9:27:00PM

Prep Batch: XXX38741
Prep Method: SW3550C
Prep Date/Time: 10/25/2017 9:58:35AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 11/17/2017 11:26:38AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [XXX38741]
Blank Spike Lab ID: 1422107
Date Analyzed: 10/28/2017 21:36

Spike Duplicate ID: LCSD for HBN 1179324 [XXX38741]
Spike Duplicate Lab ID: 1422108
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324001, 1179324002

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	130	78	167	125	75	* (75-125)	4.20	(< 20)
Surrogates									
5a Androstane (surr)	3.33	76.4	76	3.33	73.9	74	(60-120)	3.30	

Batch Information

Analytical Batch: **XFC13924**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **CMS**

Prep Batch: **XXX38741**
Prep Method: **SW3550C**
Prep Date/Time: **10/25/2017 09:58**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1770949 [XXX/38750]
Blank Lab ID: 1422381

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324015, 1179324016, 1179324017, 1179324018, 1179324019, 1179324020, 1179324021, 1179324022

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	89.1	60-120		%

Batch Information

Analytical Batch: XFC13935
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CMS
Analytical Date/Time: 10/31/2017 9:59:00PM

Prep Batch: XXX38750
Prep Method: SW3550C
Prep Date/Time: 10/26/2017 1:29:24PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [XXX38750]
Blank Spike Lab ID: 1422382
Date Analyzed: 10/31/2017 22:08

Spike Duplicate ID: LCSD for HBN 1179324 [XXX38750]
Spike Duplicate Lab ID: 1422383
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324003, 1179324004, 1179324005, 1179324006, 1179324007, 1179324008, 1179324009, 1179324010, 1179324011, 1179324012, 1179324013, 1179324014, 1179324015, 1179324016, 1179324017, 1179324018, 1179324019, 1179324020, 1179324021, 1179324022

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	161	97	167	164	98	(75-125)	1.30	(< 20)
Surrogates									
5a Androstane (surr)	3.33	96.2	96	3.33	97.2	97	(60-120)	1.00	

Batch Information

Analytical Batch: **XFC13935**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **CMS**

Prep Batch: **XXX38750**
Prep Method: **SW3550C**
Prep Date/Time: **10/26/2017 13:29**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1770982 [XXX/38755]
Blank Lab ID: 1422536

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179324006, 1179324016

Results by **8270D SIM (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	12.5U	25.0	7.50	ug/Kg
2-Methylnaphthalene	12.5U	25.0	7.50	ug/Kg
Acenaphthene	12.5U	25.0	7.50	ug/Kg
Acenaphthylene	12.5U	25.0	7.50	ug/Kg
Anthracene	12.5U	25.0	7.50	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	7.50	ug/Kg
Benzo[a]pyrene	12.5U	25.0	7.50	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	7.50	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	7.50	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	7.50	ug/Kg
Chrysene	12.5U	25.0	7.50	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	7.50	ug/Kg
Fluoranthene	12.5U	25.0	7.50	ug/Kg
Fluorene	12.5U	25.0	7.50	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	7.50	ug/Kg
Naphthalene	10.0U	20.0	6.00	ug/Kg
Phenanthrene	12.5U	25.0	7.50	ug/Kg
Pyrene	12.5U	25.0	7.50	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	75.3	50-150		%
Fluoranthene-d10 (surr)	77.3	50-150		%

Batch Information

Analytical Batch: XMS10538
Analytical Method: 8270D SIM (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 11/10/2017 12:40:00PM

Prep Batch: XXX38755
Prep Method: SW3550C
Prep Date/Time: 10/27/2017 7:57:26AM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [XXX38755]
Blank Spike Lab ID: 1422537
Date Analyzed: 11/10/2017 13:01

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324006, 1179324016

Results by **8270D SIM (PAH)**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	111	91.7	83	(43-111)
2-Methylnaphthalene	111	83.8	75	(39-114)
Acenaphthene	111	95.1	86	(44-111)
Acenaphthylene	111	95.2	86	(39-116)
Anthracene	111	107	97	(50-114)
Benzo(a)Anthracene	111	99.4	90	(54-122)
Benzo[a]pyrene	111	91.4	82	(50-125)
Benzo[b]Fluoranthene	111	99.0	89	(53-128)
Benzo[g,h,i]perylene	111	101	91	(49-127)
Benzo[k]fluoranthene	111	103	93	(56-123)
Chrysene	111	104	94	(57-118)
Dibenzo[a,h]anthracene	111	99.6	90	(50-129)
Fluoranthene	111	94.0	85	(55-119)
Fluorene	111	98.3	89	(47-114)
Indeno[1,2,3-c,d] pyrene	111	101	91	(49-130)
Naphthalene	111	82.0	74	(38-111)
Phenanthrene	111	112	101	(49-113)
Pyrene	111	98.7	89	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111	78.6	79	(50-150)
Fluoranthene-d10 (surr)	111	80.7	81	(50-150)

