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January 31, 2020
1405-41

Knik Construction Company, Inc.
6520 Kulis Drive
Anchorage, AK 99502

Attention: Mr. Pete Hoogenboom

RE: North Star Pit Phase II Environmental Site Assessment

Dear Mr. Hoogenboom:

Travis/Peterson Environmental Consulting, Inc. (TPECI) conducted a Phase II Environmental Site Assessment at the North Star Pit property located at 44251 Frontier Avenue in Soldotna, Alaska, hereafter referred to as the subject property (Figures 1 and 2). The December 2019 *North Star Pit Soldotna, Alaska Phase I Environmental Site Assessment* completed by TPECI documented several areas of concern related to potential hydrocarbon contamination at the subject property.

In the December 2019 Phase I ESA, TPECI identified an unmaintained oil/water separator located at the vehicle and equipment maintenance shop on the property. In an interview with the property owner, TPECI determined that the oil/water separator discharged to the subsurface (leach field). A CONEX contained had been placed over the oil/water separator access manhole and leach field area. As a result, no inspection or maintenance had occurred in several years.

TPECI also identified surface soil staining in the area surrounding an aboveground storage tank used to store used oil. The extent of the potential contamination associated with both of these areas of concern was not further investigation as part of the Phase I ESA. Figure two (enclosed) shows the locations of the oil/water separator leach field and the aboveground used oil storage tank.

<u>Oil/Water Separator and Leach Field</u>

On January 15, 2020, TPECI personnel and the property owner excavated soils at the oil/water separator leach field exposing the perforated leach field lateral pipe. A photographic log

documenting the site work is enclosed. The leach field consisted of a single eight-foot segmented of perforated PVC drain field pipe extending to the northeast of the vehicle and equipment maintenance shop building. The pipe was at approximately eight feet (8.0 ft) below ground surface (bgs). The pipe was bedded in washed drain (septic) rock. The property owner could not recall the specific depth of the drain rock but suspected that it extended three to four feet below the piping (maximum total depth 12 feet bgs).

TPECI personnel observed an unidentified black substance filling all of the drain rock void space beneath the leach field piping. Upon investigation, TPECI determined that the perforated pipe was similarly filled completely with the unidentified black substance. The substance had a consistency similar to that of grease with an observable odor similar to that of gear oil. The ambient air temperature at the time of the investigation was -17ºF. As a result, heavy oils such as gear oil may have gelled to a consistency similar to that observed.

Used Oil Storage Tank

TPECI personnel directed the property owner to excavate a soil test pit at the southeast corner of the aboveground used oil storage tank where surface soil staining had been observed in the December 2019 Phase I ESA. Extreme cold temperatures and frozen soils made excavation challenging at the site. Approximately six inches of snow cover was first removed from the site. A trackhoe was used to advance a test pit to approximately 18 inches bgs. During the excavation, TPECI noticed a strong hydrocarbon odor within the excavated soils. The presence of a strong hydrocarbon odor (volatilizing compounds) was surprising given the ambient air temperature of -17ºF. No subsurface soil staining was visible.

Soil Sampling

The following describes the sampling protocols that TPECI field personnel followed to screen and collect soil samples. TPECI personnel field screened soils in accordance with the Alaska Department of Environmental Conservation (ADEC) *October 2019 Field Sampling Guidance*, Section 3.0 Soil Sampling. TPECI personnel collected characterization samples for laboratory analysis from the locations with the highest screening readings. The characterization samples were collected in accordance with Sections 3.3 and 3.5 of the ADEC *October 2019 Field Sampling Guidance*, specifically Soil Laboratory Analytical Sample Collection, Subsection 3.5.4 In-Situ Soils Characterization Sampling.

TPECI collected two soil samples from beneath the leach field pipe for field screening. These samples were identified as OW-1 and OW-2. TPECI also collected two soil samples from the test pit adjacent to the used oil storage tank. Those soil samples were identified as OT-1 and OT-2. TPECI utilized a photo-ionization detector (PID) to conduct field screening analysis.

The PID was calibrated according to the manufacturer's specifications in the field using a fresh-air charcoal blank and 100-ppm isobutylene calibration span gas. A re-sealable polyethylene bag with a total capacity not less than eight ounces (approximately 250mL) was filled one-third to one-half full of soil from the screening sample. The soil, sealed in the bag, was allowed to warm up to 40 degrees Fahrenheit where it was held for at least 10 minutes, but not longer than 60 minutes. The soil sample was agitated for approximately 15 seconds at the beginning and end of

the headspace development period to assist in volatilization. The tip of the calibrated PID was then placed inside the bag for thirty seconds or until the reading stabilized.

Soil samples for laboratory analysis for characterization were collected from each soil test location where the highest field screening PID results were observed. TPECI collected three soil samples for laboratory analysis for site characterization (OW-1, OT-1, and OT-2).

All soil samples selected for laboratory analysis were transported to the analytical laboratory and analyzed for VOC by EPA method 8260C, DRO and RRO by method AK102/AK103, and GRO by Method AK101.

Table 1: Laboratory Analytical Methods for Soil

Method	Matrix	Container (jars)	Preservative	Hold time
8260C VOC	Soil	1 4-oz amber wide mouth jar with septa lid	MeOH and 4 degrees C	14 days
AK101 (GRO)	Soil	1 4-oz amber wide mouth jar with septa lid	MeOH and 4 degrees C	14 days
AK102 (DRO)	Soil	1 4-oz amber wide mouth jar	4 degrees C.	14 days
AK103 (RRO)	Soil	1 4oz amber wide mouth jar	4 degrees C.	14 days

Soil samples destined for volatile analysis were collected first, follow by samples collected for non-volatile analysis. Pre-weighed and pre-labeled soil sample containers were filled to a volume (mass) ranging from 25 to 50 grams of soil (approximately 1/3rd container volume) and were immediately preserved by pouring methanol over the soil and promptly securing the Teflon-lined container lid. Care was taken to ensure soils are completely covered with preservative provided by the analytical laboratory in pre-measured 25mL portions. If more than 25mL of preservative was required for a given sample, documentation of total preservative volume was recorded in the field notes and on the laboratory Chain-of-Custody.

Sample Field Preparation
Sampling was performed in accordance with the applicable regulations:

- All samples were collected using disposable or cleaned and decontaminated sampling equipment;
- Field personnel wore disposable gloves, safety goggles, steel toed boots, hard hat, reflective vest, and other appropriate Class D personal protective equipment (PPE). Gloves and sampling devices were changed between samples;
- Samples were collected as quickly as possible and placed in laboratory supplied containers;
- Soil for analytical sample testing was not obtained from field screening *sample* material;
- All samples were labeled; and
- All samples were preserved in accordance with laboratory specifications and cooled to a temperature of 0 to 6 degrees Celsius.

Sampling Results

TPECI collected a total of four samples for heated headspace field screening from the two sampling locations. Of those samples, three were selected for laboratory analysis. Table 2 (enclosed shows the heated headspace field screening results for soil samples collected at the property. Table 3 (enclosed) shows the laboratory results for GRO, DRO, RRO, and BTEX. The tabular VOC results for the samples are available in Table 4 (enclosed).

Field screening yielded elevated heated headspace results in all samples. Heated headspace field screening results for samples collected from the soil samples ranged from 22.8 ppm to 316.1 ppm. All four of the soil samples were noted to have heated headspace field screening results greater than 20.0ppm. TPECI typically uses a reference limit of 20.0ppm as an indicator that hydrocarbon soil contaminants may exceed the applicable ADEC cleanup levels.

Laboratory results showed DRO concentrations in OW-1 collected from the oil/water separator site to be 54,300 mg/Kg. DRO concentrations in samples OT-1 and OT-2 collected from the used oil storage tank test pit were found to be 893 mg/Kg and 681 mg/Kg, respectively. All samples had DRO concentrations greater than 250 mg/Kg, the ADEC cleanup level for DRO at this site.

RRO concentrations at the oil/water separator were found to be 333,000 mg/Kg, significantly greater than the ADEC cleanup level of 11,000 mg/Kg. Samples collected from the used oil storage tank test pit were found to be below the laboratory detection limits for RRO.

GRO concentrations from the soil samples ranged from below the laboratory detection limits to 7.12 mg/Kg. All samples were well below the applicable ADEC cleanup level for GRO, 300 mg/Kg.

Several BTEX analytes including Toluene, Ethylbenzene, and Total Xylenes were all detected in samples OT-1 and OT-2. However, concentrations were all below the applicable ADEC cleanup levels. Several other VOC analytes were also detected in OT-1 and OT-2. Those included 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Isopropylbenzene, and Methylene chloride. Of those, only 1,2,4-Trimethylbenzene was found to exceed the ADEC cleanup level (in both OT-1 and OT-2). Acetone and Methylene chloride were also detected in sample OW-1 but were both below the applicable ADEC cleanup levels.

The Limit of Quantitation (LOQ) for several VOC analytes exceeded the applicable ADEC cleanup levels. However, many of the analytes where this occurred were not associated with hydrocarbon contamination. Thus, these exceedances do not impact this site.

Discussion and Conclusions

The extremely high DRO and RRO concentrations (DRO 217 times greater than the ADEC cleanup level, RRO 30 times greater than the ADEC cleanup level) in sample OW-1 collected from beneath the oil/water separator discharge pipe indicated that the oil/water separator was not operating correctly and had discharged heavy hydrocarbon contaminants such as lube oil, gear

oil, or heavy fuels such as diesel fuel. Additionally, the presence of acetone and other VOCs indicated the discharge of solvents and degreasers. The laboratory data confirmed the visual observations made by TPECI personnel during the site work.

TPECI personnel discussed the historical operation of the oil/water separator with the property owner. The property owner indicated that little if any water was ever put into the oil/water separator, though drips and spills of hydrocarbons into the floor drains were common and frequent. TPECI inspected the oil/water separator via the access manhole and noted only the presence of an oil sludge. Minimal water (or ice) was present.

A lack of water and regular water input to an oil/water separator will result in a system failure. The presence of water is required to allow hydrocarbons to coalesce on top of the contained water. When adequate water is not present, oils will discharge from the oil/water separator. This scenario appears to have occurred at this location. Based on discussions with the property owner and descriptions of system usage and operation, it is likely that the oil/water separator has been discharging hydrocarbons throughout its operational lifetime (since the early 1980s).

During the investigation, the drain rock beneath the discharge pipe was only excavated several inches. The vertical extent of the contamination was not determined. Due to the design of the leach field and the operation of the oil/water separator, it is likely that the horizontal extent of the contamination is limited to the area immediately surrounding the discharge pipe. However, there is a high probability that the oil and grease traveled vertically downward several feet. Groundwater is estimated to be approximately 19 feet bgs, less than 11 feet below the discharge pipe. If contaminants reached groundwater, it is possible that groundwater contamination exists at the property. Additional soils may be contaminated from the resulting contaminated groundwater plume. The installation of a groundwater monitoring well would be necessary to determine if groundwater at the site was impacted.

The DRO and VOC concentrations that were found to be above the applicable ADEC cleanup levels in samples OT-1 and OT-2 near the used oil storage tank indicate the presence of a diesel release. In the December 2019 Phase I ESA, TPECI personnel noted the presence of surface soil staining in this area. The laboratory data from soil samples collected an 18-inch depth indicate that contamination at this site was more extensive than minor surface staining. Additionally, the contaminants present were not what would typically be associated with used oil, but more typical of a diesel fuel release. During both site visits, TPECI personnel noted the presence of 55-gallon drums in the area of the tank. It seemed probably that either these drums, or others that historically been stored or staged in this location may have contained diesel fuel or other, lighter hydrocarbons and a release occurred. However, no definitive source was identified as part of this investigation.

Neither the vertical nor horizontal extents of contamination were determined as part of this investigation. The frozen soils limited excavation at the site. Future work would be necessary to identify the contaminant extents associated with this release location.

In accordance with 18 AAC 75, the ADEC should be notified of these releases and the areas of contamination identified at the property. The property owner or other responsible party should

meet those notification requirements.

A complete characterization and remediation of the contamination identified at the site should be completed. Due to the historic nature of the contaminants at the property, authorization for future work will likely be managed by the ADEC Contaminated Sites Program. A Work Plan must be developed and submitted to the ADEC for review and approval prior to any further characterization or remediation work at the property.

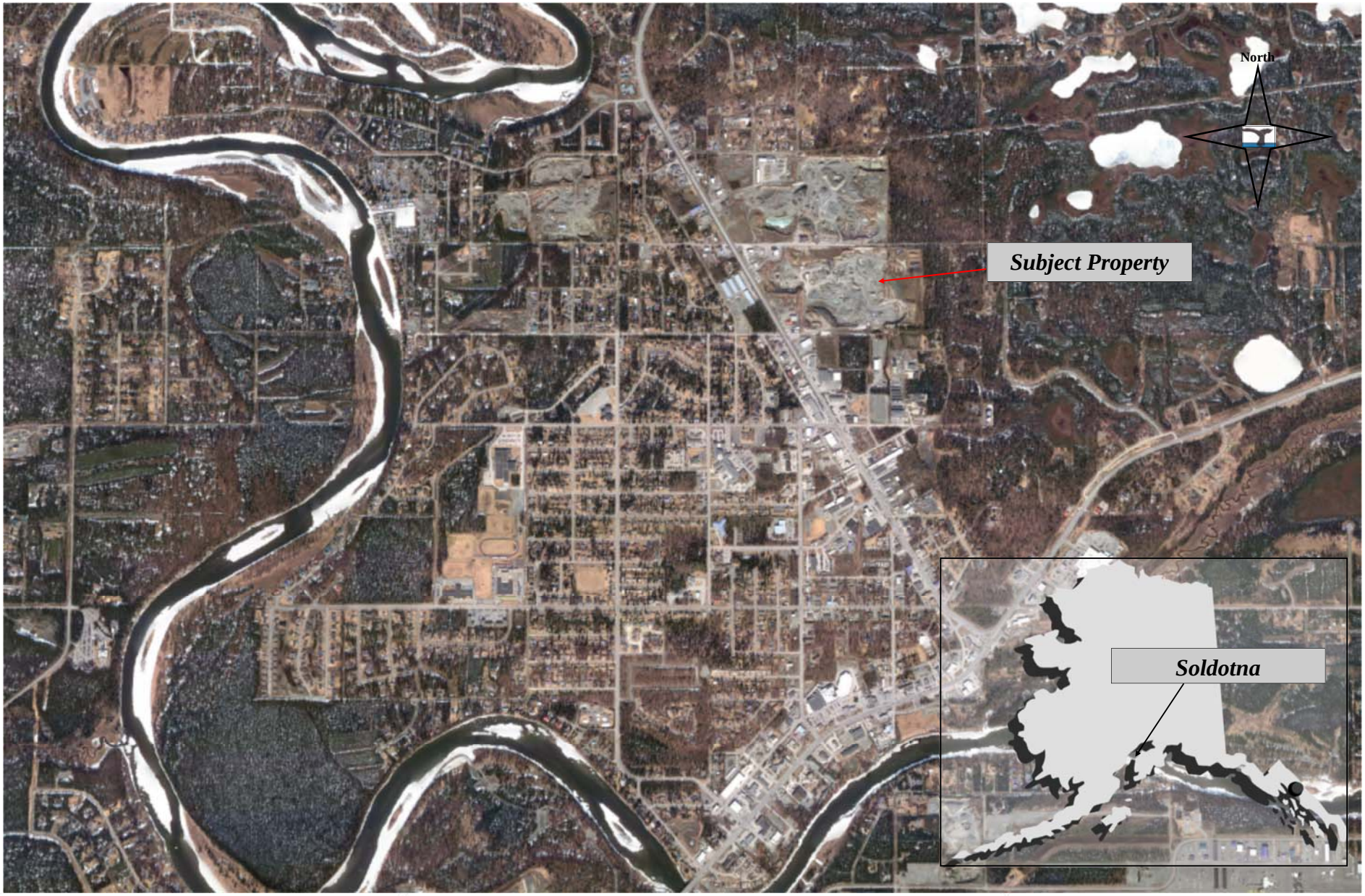
To prevent further impacts to the property the oil/water separator should be removed from service immediately.

If you have any questions or comments, please feel free to call me at (907) 522-4337 or email me at EMundahl@tpeci.com.