Batch Information

Analytical Batch: **XMS10538**
Analytical Method: **8270D SIM (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **DSD**

Prep Batch: **XXX38755**
Prep Method: **SW3550C**
Prep Date/Time: **10/27/2017 07:57**
Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 11/17/2017 11:26:48AM

Matrix Spike Summary

Original Sample ID: 1177500008
MS Sample ID: 1422538 MS
MSD Sample ID: 1422539 MSD

Analysis Date: 11/10/2017 15:24
Analysis Date: 11/10/2017 15:44
Analysis Date: 11/10/2017 16:04
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179324006, 1179324016

Results by **8270D SIM (PAH)**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	14.2U	127	101	79	128	103	81	43-111	2.00	(< 20)
2-Methylnaphthalene	14.2U	127	93.3	73	128	95.8	75	39-114	2.60	(< 20)
Acenaphthene	14.2U	127	104	82	128	107	83	44-111	2.50	(< 20)
Acenaphthylene	14.2U	127	105	83	128	107	84	39-116	1.80	(< 20)
Anthracene	14.2U	127	120	94	128	123	96	50-114	1.50	(< 20)
Benzo(a)Anthracene	14.2U	127	115	90	128	114	89	54-122	1.40	(< 20)
Benzo[a]pyrene	14.2U	127	107	84	128	107	83	50-125	0.59	(< 20)
Benzo[b]Fluoranthene	14.2U	127	114	90	128	115	90	53-128	0.69	(< 20)
Benzo[g,h,i]perylene	14.2U	127	111	87	128	111	86	49-127	0.32	(< 20)
Benzo[k]fluoranthene	14.2U	127	118	92	128	114	89	56-123	3.00	(< 20)
Chrysene	14.2U	127	119	93	128	118	92	57-118	1.00	(< 20)
Dibenzo[a,h]anthracene	14.2U	127	110	86	128	110	86	50-129	0.26	(< 20)
Fluoranthene	14.2U	127	105	82	128	103	81	55-119	1.80	(< 20)
Fluorene	14.2U	127	107	83	128	110	86	47-114	2.80	(< 20)
Indeno[1,2,3-c,d] pyrene	14.2U	127	111	87	128	111	87	49-130	0.32	(< 20)
Naphthalene	11.4U	127	91.2	71	128	96.8	76	38-111	5.90	(< 20)
Phenanthrene	14.2U	127	124	97	128	126	98	49-113	2.10	(< 20)
Pyrene	14.2U	127	110	86	128	110	86	55-117	0.33	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		127	93.3	73	128	95.6	75	50-150	2.40	
Fluoranthene-d10 (surr)		127	97.3	76	128	95.3	74	50-150	2.20	

Batch Information

Analytical Batch: XMS10538
Analytical Method: 8270D SIM (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 11/10/2017 3:44:00PM

Prep Batch: XXX38755
Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
Prep Date/Time: 10/27/2017 7:57:26AM
Prep Initial Wt./Vol.: 22.63g
Prep Extract Vol: 5.00mL

Print Date: 11/17/2017 11:26:48AM

Method Blank

Blank ID: MB for HBN 1771103 [XXX/38763]
Blank Lab ID: 1422877

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1179324024

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	88.1	60-120		%

Batch Information

Analytical Batch: XFC13934
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CMS
Analytical Date/Time: 10/31/2017 5:36:00PM

Prep Batch: XXX38763
Prep Method: SW3520C
Prep Date/Time: 10/30/2017 8:10:31AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179324 [XXX38763]
Blank Spike Lab ID: 1422878
Date Analyzed: 10/31/2017 17:46

Spike Duplicate ID: LCSD for HBN 1179324 [XXX38763]
Spike Duplicate Lab ID: 1422879
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1179324024

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	18.7	93	20	18.9	95	(75-125)	1.20	(< 20)
Surrogates									
5a Androstane (surr)	0.4	88.8	89	0.4	97.6	98	(60-120)	9.40	

Batch Information

Analytical Batch: **XFC13934**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **CMS**

Prep Batch: **XXX38763**
Prep Method: **SW3520C**
Prep Date/Time: **10/30/2017 08:10**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

SGS

SGS NORTH AMERICA INC. CHAIN OF CU

1179324

SGS Environmental Services
200 West Potter Road
Anchorage, AK 99518
(907) 562-2343
www.sgs.com/alaska

SECTION 1

CLIENT: EMI

CONTACT: Larry Helgeson — PHONE #: 907-272-9336

PROJECT NAME: Hub Release Investigation — PROJECT/ PWSID/ PERMIT #: 17875

REPORTS TO: Larry Helgeson — E-MAIL:

INVOICE TO: EMI — QUOTE #: — P.O. #: 17875

INSTRUCTIONS: SECTIONS 1-5 MUST BE FILLED OUT. OMISSIONS MAY DELAY THE ONSET OF ANALYSIS.