Sincerely,

Erik D. Mundahl, P.E.
Environmental Engineer

Encl.: 1) Location & Vicinity and Site Maps
2) Photographic Log
3) SGS Laboratory Report
4) Data Tables



Travis/Peterson Environmental Consulting, Inc.
3305 Arctic Boulevard, Suite 102
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907-522-4337

North Star Pit Phase II ESA

Soldotna, Alaska

Location and Vicinity Map

Figure #1

Project No: 1405-41	**File: Company/Projects/1405/41**	**Date: 1/31/2020**	**Scale: None**

Travis/Peterson Environmental Consulting, Inc.
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Anchorage, AK 99503
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North Star Pit Phase II ESA

Soldotna Alaska

Site Map

Figure #2

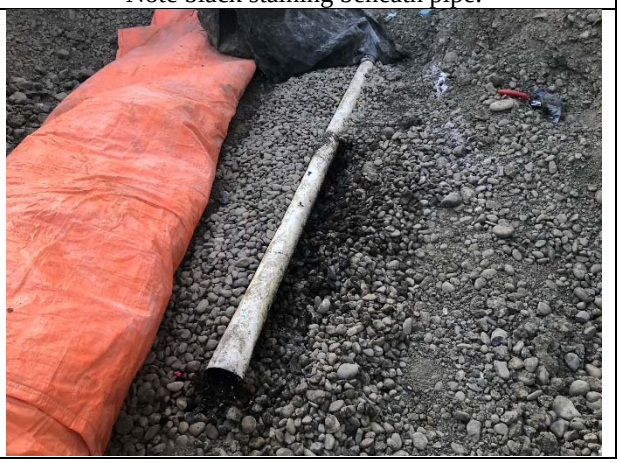
Project No: 1405-41	**File: Company/Projects/1405/41**	**Date: 1/31/2020**	**Scale: None**

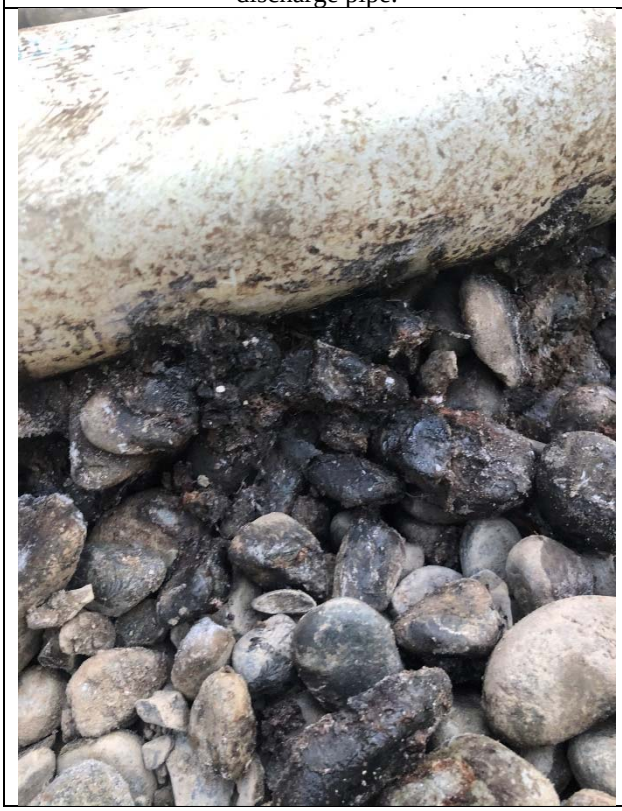
Travis/Peterson Environmental Consulting, Inc. 3305 Arctic Boulevard, Suite 102 Anchorage, AK 99503 907-522-4337	**North Star Pit Phase II ESA** **Soldotna Alaska**	**Detailed Site Map** **Figure #3**

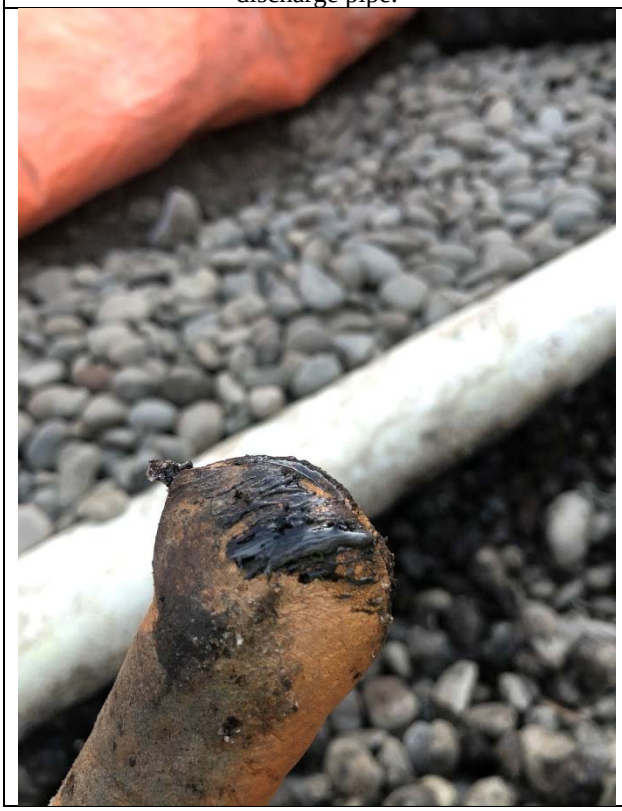
Project No: 1405-41	**File: Company/Projects/1405/41**	**Date: 1/31/2020**	**Scale: None**

North Star Pit Phase II ESA Site Visit: Photo Log – December 19, 2019

Oil/water separator (manhole cover on left) and excavated discharge pipe covered in heat blanket.	End of oil/water separator discharge pipe. Pipe was plugged with black hydrocarbon sludge.
	

Oil/water separator discharge pipe on drain rock bed. Note black staining beneath pipe.	Oil/water separator discharge pipe on drain rock bed. Note black staining beneath pipe.
	

Black sludge on drain rocks beneath oil/water discharge pipe.	Black sludge on drain rocks beneath oil/water discharge pipe.
	

Greasy black sludge from beneath oil/water separator discharge pipe.	Looking northeast standing atop oil/water separator with discharge pipe extending away.
	

Looking down at oil/water separator and discharge pipe.	Inside oil/water separator. No distinct water or ice layer was present. Semi-homogenous oil throughout.
	

Used oil storage tank and drunks. Soil test pit is shown in the foreground.	Soil test pit near used oil storage tank.
	

Soil test pit near used oil storage tank.	Soil test pit near used oil storage tank.
	

Laboratory Report of Analysis

To: Travis/Peterson (TPECI)
3305 Arctic Blvd Suite 102
Anchorage, AK 99503
(907)522-4337

Report Number: **1200231**

Client Project: **Northstar Pit Phase II**

Dear Erik Mundahl,

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 Chuck 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.

_____

Chuck Homestead Date
Project Manager
Charles.Homestead@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: **Travis/Peterson (TPECI)**
SGS Project: **1200231**
Project Name/Site: **Northstar Pit Phase II**
Project Contact: **Erik Mundahl**

Refer to sample receipt form for information on sample condition.

OW-1 (1200231003) PS

8260C - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria. The sample was analyzed twice and results were confirmed.
AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria. Sample was analyzed twice and results confirmed.
AK102 - Surrogate recovery for 5a-androstane does not meet QC criteria due to sample dilution.
AK103 - Surrogate recovery n-triacontane does not meet QC criteria due to sample dilution.

LCS for HBN 1803866 [VXX/35389 (1549513) LCS

8260C - LCS recovery for methylene chloride does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

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

Print Date: 01/28/2020 3:28:21PM

Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
SW8260C				
1200231001	OT-1	VMS19772	4-Isopropyltoluene	SP
1200231002	OT-2	VMS19772	4-Isopropyltoluene	SP
1200231003	OW-1	VMS19772	Naphthalene	SP

Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

Print Date: 01/28/2020 3:28:22PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. 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 & Microbiology) & 17-021 (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). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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	Analytical 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
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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
OT-1	1200231001	01/15/2020	01/16/2020	Soil/Solid (dry weight)
OT-2	1200231002	01/15/2020	01/16/2020	Soil/Solid (dry weight)
OW-1	1200231003	01/15/2020	01/16/2020	Soil/Solid (dry weight)
Trip Blank	1200231004	01/15/2020	01/16/2020	Soil/Solid (dry weight)

Method	Method Description
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK101	Gasoline Range Organics (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted

Print Date: 01/28/2020 3:28:25PM

Detectable Results Summary

Client Sample ID: **OT-1**
Lab Sample ID: 1200231001

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	893	mg/Kg
Volatile Fuels	Gasoline Range Organics	7.12	mg/Kg
Volatile GC/MS	1,2,4-Trimethylbenzene	891	ug/Kg
	1,3,5-Trimethylbenzene	308	ug/Kg
	Ethylbenzene	90.0	ug/Kg
	Isopropylbenzene (Cumene)	75.8	ug/Kg
	Methylene chloride	147	ug/Kg
	Naphthalene	581	ug/Kg
	n-Propylbenzene	188	ug/Kg
	o-Xylene	308	ug/Kg
	P & M -Xylene	434	ug/Kg
	sec-Butylbenzene	87.1	ug/Kg
	Toluene	53.6	ug/Kg
	Xylenes (total)	743	ug/Kg

Client Sample ID: **OT-2**
Lab Sample ID: 1200231002

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	681	mg/Kg
Volatile Fuels	Gasoline Range Organics	5.90	mg/Kg
Volatile GC/MS	1,2,4-Trimethylbenzene	590	ug/Kg
	1,3,5-Trimethylbenzene	209	ug/Kg
	Ethylbenzene	57.3	ug/Kg
	Isopropylbenzene (Cumene)	51.1	ug/Kg
	Methylene chloride	106	ug/Kg
	Naphthalene	366	ug/Kg
	n-Propylbenzene	126	ug/Kg
	o-Xylene	184	ug/Kg
	P & M -Xylene	255	ug/Kg
	sec-Butylbenzene	60.5	ug/Kg
	Toluene	32.1	ug/Kg
	Xylenes (total)	439	ug/Kg

Client Sample ID: **OW-1**
Lab Sample ID: 1200231003

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	54300	mg/Kg
	Residual Range Organics	333000	mg/Kg
Volatile GC/MS	Acetone	1190	ug/Kg
	Methylene chloride	440	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

Results of **OT-1**

Client Sample ID: **OT-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231001
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):87.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	893		22.8	7.07	mg/Kg	1		01/27/20 18:50
Surrogates								
5a Androstane (surr)	102		50-150		%	1		01/27/20 18:50

Batch Information

Analytical Batch: XFC15529
Analytical Method: AK102
Analyst: DSD
Analytical Date/Time: 01/27/20 18:50
Container ID: 1200231001-A

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 01/23/20 10:38
Prep Initial Wt./Vol.: 30.264 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	114	U	114	49.0	mg/Kg	1		01/27/20 18:50
Surrogates								
n-Triacontane-d62 (surr)	115		50-150		%	1		01/27/20 18:50

Batch Information

Analytical Batch: XFC15529
Analytical Method: AK103
Analyst: DSD
Analytical Date/Time: 01/27/20 18:50
Container ID: 1200231001-A

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 01/23/20 10:38
Prep Initial Wt./Vol.: 30.264 g
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
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Results of **OT-1**

Client Sample ID: **OT-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231001
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):87.0
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	7.12		2.91	0.874	mg/Kg	1		01/17/20 15:34
Surrogates								
4-Bromofluorobenzene (surr)	124		50-150		%	1		01/17/20 15:34

Batch Information

Analytical Batch: VFC15075
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/17/20 15:34
Container ID: 1200231001-B

Prep Batch: VXX35390
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:20
Prep Initial Wt./Vol.: 66.387 g
Prep Extract Vol: 33.6566 mL

Print Date: 01/28/2020 3:28:28PM

Results of **OT-1**

Client Sample ID: **OT-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231001
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):87.0
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	23.3	U	23.3	7.23	ug/Kg	1		01/20/20 16:50
1,1,1-Trichloroethane	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
1,1,2,2-Tetrachloroethane	2.33	U	2.33	0.723	ug/Kg	1		01/20/20 16:50
1,1,2-Trichloroethane	0.933	U	0.933	0.291	ug/Kg	1		01/20/20 16:50
1,1-Dichloroethane	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
1,1-Dichloroethene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
1,1-Dichloropropene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
1,2,3-Trichlorobenzene	58.3	U	58.3	17.5	ug/Kg	1		01/20/20 16:50
1,2,3-Trichloropropane	2.33	U	2.33	0.723	ug/Kg	1		01/20/20 16:50
1,2,4-Trichlorobenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
1,2,4-Trimethylbenzene	891		58.3	17.5	ug/Kg	1		01/20/20 16:50
1,2-Dibromo-3-chloropropane	117	U	117	36.1	ug/Kg	1		01/20/20 16:50
1,2-Dibromoethane	1.17	U	1.17	0.361	ug/Kg	1		01/20/20 16:50
1,2-Dichlorobenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
1,2-Dichloroethane	2.33	U	2.33	0.723	ug/Kg	1		01/20/20 16:50
1,2-Dichloropropane	11.7	U	11.7	3.61	ug/Kg	1		01/20/20 16:50
1,3,5-Trimethylbenzene	308		29.1	9.09	ug/Kg	1		01/20/20 16:50
1,3-Dichlorobenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
1,3-Dichloropropane	11.7	U	11.7	3.61	ug/Kg	1		01/20/20 16:50
1,4-Dichlorobenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
2,2-Dichloropropane	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
2-Butanone (MEK)	291	U	291	90.9	ug/Kg	1		01/20/20 16:50
2-Chlorotoluene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
2-Hexanone	117	U	117	36.1	ug/Kg	1		01/20/20 16:50
4-Chlorotoluene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
4-Isopropyltoluene	117	U	117	29.1	ug/Kg	1		01/20/20 16:50
4-Methyl-2-pentanone (MIBK)	291	U	291	90.9	ug/Kg	1		01/20/20 16:50
Acetone	291	U	291	90.9	ug/Kg	1		01/20/20 16:50
Benzene	14.6	U	14.6	4.55	ug/Kg	1		01/20/20 16:50
Bromobenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
Bromochloromethane	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
Bromodichloromethane	2.33	U	2.33	0.723	ug/Kg	1		01/20/20 16:50
Bromoform	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
Bromomethane	23.3	U	23.3	7.23	ug/Kg	1		01/20/20 16:50
Carbon disulfide	117	U	117	36.1	ug/Kg	1		01/20/20 16:50
Carbon tetrachloride	14.6	U	14.6	4.55	ug/Kg	1		01/20/20 16:50
Chlorobenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50

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Results of **OT-1**

Client Sample ID: **OT-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231001
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):87.0
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	233	U	233	72.3	ug/Kg	1		01/20/20 16:50
Chloroform	4.66	U	4.66	0.723	ug/Kg	1		01/20/20 16:50
Chloromethane	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
cis-1,2-Dichloroethene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
cis-1,3-Dichloropropene	14.6	U	14.6	4.55	ug/Kg	1		01/20/20 16:50
Dibromochloromethane	5.83	U	5.83	0.723	ug/Kg	1		01/20/20 16:50
Dibromomethane	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
Dichlorodifluoromethane	58.3	U	58.3	17.5	ug/Kg	1		01/20/20 16:50
Ethylbenzene	90.0		29.1	9.09	ug/Kg	1		01/20/20 16:50
Freon-113	117	U	117	36.1	ug/Kg	1		01/20/20 16:50
Hexachlorobutadiene	23.3	U	23.3	7.23	ug/Kg	1		01/20/20 16:50
Isopropylbenzene (Cumene)	75.8		29.1	9.09	ug/Kg	1		01/20/20 16:50
Methylene chloride	147		117	36.1	ug/Kg	1		01/20/20 16:50
Methyl-t-butyl ether	117	U	117	36.1	ug/Kg	1		01/20/20 16:50
Naphthalene	581		29.1	9.09	ug/Kg	1		01/20/20 16:50
n-Butylbenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
n-Propylbenzene	188		29.1	9.09	ug/Kg	1		01/20/20 16:50
o-Xylene	308		29.1	9.09	ug/Kg	1		01/20/20 16:50
P & M -Xylene	434		58.3	17.5	ug/Kg	1		01/20/20 16:50
sec-Butylbenzene	87.1		29.1	9.09	ug/Kg	1		01/20/20 16:50
Styrene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
tert-Butylbenzene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
Tetrachloroethene	14.6	U	14.6	4.55	ug/Kg	1		01/20/20 16:50
Toluene	53.6		29.1	9.09	ug/Kg	1		01/20/20 16:50
trans-1,2-Dichloroethene	29.1	U	29.1	9.09	ug/Kg	1		01/20/20 16:50
trans-1,3-Dichloropropene	14.6	U	14.6	4.55	ug/Kg	1		01/20/20 16:50
Trichloroethene	5.83	U	5.83	1.75	ug/Kg	1		01/20/20 16:50
Trichlorofluoromethane	58.3	U	58.3	17.5	ug/Kg	1		01/20/20 16:50
Vinyl acetate	117	U	117	36.1	ug/Kg	1		01/20/20 16:50
Vinyl chloride	0.933	U	0.933	0.291	ug/Kg	1		01/20/20 16:50
Xylenes (total)	743		87.4	26.6	ug/Kg	1		01/20/20 16:50
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		71-136		%	1		01/20/20 16:50
4-Bromofluorobenzene (surr)	87.1		55-151		%	1		01/20/20 16:50
Toluene-d8 (surr)	99		85-116		%	1		01/20/20 16:50