SECTION 2

RESERVED FOR LAB USE	SAMPLE IDENTIFICATION	DATE MM/DD/YY	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE: Comp Grab MI (Multi-incremental)	PRESERVATIVE: None	None	MeOH + BFB	MeOH + BFB							REMARKS/ LOC ID
							DRO (AK102)	PAH (8270D-SIM)	GRO (AK101)	VOC-Petro (8260)							
(1) A-B	X02	10/22/17	17:17	S	2	GRAB	X		X	X							
(2) A-B	X11	10/22/17	17:26	S	2	GRAB	↓		↓	↓							
(3) A-B	X12	10/22/17	17:32	S	2	GRAB											
(4) A-B	X13	10/22/17	17:37	S	2	GRAB											
(5) A-B	X26	10/22/17	17:46	S	2	GRAB											
(6) A-B	X33	10/22/17	17:52	S	2	GRAB		X									
(7) A-B	X50	10/22/17	17:59	S	2	GRAB				↓							
(8) A-B	SR01	10/22/17	18:21	S	2	GRAB											
(9) A-B	SR09	10/22/17	18:09	S	2	GRAB	↓		↓	↓							
(10) A-B	SR11	10/22/17	18:15	S	2	GRAB	X		X	X							

SECTION 5

	DATE	TIME	
RELINQUISHED BY: (1) Terrance Mount	10/24/17	09:50	RECEIVED BY:
RELINQUISHED BY:(2)	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:(3)	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:(4)	10/24/17	9:50	RECEIVED FOR LABORATORY BY: Jayme Collie

SECTION 4 DOD Project? NO

COC ID:

Cooler ID:

DATA DELIVERABLE REQUIREMENTS: Level II

REQUESTED TURNAROUND TIME AND/OR SPECIAL INSTRUCTIONS: Std TAT. Hold samples pending result for possible Pb analysis

TEMP BLANK °C: 3.9 DLO

OR AMBIENT [ ]

(See attached Sample Receipt Form)

CHAIN OF CUSTODY SEAL: (CIRCLE) HD

INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

http://www.sgs.com/terms-and-conditions

F101_eCOC_Revised_2014-12-10

SGS

SGS NORTH AMERICA INC. CHAIN OF C

1179324

SGS Environmental Services
200 West Potter Road
Anchorage, AK 99518
(907) 562-2343
www.sgs.com/alaska

SECTION 1

CLIENT: EMI

CONTACT: Larry Helgeson | PHONE #: 907-272-9336

PROJECT NAME: Hub Release Investigation | PROJECT/ PWSID/ PERMIT #: 17875

REPORTS TO: Larry Helgeson | E-MAIL:

INVOICE TO: EMI | QUOTE #: | P.O. #: 17875

INSTRUCTIONS: SECTIONS 1-5 MUST BE FILLED OUT. OMISSIONS MAY DELAY THE ONSET OF ANALYSIS.

SECTION 3

SECTION 2

RESERVED FOR LAB USE	SAMPLE IDENTIFICATION	DATE MM/DD/YY	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE: Comp Grab MI (Multi-incremental)	PRESERVATIVE: None	None	MeOH + BFB	MeOH + BFB							REMARKS/ LOC ID
							DRO (AK102)	PAH (8270D-SIM)	GRO (AK101)	VOC-Petro (8260)							
(11) A-B	SR20	10/22/17	18:09	S	2	GRAB	X		X	X							
(12) A-B	SR24	10/22/17	18:23	S	2	GRAB											
(13) A-B	SR27	10/22/17	17:53	S	2	GRAB											
(14) A-B	SR30	10/22/17	17:47	S	2	GRAB											
(15) A-B	SR36	10/22/17	18:28	S	2	GRAB											
(16) A-B	BR15	10/22/17	16:59	S	2	GRAB		X									
(17) A-B	BR45	10/22/17	17:25	S	2	GRAB											
(18) A-B	BR46	10/22/17	17:30	S	2	GRAB											
(19) A-B	BR47	10/22/17	17:07	S	2	GRAB											
(20) A-B	BR49	10/22/17	17:15	S	2	GRAB	X		X	X							

SECTION 5

	DATE	TIME	
RELINQUISHED BY: (1) ~~Terrance Mont~~ Terrance Mont	10/24/17	9:50	RECEIVED BY:
RELINQUISHED BY:(2)	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:(3)	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:(4)	DATE 10/24/17	TIME 9:50	RECEIVED FOR LABORATORY BY: Rayne Collie

SECTION 4

DOD Project? NO

COC ID:

Cooler ID:

DATA DELIVERABLE REQUIREMENTS: Level II

REQUESTED TURNAROUND TIME AND/OR SPECIAL INSTRUCTIONS

TEMP BLANK °C: 3.9 D10 OR AMBIENT [ ]
(See attached Sample Receipt Form)