Print Date: 01/28/2020 3:28:28PM

Results of **OT-1**

Client Sample ID: **OT-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231001
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):87.0
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19772
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 01/20/20 16:50
Container ID: 1200231001-B

Prep Batch: VXX35391
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:20
Prep Initial Wt./Vol.: 66.387 g
Prep Extract Vol: 33.6566 mL

Print Date: 01/28/2020 3:28:28PM

Results of **OT-2**

Client Sample ID: **OT-2**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231002
Lab Project ID: 1200231

Collection Date: 01/15/20 10:24
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):88.4
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	681		22.5	6.97	mg/Kg	1		01/27/20 19:00
Surrogates								
5a Androstane (surr)	87.5		50-150		%	1		01/27/20 19:00

Batch Information

Analytical Batch: XFC15529
Analytical Method: AK102
Analyst: DSD
Analytical Date/Time: 01/27/20 19:00
Container ID: 1200231002-A

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 01/23/20 10:38
Prep Initial Wt./Vol.: 30.189 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	112	U	112	48.3	mg/Kg	1		01/27/20 19:00
Surrogates								
n-Triacontane-d62 (surr)	98.3		50-150		%	1		01/27/20 19:00

Batch Information

Analytical Batch: XFC15529
Analytical Method: AK103
Analyst: DSD
Analytical Date/Time: 01/27/20 19:00
Container ID: 1200231002-A

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 01/23/20 10:38
Prep Initial Wt./Vol.: 30.189 g
Prep Extract Vol: 5 mL

Print Date: 01/28/2020 3:28:28PM

Results of **OT-2**

Client Sample ID: **OT-2**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231002
Lab Project ID: 1200231

Collection Date: 01/15/20 10:24
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):88.4
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	5.90		2.34	0.702	mg/Kg	1		01/17/20 15:52
Surrogates								
4-Bromofluorobenzene (surr)	126		50-150		%	1		01/17/20 15:52

Batch Information

Analytical Batch: VFC15075
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/17/20 15:52
Container ID: 1200231002-B

Prep Batch: VXX35390
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:24
Prep Initial Wt./Vol.: 83.827 g
Prep Extract Vol: 34.6929 mL

Print Date: 01/28/2020 3:28:28PM

Results of **OT-2**

Client Sample ID: **OT-2**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231002
Lab Project ID: 1200231

Collection Date: 01/15/20 10:24
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):88.4
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	18.7	U	18.7	5.80	ug/Kg	1		01/20/20 16:16
1,1,1-Trichloroethane	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
1,1,2,2-Tetrachloroethane	1.87	U	1.87	0.580	ug/Kg	1		01/20/20 16:16
1,1,2-Trichloroethane	0.749	U	0.749	0.234	ug/Kg	1		01/20/20 16:16
1,1-Dichloroethane	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
1,1-Dichloroethene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
1,1-Dichloropropene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
1,2,3-Trichlorobenzene	46.8	U	46.8	14.0	ug/Kg	1		01/20/20 16:16
1,2,3-Trichloropropane	1.87	U	1.87	0.580	ug/Kg	1		01/20/20 16:16
1,2,4-Trichlorobenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
1,2,4-Trimethylbenzene	590		46.8	14.0	ug/Kg	1		01/20/20 16:16
1,2-Dibromo-3-chloropropane	93.6	U	93.6	29.0	ug/Kg	1		01/20/20 16:16
1,2-Dibromoethane	0.936	U	0.936	0.290	ug/Kg	1		01/20/20 16:16
1,2-Dichlorobenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
1,2-Dichloroethane	1.87	U	1.87	0.580	ug/Kg	1		01/20/20 16:16
1,2-Dichloropropane	9.36	U	9.36	2.90	ug/Kg	1		01/20/20 16:16
1,3,5-Trimethylbenzene	209		23.4	7.30	ug/Kg	1		01/20/20 16:16
1,3-Dichlorobenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
1,3-Dichloropropane	9.36	U	9.36	2.90	ug/Kg	1		01/20/20 16:16
1,4-Dichlorobenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
2,2-Dichloropropane	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
2-Butanone (MEK)	234	U	234	73.0	ug/Kg	1		01/20/20 16:16
2-Chlorotoluene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
2-Hexanone	93.6	U	93.6	29.0	ug/Kg	1		01/20/20 16:16
4-Chlorotoluene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
4-Isopropyltoluene	93.6	U	93.6	23.4	ug/Kg	1		01/20/20 16:16
4-Methyl-2-pentanone (MIBK)	234	U	234	73.0	ug/Kg	1		01/20/20 16:16
Acetone	234	U	234	73.0	ug/Kg	1		01/20/20 16:16
Benzene	11.7	U	11.7	3.65	ug/Kg	1		01/20/20 16:16
Bromobenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
Bromochloromethane	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
Bromodichloromethane	1.87	U	1.87	0.580	ug/Kg	1		01/20/20 16:16
Bromoform	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
Bromomethane	18.7	U	18.7	5.80	ug/Kg	1		01/20/20 16:16
Carbon disulfide	93.6	U	93.6	29.0	ug/Kg	1		01/20/20 16:16
Carbon tetrachloride	11.7	U	11.7	3.65	ug/Kg	1		01/20/20 16:16
Chlorobenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16

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

Results of **OT-2**

Client Sample ID: **OT-2**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231002
Lab Project ID: 1200231

Collection Date: 01/15/20 10:24
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):88.4
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	187	U	187	58.0	ug/Kg	1		01/20/20 16:16
Chloroform	3.74	U	3.74	0.580	ug/Kg	1		01/20/20 16:16
Chloromethane	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
cis-1,2-Dichloroethene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
cis-1,3-Dichloropropene	11.7	U	11.7	3.65	ug/Kg	1		01/20/20 16:16
Dibromochloromethane	4.68	U	4.68	0.580	ug/Kg	1		01/20/20 16:16
Dibromomethane	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
Dichlorodifluoromethane	46.8	U	46.8	14.0	ug/Kg	1		01/20/20 16:16
Ethylbenzene	57.3		23.4	7.30	ug/Kg	1		01/20/20 16:16
Freon-113	93.6	U	93.6	29.0	ug/Kg	1		01/20/20 16:16
Hexachlorobutadiene	18.7	U	18.7	5.80	ug/Kg	1		01/20/20 16:16
Isopropylbenzene (Cumene)	51.1		23.4	7.30	ug/Kg	1		01/20/20 16:16
Methylene chloride	106		93.6	29.0	ug/Kg	1		01/20/20 16:16
Methyl-t-butyl ether	93.6	U	93.6	29.0	ug/Kg	1		01/20/20 16:16
Naphthalene	366		23.4	7.30	ug/Kg	1		01/20/20 16:16
n-Butylbenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
n-Propylbenzene	126		23.4	7.30	ug/Kg	1		01/20/20 16:16
o-Xylene	184		23.4	7.30	ug/Kg	1		01/20/20 16:16
P & M -Xylene	255		46.8	14.0	ug/Kg	1		01/20/20 16:16
sec-Butylbenzene	60.5		23.4	7.30	ug/Kg	1		01/20/20 16:16
Styrene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
tert-Butylbenzene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
Tetrachloroethene	11.7	U	11.7	3.65	ug/Kg	1		01/20/20 16:16
Toluene	32.1		23.4	7.30	ug/Kg	1		01/20/20 16:16
trans-1,2-Dichloroethene	23.4	U	23.4	7.30	ug/Kg	1		01/20/20 16:16
trans-1,3-Dichloropropene	11.7	U	11.7	3.65	ug/Kg	1		01/20/20 16:16
Trichloroethene	4.68	U	4.68	1.40	ug/Kg	1		01/20/20 16:16
Trichlorofluoromethane	46.8	U	46.8	14.0	ug/Kg	1		01/20/20 16:16
Vinyl acetate	93.6	U	93.6	29.0	ug/Kg	1		01/20/20 16:16
Vinyl chloride	0.749	U	0.749	0.234	ug/Kg	1		01/20/20 16:16
Xylenes (total)	439		70.2	21.3	ug/Kg	1		01/20/20 16:16
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		71-136		%	1		01/20/20 16:16
4-Bromofluorobenzene (surr)	90		55-151		%	1		01/20/20 16:16
Toluene-d8 (surr)	99		85-116		%	1		01/20/20 16:16