CHAIN OF CUSTODY SEAL: (CIRCLE) INTACT BROKEN ABSENT
(See attached Sample Receipt Form)

http://www.sgs.com/terms-and-conditions

F101_eCOC_Revised_2014-12-10

SGS

SGS NORTH AMERICA INC. CHAIN OF CU

1179324

SGS Environmental Services
200 West Potter Road
Anchorage, AK 99518
(907) 562-2343
www.sgs.com/alaska

SECTION 1

CLIENT: EMI

CONTACT: Larry Helgeson | PHONE #: 907-272-9336

PROJECT NAME: Hub Release Investigation | PROJECT/ PWSID/ PERMIT #: 17875

REPORTS TO: Larry Helgeson | E-MAIL:

INVOICE TO: EMI | QUOTE #: | P.O. #: 17875

INSTRUCTIONS: SECTIONS 1-5 MUST BE FILLED OUT. OMISSIONS MAY DELAY THE ONSET OF ANALYSIS.

SECTION 2

RESERVED FOR LAB USE	SAMPLE IDENTIFICATION	DATE MM/DD/YY	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE: Comp Grab MI (Multi-incremental)	PRESERVATIVE: None	None	MeOH + BFB	MeOH + BFB							REMARKS/ LOC ID
							DRO (AK102)	PAH (8270D-SIM)	GRO (AK101)	VOC-Petro (8260)							
(21) A-B	BR50	10/22/17	17:39	S	2	GRAB	X		X	X							
(22) A-B	BK04	10/21/17	17:13	S	2	GRAB	X		X	X							
(23) A	VW8-91-42	10/20/17	17:00	S	1					X							Soil TB
(24) A-H	W-01	10/21/17	18:17	W	8		X			X							
(25) A-C	VLP	10/20/17	17:00	W	1					X							Water TB

SECTION 5

	DATE	TIME	
RELINQUISHED BY: (1) Terrance Mould	10/24/17	9:50	RECEIVED BY:
RELINQUISHED BY:(2)	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:(3)	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:(4)	10/24/17	09:50	RECEIVED FOR LABORATORY BY:

SECTION 4

DOD Project? NO

COC ID:

Cooler ID:

DATA DELIVERABLE REQUIREMENTS: Level II

REQUESTED TURNAROUND TIME AND/OR SPECIAL INSTRUCTIONS

TEMP BLANK °C: 3.9 D10 OR AMBIENT [ ]
(See attached Sample Receipt Form)

CHAIN OF CUSTODY SEAL: (CIRCLE) INTACT BROKEN ABSENT
(See attached Sample Receipt Form)

http://www.sgs.com/terms-and-conditions

F101_eCOC_Revised_2014-12-10

SGS

e-Sample Receipt Form

SGS Workorder #: **1179324**

1 1 7 9 3 2 4

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		Yes — Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
	N/A	**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 3.9 °C Therm. ID: D10
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
If samples 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".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)? **Note: If times differ <1hr, record details & login per COC.	Yes	
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	Yes	
		N/A — ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	Yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	Water and Soil Trip Blanks in cooler with samples.
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	Yes	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1179324001-A	No Preservative Required	OK			
1179324001-B	Methanol field pres. 4 C	OK			
1179324002-A	No Preservative Required	OK			
1179324002-B	Methanol field pres. 4 C	OK			
1179324003-A	No Preservative Required	OK			
1179324003-B	Methanol field pres. 4 C	OK			
1179324004-A	No Preservative Required	OK			
1179324004-B	Methanol field pres. 4 C	OK			
1179324005-A	No Preservative Required	OK			
1179324005-B	Methanol field pres. 4 C	OK			
1179324006-A	No Preservative Required	OK			
1179324006-B	Methanol field pres. 4 C	OK			
1179324007-A	No Preservative Required	OK			
1179324007-B	Methanol field pres. 4 C	OK			
1179324008-A	No Preservative Required	OK			
1179324008-B	Methanol field pres. 4 C	OK			
1179324009-A	No Preservative Required	OK			
1179324009-B	Methanol field pres. 4 C	OK			
1179324010-A	No Preservative Required	OK			
1179324010-B	Methanol field pres. 4 C	OK			
1179324011-A	No Preservative Required	OK			
1179324011-B	Methanol field pres. 4 C	OK			
1179324012-A	No Preservative Required	OK			
1179324012-B	Methanol field pres. 4 C	OK			
1179324013-A	No Preservative Required	OK			
1179324013-B	Methanol field pres. 4 C	OK			
1179324014-A	No Preservative Required	OK			
1179324014-B	Methanol field pres. 4 C	OK			
1179324015-A	No Preservative Required	OK			
1179324015-B	Methanol field pres. 4 C	OK			
1179324016-A	No Preservative Required	OK			
1179324016-B	Methanol field pres. 4 C	OK			
1179324017-A	No Preservative Required	OK			
1179324017-B	Methanol field pres. 4 C	OK			
1179324018-A	No Preservative Required	OK			
1179324018-B	Methanol field pres. 4 C	OK			
1179324019-A	No Preservative Required	OK			
1179324019-B	Methanol field pres. 4 C	OK			
1179324020-A	No Preservative Required	OK			
1179324020-B	Methanol field pres. 4 C	OK			