Print Date: 01/28/2020 3:28:28PM

Results of **OT-2**

Client Sample ID: **OT-2**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231002
Lab Project ID: 1200231

Collection Date: 01/15/20 10:24
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):88.4
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19772
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 01/20/20 16:16
Container ID: 1200231002-B

Prep Batch: VXX35391
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:24
Prep Initial Wt./Vol.: 83.827 g
Prep Extract Vol: 34.6929 mL

Print Date: 01/28/2020 3:28:28PM

Results of **OW-1**

Client Sample ID: **OW-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231003
Lab Project ID: 1200231

Collection Date: 01/15/20 10:50
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):55.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	54300		717	222	mg/Kg	5		01/27/20 19:10
Surrogates								
5a Androstane (surr)	404	*	50-150		%	5		01/27/20 19:10

Batch Information

Analytical Batch: XFC15529
Analytical Method: AK102
Analyst: DSD
Analytical Date/Time: 01/27/20 19:10
Container ID: 1200231003-A

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 01/23/20 10:38
Prep Initial Wt./Vol.: 30.082 g
Prep Extract Vol: 20 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	333000		14300	6170	mg/Kg	20		01/28/20 13:04
Surrogates								
n-Triacontane-d62 (surr)	0	*	50-150		%	20		01/28/20 13:04

Batch Information

Analytical Batch: XFC15530
Analytical Method: AK103
Analyst: DSD
Analytical Date/Time: 01/28/20 13:04
Container ID: 1200231003-A

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 01/23/20 10:38
Prep Initial Wt./Vol.: 30.082 g
Prep Extract Vol: 20 mL

Print Date: 01/28/2020 3:28:28PM

Results of **OW-1**

Client Sample ID: **OW-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231003
Lab Project ID: 1200231

Collection Date: 01/15/20 10:50
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):55.6
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	9.83	U	9.83	2.95	mg/Kg	1		01/17/20 16:11
Surrogates								
4-Bromofluorobenzene (surr)	10.6	*	50-150		%	1		01/17/20 16:11

Batch Information

Analytical Batch: VFC15075
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/17/20 16:11
Container ID: 1200231003-B

Prep Batch: VXX35390
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:50
Prep Initial Wt./Vol.: 38.49 g
Prep Extract Vol: 42.077 mL

Print Date: 01/28/2020 3:28:28PM

Results of **OW-1**

Client Sample ID: **OW-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231003
Lab Project ID: 1200231

Collection Date: 01/15/20 10:50
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):55.6
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	78.6	U	78.6	24.4	ug/Kg	1		01/20/20 17:40
1,1,1-Trichloroethane	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,1,2,2-Tetrachloroethane	7.86	U	7.86	2.44	ug/Kg	1		01/20/20 17:40
1,1,2-Trichloroethane	3.14	U	3.14	0.983	ug/Kg	1		01/20/20 17:40
1,1-Dichloroethane	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,1-Dichloroethene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,1-Dichloropropene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,2,3-Trichlorobenzene	197	U	197	59.0	ug/Kg	1		01/20/20 17:40
1,2,3-Trichloropropane	7.86	U	7.86	2.44	ug/Kg	1		01/20/20 17:40
1,2,4-Trichlorobenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,2,4-Trimethylbenzene	197	U	197	59.0	ug/Kg	1		01/20/20 17:40
1,2-Dibromo-3-chloropropane	393	U	393	122	ug/Kg	1		01/20/20 17:40
1,2-Dibromoethane	3.93	U	3.93	1.22	ug/Kg	1		01/20/20 17:40
1,2-Dichlorobenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,2-Dichloroethane	7.86	U	7.86	2.44	ug/Kg	1		01/20/20 17:40
1,2-Dichloropropane	39.3	U	39.3	12.2	ug/Kg	1		01/20/20 17:40
1,3,5-Trimethylbenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,3-Dichlorobenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
1,3-Dichloropropane	39.3	U	39.3	12.2	ug/Kg	1		01/20/20 17:40
1,4-Dichlorobenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
2,2-Dichloropropane	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
2-Butanone (MEK)	983	U	983	307	ug/Kg	1		01/20/20 17:40
2-Chlorotoluene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
2-Hexanone	393	U	393	122	ug/Kg	1		01/20/20 17:40
4-Chlorotoluene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
4-Isopropyltoluene	393	U	393	98.3	ug/Kg	1		01/20/20 17:40
4-Methyl-2-pentanone (MIBK)	983	U	983	307	ug/Kg	1		01/20/20 17:40
Acetone	1190		983	307	ug/Kg	1		01/20/20 17:40
Benzene	49.1	U	49.1	15.3	ug/Kg	1		01/20/20 17:40
Bromobenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Bromochloromethane	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Bromodichloromethane	7.86	U	7.86	2.44	ug/Kg	1		01/20/20 17:40
Bromoform	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Bromomethane	78.6	U	78.6	24.4	ug/Kg	1		01/20/20 17:40
Carbon disulfide	393	U	393	122	ug/Kg	1		01/20/20 17:40
Carbon tetrachloride	49.1	U	49.1	15.3	ug/Kg	1		01/20/20 17:40
Chlorobenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40

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Results of **OW-1**

Client Sample ID: **OW-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231003
Lab Project ID: 1200231

Collection Date: 01/15/20 10:50
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):55.6
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	786	U	786	244	ug/Kg	1		01/20/20 17:40
Chloroform	15.7	U	15.7	2.44	ug/Kg	1		01/20/20 17:40
Chloromethane	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
cis-1,2-Dichloroethene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
cis-1,3-Dichloropropene	49.1	U	49.1	15.3	ug/Kg	1		01/20/20 17:40
Dibromochloromethane	19.7	U	19.7	2.44	ug/Kg	1		01/20/20 17:40
Dibromomethane	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Dichlorodifluoromethane	197	U	197	59.0	ug/Kg	1		01/20/20 17:40
Ethylbenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Freon-113	393	U	393	122	ug/Kg	1		01/20/20 17:40
Hexachlorobutadiene	78.6	U	78.6	24.4	ug/Kg	1		01/20/20 17:40
Isopropylbenzene (Cumene)	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Methylene chloride	440		393	122	ug/Kg	1		01/20/20 17:40
Methyl-t-butyl ether	393	U	393	122	ug/Kg	1		01/20/20 17:40
Naphthalene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
n-Butylbenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
n-Propylbenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
o-Xylene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
P & M -Xylene	197	U	197	59.0	ug/Kg	1		01/20/20 17:40
sec-Butylbenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Styrene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
tert-Butylbenzene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
Tetrachloroethene	49.1	U	49.1	15.3	ug/Kg	1		01/20/20 17:40
Toluene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
trans-1,2-Dichloroethene	98.3	U	98.3	30.7	ug/Kg	1		01/20/20 17:40
trans-1,3-Dichloropropene	49.1	U	49.1	15.3	ug/Kg	1		01/20/20 17:40
Trichloroethene	19.7	U	19.7	5.90	ug/Kg	1		01/20/20 17:40
Trichlorofluoromethane	197	U	197	59.0	ug/Kg	1		01/20/20 17:40
Vinyl acetate	393	U	393	122	ug/Kg	1		01/20/20 17:40
Vinyl chloride	3.14	U	3.14	0.983	ug/Kg	1		01/20/20 17:40
Xylenes (total)	295	U	295	89.6	ug/Kg	1		01/20/20 17:40
Surrogates								
1,2-Dichloroethane-D4 (surr)	107		71-136		%	1		01/20/20 17:40
4-Bromofluorobenzene (surr)	11.2	*	55-151		%	1		01/20/20 17:40
Toluene-d8 (surr)	98.3		85-116		%	1		01/20/20 17:40