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1179324021-A	No Preservative Required	OK			
1179324021-B	Methanol field pres. 4 C	OK			
1179324022-A	No Preservative Required	OK			
1179324022-B	Methanol field pres. 4 C	OK			
1179324023-A	Methanol field pres. 4 C	OK			
1179324024-A	HCL to pH < 2	OK			
1179324024-B	HCL to pH < 2	OK			
1179324024-C	HCL to pH < 2	OK			
1179324024-D	HCL to pH < 2	OK			
1179324024-E	HCL to pH < 2	OK			
1179324024-F	HCL to pH < 2	BU			
1179324024-G	HCL to pH < 2	OK			
1179324024-H	HCL to pH < 2	OK			
1179324025-A	HCL to pH < 2	OK			
1179324025-B	HCL to pH < 2	OK			
1179324025-C	HCL to pH < 2	OK			

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed by:

Larry Helgeson

Title:

Environmental Engineer

Date:

January 15, 2018

CS Report Name:

Report Date:

November 17, 2017

Consultant Firm:

Environmental Management, Inc.

Laboratory Name:

SGS -North America

Laboratory Report Number:

1179324

ADEC File Number:

Hazard Identification Number:

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

      (•) Yes ( ) No 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 Comments:

      Samples were not transferred.

2. Chain of Custody (COC)

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

      (•) Yes ( ) No Comments:

   b. Correct analyses requested?

      (•) Yes ( ) No Comments:

3. Laboratory Sample Receipt Documentation

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

      (•) Yes ( ) No Comments:

      Cooler temperature was 3.9°C

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

      (•) Yes ( ) No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

      (•) Yes ( ) No Comments:

      None were broken or leaking.

   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 Comments:

e. Data quality or usability affected?

Comments:

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No Comments:

b. Discrepancies, errors or QC failures identified by the lab?

(•) Yes ( ) No Comments:

c. Were all corrective actions documented?

(•) Yes ( ) No Comments:

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

Comments:

None, most sample QC failures were due to dilution & matrix interference.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No Comments:

b. All applicable holding times met?

(•) Yes ( ) No Comments:

c. All soils reported on a dry weight basis?

(•) Yes ( ) No Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

(•) Yes ( ) No Comments:

LOQ for 1,2-Dibromoethane and was above the action level in all of the samples. In several cases individual LOQs were above the action level but there was other contamination present requiring dilution or intefering with the results.

e. Data quality or usability affected?

Comments:

No 1,2-Dibromoethane should not be considered a primary contaminant of concern unless it has been detected independently at the site above the action level.

6. QC Samples

a. Method Blank

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

(•) Yes ( ) No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

(•) Yes ( ) No Comments:

iii. If above LOQ, what samples are affected?

Comments:

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

(•) Yes ( ) No Comments:

v. Data quality or usability affected?

Comments:

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 Comments:

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

(•) Yes ( ) No Comments:

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 Comments:

MTBE and Benzene on MSD 1423941 and benzene on MS 1423971 were out of range. LCS on impacted samples met standard

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 Comments:

MSD RPDs for naphalene was 22.5%

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 Comments:

vii. Data quality or usability affected?

Comments:

In all cases where listed compounds were detected the area was considered contaminated due to other comnpounds. Therefore there is no significant impact on the site characterization.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

(•) Yes ( ) No 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 Comments:

There were multiple failed recoveries due to dilution or matrix interference

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

( ) Yes (•) No Comments:

Failed surrogates are marked with an "*" but the data itself does not have a separate data flag.

iv. Data quality or usability affected?

Comments:

No, in all cases the sample was contamainted with other compounds requiring dilution.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

(•) Yes ( ) No 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 Comments:

Only one cooler was used

iii. All results less than LOQ?

(•) Yes ( ) No Comments:

iv. If above LOQ, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

(•) Yes ( ) No Comments:

ii. Submitted blind to lab?

(•) Yes ( ) No Comments:

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 Comments:

RPD on samples X02 and X50 for benzene and toluene were out of limits with resluts close to 100%. The rest of the RPDs calcualted were from 8% to 28% which was acceptable. The poor RPDs maybe to the heterogenious nature of the stockpiles.

iv. Data quality or usability affected?

Comments:

Overall the site data indicates the site is still contamainted based on several results so the couple of elevated RPDs does not have a big imapct on the site overall.

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

○ Yes ○ No ◉ Not Applicable

i. All results less than LOQ?

○ Yes ◉ No Comments:

Only previously cleaned sample spoons or disposible tools were used to collect the samples. No decontaminaiton was done in the field.

ii. If above LOQ, what samples are affected?

Comments:

iii. Data quality or usability affected?

Comments:

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

   a. Defined and appropriate?

      ○ Yes ◉ No Comments:

Appendix D
Well Logs

7389

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND & WATER
Alaska Hydrologic Survey

WATER WELL LOG Revised 08/18/2016

Drilling Started: ____/____/_____ Completed: 1 / 1 / 1968 Pump Install: ____/____/_____

City/Borough	Subdivision	Block	Lot	Property Owner Name & Address
Glennallen				CARL J BOUERS ,

Well location: Latitude _____ **Longitude** _____
Meridian C Township 004N Range 002W Section 24 , SW 1/4 of NW 1/4 of SW 1/4 of SE 1/4

BOREHOLE DATA: (from ground surface)
Suggest T.**M. Hanna's hydrogeologic classification system***
https://my.ngwa.org/NC__Product?id=a185000000BYub3AAD

	Depth From	Depth To

Include description or sketch of well location (include road names, buildings, etc.):

North

AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within **45 days of well completion**. Well logs may be submitted using the online well log reporting system available at:

https://dnr.alaska.gov/welts/

OR email electronic well logs to

dnr.water.reports@alaska.gov

Drilling method: ☐ Air rotary, ☐ Cable tool, ☐ Other _____
Well use: ☐ Public supply, ☐ Domestic, ☐ Reinjection, ☐ Hydrofracking ☐ Commercial, ☐ Observation/Monitoring, ☐ Test/Exploratory, ☐ Cooling, ☐ Irrigation/Agriculture, ☐ Grounding, ☐ Recharge/Aquifer Storage, ☐ Heating, ☐ Geothermal Exploration, ☐ Other _____
Fluids used: _____

Depth of hole: 110 ft Casing stickup: _____ft
Casing type: _____ Casing thickness: _____ inches
Casing diameter: _____ inches Casing depth: _____ ft
Liner type: _____ Depth: _____ ft Diameter: _____inches
Note: _____

Well intake opening type: ☐ Open end, ☐ Open hole, ☐ Other _____
Screen type: _____, Screen mesh size: _____
Screen start: _____ ft, Screen stop:_____ ft, Perforated ☐ Yes ☒ No
Perforation description:_____ Perf from: _____ ft, Perf to: _____ft, Perf from: _____ ft, Perf to: _____ ft
Gravel packed ☐ Yes ☐ No Gravel start: _____ ft , Gravel stop:_____ ft
Note: _____

Static water (from top of casing): _____ ft on____/____/_____ Artesian well ☐
Pumping level & yield: _____ feet after _____ hours at _____ gpm
Method of testing:_____
Development method:_____ Duration: _____
Recovery rate: _____ gpm

Grout type: _____ Volume _____
Depth: From _____ft, To _____ft

Final pump intake depth: _____ ft Model: _____
Pump size: _____ hp Brand name: _____

Was well disinfected upon completion? ☐ Yes ☐ No
Method of disinfection: _____
Was water quality tested? ☐ Yes ☐ No
Water quality parameters tested: _____

Well driller name: .....
Company name: SNOBERTS BILL .....
Mailing address:.....
City: _____ State: AK Zip: _____
Phone number: (_____) _____- _____
Driller's signature: _____
Date: _____/_____/_____

Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within **30 days of well completion**.

City Permit Number: _____
Date of Issue: _____/____/_____

Parcel Identification Number: _____-_____-_____

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press

Carl Bovers

4N/2W-24 024

7389

LONG FORM
Ground-water Site Visit Field Notes
U.S.G.S. - W.R.D., Alaska 1978
System 2000 updated on _____

AGENCY FILE NO. _____

GWSI SITE ID _____

LOCAL WELL DESIGNATION _____

VISITED BY RG

AGENCY _____ 7 29 82 (Mo. Day Year)

INITIAL SITE; INFO _____, VISIT _____

Site Register Numbers
A.D.L. _____
D.G.G.S. _____
A.D.E.C. _____
U.S.G.S. _____

PURPOSE OF VISIT: (circle) field inventory, water level, water quality, geophysical logging, survey levels, verify location, other _____

WELL DESCRIPTION AND CONSTRUCTION

OWNER: 1st Fred Wells, now Carl Bovers as of mo. ____ yr. 70

LOCATION: Community or area _____ ¼ ¼ ¼ ¼ Sec T N S R E W B&M

Plotted on aerial photo/field map Gulkana A-4 Scale 63360

Subdivision _____ blk ____ lot ____; photos taken _____

SOURCE OF INFORMATION: (circle) owner, neighbor, driller, driller's log, personal observation, other (specify) _____

DRILLER AND COMPANY Bill Snoberts

DATE COMPLETED late 60's TYPE OF DRILL RIG _____

HOLE DEPTH _____ ft, WELL DEPTH 110 ft, TOTAL CASING _____ ft, DIAM _____ in

WELL FINISH subm.