Print Date: 01/28/2020 3:28:28PM

Results of **OW-1**

Client Sample ID: **OW-1**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231003
Lab Project ID: 1200231

Collection Date: 01/15/20 10:50
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):55.6
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19772
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 01/20/20 17:40
Container ID: 1200231003-B

Prep Batch: VXX35391
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:50
Prep Initial Wt./Vol.: 38.49 g
Prep Extract Vol: 42.077 mL

Print Date: 01/28/2020 3:28:28PM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231004
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
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	0.762	mg/Kg	1		01/17/20 18:37
Surrogates								
4-Bromofluorobenzene (surr)	93.3		50-150		%	1		01/17/20 18:37

Batch Information

Analytical Batch: VFC15075
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/17/20 18:37
Container ID: 1200231004-A

Prep Batch: VXX35390
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:20
Prep Initial Wt./Vol.: 49.229 g
Prep Extract Vol: 25 mL

Print Date: 01/28/2020 3:28:28PM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231004
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,2-Trichloroethane	0.813	U	0.813	0.254	ug/Kg	1		01/17/20 15:16
1,1-Dichloropropene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,2,4-Trichlorobenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,2,4-Trimethylbenzene	50.8	U	50.8	15.2	ug/Kg	1		01/17/20 15:16
1,2-Dibromo-3-chloropropane	102	U	102	31.5	ug/Kg	1		01/17/20 15:16
1,2-Dibromoethane	1.02	U	1.02	0.406	ug/Kg	1		01/17/20 15:16
1,2-Dichlorobenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,2-Dichloroethane	2.03	U	2.03	0.711	ug/Kg	1		01/17/20 15:16
1,2-Dichloropropane	10.2	U	10.2	3.15	ug/Kg	1		01/17/20 15:16
1,3,5-Trimethylbenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,1,1-Trichloroethane	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,1,2,2-Tetrachloroethane	2.03	U	2.03	0.630	ug/Kg	1		01/17/20 15:16
1,1-Dichloroethane	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,1-Dichloroethene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,2,3-Trichlorobenzene	50.8	U	50.8	15.2	ug/Kg	1		01/17/20 15:16
1,2,3-Trichloropropane	2.03	U	2.03	0.630	ug/Kg	1		01/17/20 15:16
1,1,1,2-Tetrachloroethane	20.3	U	20.3	6.30	ug/Kg	1		01/17/20 15:16
1,3-Dichlorobenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
1,3-Dichloropropane	10.2	U	10.2	3.15	ug/Kg	1		01/17/20 15:16
1,4-Dichlorobenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
2,2-Dichloropropane	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
2-Butanone (MEK)	254	U	254	79.2	ug/Kg	1		01/17/20 15:16
2-Chlorotoluene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
2-Hexanone	102	U	102	31.5	ug/Kg	1		01/17/20 15:16
4-Chlorotoluene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
4-Isopropyltoluene	102	U	102	25.4	ug/Kg	1		01/17/20 15:16
4-Methyl-2-pentanone (MIBK)	254	U	254	79.2	ug/Kg	1		01/17/20 15:16
Acetone	254	U	254	79.2	ug/Kg	1		01/17/20 15:16
Benzene	12.7	U	12.7	3.96	ug/Kg	1		01/17/20 15:16
Bromobenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Bromochloromethane	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Bromodichloromethane	2.03	U	2.03	0.630	ug/Kg	1		01/17/20 15:16
Bromoform	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Bromomethane	20.3	U	20.3	6.30	ug/Kg	1		01/17/20 15:16
Carbon disulfide	102	U	102	31.5	ug/Kg	1		01/17/20 15:16
Carbon tetrachloride	12.7	U	12.7	3.96	ug/Kg	1		01/17/20 15:16
Chlorobenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16

Print Date: 01/28/2020 3:28:28PM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231004
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	203	U	203	63.0	ug/Kg	1		01/17/20 15:16
Chloroform	4.06	U	4.06	1.02	ug/Kg	1		01/17/20 15:16
Chloromethane	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
cis-1,2-Dichloroethene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
cis-1,3-Dichloropropene	12.7	U	12.7	3.96	ug/Kg	1		01/17/20 15:16
Dibromochloromethane	5.08	U	5.08	1.52	ug/Kg	1		01/17/20 15:16
Dibromomethane	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Dichlorodifluoromethane	50.8	U	50.8	15.2	ug/Kg	1		01/17/20 15:16
Ethylbenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Freon-113	102	U	102	31.5	ug/Kg	1		01/17/20 15:16
Hexachlorobutadiene	20.3	U	20.3	6.30	ug/Kg	1		01/17/20 15:16
Isopropylbenzene (Cumene)	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Methylene chloride	102	U	102	31.5	ug/Kg	1		01/20/20 15:43
Methyl-t-butyl ether	102	U	102	31.5	ug/Kg	1		01/17/20 15:16
Naphthalene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
n-Butylbenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
n-Propylbenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
o-Xylene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
P & M -Xylene	50.8	U	50.8	15.2	ug/Kg	1		01/17/20 15:16
sec-Butylbenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Styrene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
tert-Butylbenzene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
Tetrachloroethene	12.7	U	12.7	3.96	ug/Kg	1		01/17/20 15:16
Toluene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
trans-1,2-Dichloroethene	25.4	U	25.4	7.92	ug/Kg	1		01/17/20 15:16
trans-1,3-Dichloropropene	12.7	U	12.7	3.96	ug/Kg	1		01/17/20 15:16
Trichloroethene	5.08	U	5.08	1.52	ug/Kg	1		01/17/20 15:16
Trichlorofluoromethane	50.8	U	50.8	15.2	ug/Kg	1		01/17/20 15:16
Vinyl acetate	102	U	102	31.5	ug/Kg	1		01/17/20 15:16
Vinyl chloride	0.813	U	0.813	0.254	ug/Kg	1		01/17/20 15:16
Xylenes (total)	76.2	U	76.2	23.2	ug/Kg	1		01/17/20 15:16
Surrogates								
1,2-Dichloroethane-D4 (surr)	99.6		71-136		%	1		01/17/20 15:16
4-Bromofluorobenzene (surr)	93.7		55-151		%	1		01/17/20 15:16
Toluene-d8 (surr)	98.1		85-116		%	1		01/17/20 15:16

Print Date: 01/28/2020 3:28:28PM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Northstar Pit Phase II**
Lab Sample ID: 1200231004
Lab Project ID: 1200231

Collection Date: 01/15/20 10:20
Received Date: 01/16/20 14:05
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19771
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 01/17/20 15:16
Container ID: 1200231004-A

Prep Batch: VXX35389
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:20
Prep Initial Wt./Vol.: 49.229 g
Prep Extract Vol: 25 mL

Analytical Batch: VMS19772
Analytical Method: SW8260C
Analyst: KAJ
Analytical Date/Time: 01/20/20 15:43
Container ID: 1200231004-A

Prep Batch: VXX35391
Prep Method: SW5035A
Prep Date/Time: 01/15/20 10:20
Prep Initial Wt./Vol.: 49.229 g
Prep Extract Vol: 25 mL

Print Date: 01/28/2020 3:28:28PM

Method Blank

Blank ID: MB for HBN 1803871 [SPT/10965]
Blank Lab ID: 1549533

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231001, 1200231002, 1200231003

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10965
Analytical Method: SM21 2540G
Instrument:
Analyst: BRP
Analytical Date/Time: 1/17/2020 3:59:00PM