PUMP: mfg. name & no. 3/4 hp, depth set _____ ft, diam discharge pipe ____ in

WELL YIELD: _____ gpm for _____ hours with _____ ft drawdown, method of determining discharge _____; aquifer test date _____

WATER LEVEL: describe MP _____ which is _____ ft above/below LSD

	Hold-cut	WL below MP	WL below LSD	Time
1.				
2.				
3.				

Installed _____ recorder, W# _____, funding project _____

Remarks _____

LOCAL NO. C84-2-24 DCBC1-18
USGS SITE ID 620633145303301

7439

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND & WATER
Alaska Hydrologic Survey

WATER WELL LOG Revised 08/18/2016

Drilling Started: 7 / 1 / 1976 Completed: 7 / 2 / 1976 Pump Install: ___/___/_____

City/Borough	Subdivision	Block	Lot	Property Owner Name & Address
Glennallen	NA		NA	SAM BISHOP , AK

Well location: Latitude _____ **Longitude** _____
Meridian C Township 004N Range 002W Section 24 , SW 1/4 of SW 1/4 of SW 1/4 of SE 1/4

BOREHOLE DATA: (from ground surface)
Suggest T.**M. Hanna's hydrogeologic classification system***
https://my.ngwa.org/NC__Product?id=a185000000BYub3AAD

	Depth From	Depth To
MUD	0.0	6.0
BLUE CLAY	6.0	85.0
GRAVEL AND SAND	85.0	95.0
GRAVEL AND WATER	95.0	103.0

Include description or sketch of well location (include road names, buildings, etc.):

North

Drilling method: ☐ Air rotary, ☐ Cable tool, ☐ Other _____
Well use: ☒ Public supply, ☐ Domestic, ☐ Reinjection, ☐ Hydrofracking
☐ Commercial, ☐ Observation/Monitoring, ☐ Test/Exploratory, ☐ Cooling,
☐ Irrigation/Agriculture, ☐ Grounding, ☐ Recharge/Aquifer Storage,
☐ Heating, ☐ Geothermal Exploration, ☐ Other _____
Fluids used: _____

Depth of hole: 103 ft Casing stickup: 6 ft
Casing type: STEEL Casing thickness: _____ inches
Casing diameter: 6 inches Casing depth: _____ ft
Liner type: _____ Depth: _____ ft Diameter: _____ inches
Note: _____

Well intake opening type: ☐ Open end, ☐ Open hole, ☐ Other _____
Screen type: _____, Screen mesh size: _____
Screen start: _____ ft, Screen stop: _____ ft, Perforated ☐ Yes ☒ No
Perforation description: _____ Perf from: _____ ft, Perf to: _____ ft, Perf from: _____ ft, Perf to: _____ ft
Gravel packed ☒ Yes ☐ No Gravel start: _____ ft , Gravel stop: _____ ft
Note: _____

Static water (from top of casing): 55 ft on ___/___/_____ Artesian well ☐
Pumping level & yield: _____ feet after _____ hours at 50 gpm
Method of testing: _____
Development method: _____ Duration: _____
Recovery rate: _____ gpm

Grout type: _____ Volume _____
Depth: From _____ ft, To _____ ft

Final pump intake depth: _____ ft Model: _____
Pump size: _____ hp Brand name: _____

Was well disinfected upon completion? ☐ Yes ☐ No
Method of disinfection: _____
Was water quality tested? ☐ Yes ☐ No
Water quality parameters tested: _____

Well driller name: .....
Company name: PENN JERSEY DRILLING .....
Mailing address: 1811 S RIDGECREST ROAD .....
City: WASILLA State: AK Zip: 99623
Phone number: (907) 892 - 7206
Driller's signature: _____
Date: _____/_____/_____

AS 41.08.020(b)(4) and AAC 11 AAC 93.140(a) require that a copy of the well log be submitted to the Department of Natural Resources within **45 days of well completion**. Well logs may be submitted using the online well log reporting system available at:

https://dnr.alaska.gov/welts/

OR email electronic well logs to

dnr.water.reports@alaska.gov

Anchorage Municipal Code 15.55.060(I) and North Pole Ordinance 13.32.030(D) require that a copy of this well log be submitted to the Development Services Department/City within **30 days of well completion**.

City Permit Number: _____
Date of Issue: ___/___/_____

Parcel Identification Number: _____-_____-_____

*Guide for Using the Hydrogeologic Classification System for Logging Water Well Boreholes by Thomas M. Hanna NGWA Press

7439

DAILY DRILLING LOG

PENN JERSEY DRILLING CO.

2833 East 72nd Avenue — Anchorage, Alaska 99502 — 344-2612

OWNER OF LAND Sam Bishop

ADDRESS Box 367 - Glennallen, AK.

WELL SITE Glennallen, Alaska 99588

DATE STARTED July 1, 1976

DATE ENDED July 2, 1976

DEPTH OF WELL 103'

STATIC LEVEL OF WATER FT. 55'

DRAW DOWN FT.

GALS. PER ~~Min~~ HR. 50 GPM

KIND OF CASING 6" Steel Welded Casing

KIND OF FORMATION:

FROM 0	FT. TO 6	FT. Mud	FROM	FT. TO	FT.
FROM 6	FT. TO 85	FT. blue clay	FROM	FT. TO	FT.
FROM 85	FT. TO 95	FT. gravel &	FROM	FT. TO	FT.
FROM	FT. TO	FT. Sand	FROM	FT. TO	FT.
FROM 95	FT. TO 103	FT. gravel &	FROM	FT. TO	FT.
FROM	FT. TO	FT. water	FROM	FT. TO	FT.
FROM	FT. TO	FT.	FROM	FT. TO	FT.
FROM	FT. TO	FT.	FROM	FT. TO	FT.
FROM	FT. TO	FT.	FROM	FT. TO	FT.
FROM	FT. TO	FT.	FROM	FT. TO	FT.
FROM	FT. TO	FT.	FROM	FT. TO	FT.
FROM	FT. TO	FT.	FROM	FT. TO	FT.

MISCL. INFORMATION: Very good well. Set pump at 85 to 90 feet.

DRILLER'S NAME L.A.S., Tom, Ted, Nancy & Sally

Appendix E
Conceptual Site Model
Forms

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: The Hub, Glennallen, Alaska

File Number: Not assigned

Completed by: Shayla Marshall

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☒ USTs
- ☐ ASTs
- ☒ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☐ Other:

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☐ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☐ Sediment
- ☒ Groundwater
- ☐ Surface water
- ☐ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☐ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

Maximum concentrations remaining in mg/kg: GRO (4,630), DRO (4,060), Benzene (52.7), Ethylbenzene (137), Toluene (369), total xylenes (656), 1,2,4-Trimethylbenzene (243), 1,2-Dichloroethane (0.832), 1,3,5-Trimethylbenzene (67.5), Isopropylbenzene (23.7), and Napthalene (50.1)

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Napthalene contamination is present at the site.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Benzene and Napthalene were detected in the on-site non-potable well.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Tazlina River is located 2.13 miles south of the site and the Copper River is located 2.25 miles east of the site. Due to the distance, contaminants from the site are not expected to migrate to surface waters.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☐

If all of the boxes are checked, label this pathway complete: Incomplete

Comments:

The site is not expected to be used for hunting, fishing, or harvesting currently or in the future. The remaining contaminants are not bioaccumulative.

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Isopropylbenzene (Cumene), and 1,2-Dichloroethane contamination is within 15 feet below ground surface.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Isopropylbenzene (Cumene), and 1,2-Dichloroethane contamination is within 30 feet from the existing site structure.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

On-site potable well is used for toliet flushing only.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Not applicable. Water from on-site well not used beyond for toliet flushing purposes.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Not applicable. Contamination is present in subsurface soils.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Not applicable.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: The Hub, Glennallen, Alaska

Completed By: Shayla Marshall

Date Completed: 1/29/18

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

Media	Transport Mechanisms	check
☐ Surface Soil (0-2 ft bgs)	Direct release to surface soil	check soil
	Migration to subsurface	check soil
	Migration to groundwater	check groundwater
	Volatilization	check air
	Runoff or erosion	check surface water
	Uptake by plants or animals	check biota
	Other (list):	
☑ Subsurface Soil (2-15 ft bgs)	Direct release to subsurface soil	check soil
	✓ Migration to groundwater	check groundwater
	✓ Volatilization	check air
	Uptake by plants or animals	check biota
	Other (list):	
☑ Ground-water	Direct release to groundwater	check groundwater
	Volatilization	check air
	Flow to surface water body	check surface water
	Flow to sediment	check sediment
	Uptake by plants or animals	check biota
	Other (list):	
☐ Surface Water	Direct release to surface water	check surface water
	Volatilization	check air
	Sedimentation	check sediment
	Uptake by plants or animals	check biota
	Other (list):	
☐ Sediment	Direct release to sediment	check sediment
	Resuspension, runoff, or erosion	check surface water
	Uptake by plants or animals	check biota
	Other (list):	

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ soil	✓ Incidental Soil Ingestion		C/F	C/F	F			
	✓ Dermal Absorption of Contaminants from Soil		C/F	C/F	F			
	☐ Inhalation of Fugitive Dust							
☑ groundwater	✓ Ingestion of Groundwater		C/F	C/F	F			
	☐ Dermal Absorption of Contaminants in Groundwater							
	☐ Inhalation of Volatile Compounds in Tap Water							
☑ air	✓ Inhalation of Outdoor Air		C/F	C/F	F			
	✓ Inhalation of Indoor Air		C/F	C/F	F			
	☐ Inhalation of Fugitive Dust							
☐ surface water	☐ Ingestion of Surface Water							
	☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Inhalation of Volatile Compounds in Tap Water							
☐ sediment	☐ Direct Contact with Sediment							
☐ biota	☐ Ingestion of Wild or Farmed Foods							

Revised, 10/01/2010