Print Date: 01/28/2020 3:28:31PM

Duplicate Sample Summary

Original Sample ID: 1200231001
Duplicate Sample ID: 1549534

Analysis Date: 01/17/2020 15:59
Matrix: Soil/Solid (dry weight)

QC for Samples:

1200231001, 1200231002, 1200231003

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	87.0	87.5	%	0.67	(< 15)

Batch Information

Analytical Batch: SPT10965
Analytical Method: SM21 2540G
Instrument:
Analyst: BRP

Print Date: 01/28/2020 3:28:33PM

Method Blank

Blank ID: MB for HBN 1803866 [VXX/35389]
Blank Lab ID: 1549512

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231004

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	1.00U	2.00	0.620	ug/Kg
1,1,2-Trichloroethane	0.400U	0.800	0.250	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	1.00U	2.00	0.620	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	0.500U	1.00	0.310	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	1.00U	2.00	0.620	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	50.0U	100	25.0	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Acetone	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	1.00U	2.00	0.620	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	10.0U	20.0	6.20	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg

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Method Blank

Blank ID: MB for HBN 1803866 [VXX/35389]
Blank Lab ID: 1549512

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231004

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloroform	2.00U	4.00	0.620	ug/Kg
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	2.50U	5.00	0.620	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	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
n-Propylbenzene	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
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	2.50U	5.00	1.50	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	0.400U	0.800	0.250	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	71-136		%
4-Bromofluorobenzene (surr)	106	55-151		%
Toluene-d8 (surr)	99.8	85-116		%

Print Date: 01/28/2020 3:28:37PM

Method Blank

Blank ID: MB for HBN 1803866 [VXX/35389]
Blank Lab ID: 1549512

QC for Samples:
1200231004

Matrix: Soil/Solid (dry weight)

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS19771
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: KAJ
Analytical Date/Time: 1/17/2020 12:37:00PM

Prep Batch: VXX35389
Prep Method: SW5035A
Prep Date/Time: 1/17/2020 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 01/28/2020 3:28:37PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [VXX35389]
Blank Spike Lab ID: 1549513
Date Analyzed: 01/17/2020 13:24

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231004

Results by **SW8260C**

	Blank Spike (ug/Kg)			
Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	750	784	105	(78-125)
1,1,1-Trichloroethane	750	862	115	(73-130)
1,1,2,2-Tetrachloroethane	750	834	111	(70-124)
1,1,2-Trichloroethane	750	829	110	(78-121)
1,1-Dichloroethane	750	790	105	(76-125)
1,1-Dichloroethene	750	825	110	(70-131)
1,1-Dichloropropene	750	906	121	(76-125)
1,2,3-Trichlorobenzene	750	756	101	(66-130)
1,2,3-Trichloropropane	750	811	108	(73-125)
1,2,4-Trichlorobenzene	750	789	105	(67-129)
1,2,4-Trimethylbenzene	750	786	105	(75-123)
1,2-Dibromo-3-chloropropane	750	805	107	(61-132)
1,2-Dibromoethane	750	810	108	(78-122)
1,2-Dichlorobenzene	750	769	102	(78-121)
1,2-Dichloroethane	750	819	109	(73-128)
1,2-Dichloropropane	750	855	114	(76-123)
1,3,5-Trimethylbenzene	750	767	102	(73-124)
1,3-Dichlorobenzene	750	778	104	(77-121)
1,3-Dichloropropane	750	791	105	(77-121)
1,4-Dichlorobenzene	750	787	105	(75-120)
2,2-Dichloropropane	750	921	123	(67-133)
2-Butanone (MEK)	2250	2490	111	(51-148)
2-Chlorotoluene	750	776	103	(75-122)
2-Hexanone	2250	2450	109	(53-145)
4-Chlorotoluene	750	790	105	(72-124)
4-Isopropyltoluene	750	729	97	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2560	114	(65-135)
Acetone	2250	2230	99	(36-164)
Benzene	750	840	112	(77-121)
Bromobenzene	750	799	107	(78-121)
Bromochloromethane	750	836	111	(78-125)
Bromodichloromethane	750	835	111	(75-127)
Bromoform	750	837	112	(67-132)
Bromomethane	750	810	108	(53-143)

Print Date: 01/28/2020 3:28:39PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [VXX35389]
Blank Spike Lab ID: 1549513
Date Analyzed: 01/17/2020 13:24

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231004

Results by **SW8260C**

	Blank Spike (ug/Kg)			
Parameter	Spike	Result	Rec (%)	CL
Carbon disulfide	1130	1320	117	(63-132)
Carbon tetrachloride	750	853	114	(70-135)
Chlorobenzene	750	813	108	(79-120)
Chloroethane	750	743	99	(59-139)
Chloroform	750	795	106	(78-123)
Chloromethane	750	784	105	(50-136)
cis-1,2-Dichloroethene	750	843	112	(77-123)
cis-1,3-Dichloropropene	750	849	113	(74-126)
Dibromochloromethane	750	832	111	(74-126)
Dibromomethane	750	889	119	(78-125)
Dichlorodifluoromethane	750	766	102	(29-149)
Ethylbenzene	750	805	107	(76-122)
Freon-113	1130	1260	112	(66-136)
Hexachlorobutadiene	750	788	105	(61-135)
Isopropylbenzene (Cumene)	750	763	102	(68-134)
Methyl-t-butyl ether	1130	1300	115	(73-125)
Naphthalene	750	811	108	(62-129)
n-Butylbenzene	750	715	95	(70-128)
n-Propylbenzene	750	766	102	(73-125)
o-Xylene	750	814	108	(77-123)
P & M -Xylene	1500	1610	107	(77-124)
sec-Butylbenzene	750	749	100	(73-126)
Styrene	750	805	107	(76-124)
tert-Butylbenzene	750	761	101	(73-125)
Tetrachloroethene	750	849	113	(73-128)
Toluene	750	807	108	(77-121)
trans-1,2-Dichloroethene	750	841	112	(74-125)
trans-1,3-Dichloropropene	750	829	111	(71-130)
Trichloroethene	750	894	119	(77-123)
Trichlorofluoromethane	750	830	111	(62-140)
Vinyl acetate	750	905	121	(50-151)
Vinyl chloride	750	771	103	(56-135)
Xylenes (total)	2250	2420	108	(78-124)

Print Date: 01/28/2020 3:28:39PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [VXX35389]
Blank Spike Lab ID: 1549513
Date Analyzed: 01/17/2020 13:24

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231004

Results by **SW8260C**

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

Batch Information

Analytical Batch: **VMS19771**
Analytical Method: **SW8260C**
Instrument: **VRA Agilent GC/MS 7890B/5977A**
Analyst: **KAJ**

Prep Batch: **VXX35389**
Prep Method: **SW5035A**
Prep Date/Time: **01/17/2020 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1549525
MS Sample ID: 1549514 MS
MSD Sample ID: 1549515 MSD

QC for Samples: 1200231004

Analysis Date: 01/17/2020 15:32
Analysis Date: 01/17/2020 13:57
Analysis Date: 01/17/2020 14:13
Matrix: Soil/Solid (dry weight)

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	1.23U	92.3	98.4	107	92.3	98.5	107	78-125	0.06	(< 20)
1,1,1-Trichloroethane	1.54U	92.3	108	117	92.3	109	118	73-130	1.20	(< 20)
1,1,2,2-Tetrachloroethane	0.123U	92.3	106	114	92.3	106	114	70-124	0.01	(< 20)
1,1,2-Trichloroethane	0.0493U	92.3	102	110	92.3	101	109	78-121	0.82	(< 20)
1,1-Dichloroethane	1.54U	92.3	99.1	107	92.3	101	109	76-125	1.80	(< 20)
1,1-Dichloroethene	1.54U	92.3	107	116	92.3	107	116	70-131	0.26	(< 20)
1,1-Dichloropropene	1.54U	92.3	113	123	92.3	115	124	76-125	1.20	(< 20)
1,2,3-Trichlorobenzene	3.08U	92.3	99.6	108	92.3	110	119	66-130	10.00	(< 20)
1,2,3-Trichloropropane	0.123U	92.3	99.7	108	92.3	99.5	108	73-125	0.29	(< 20)
1,2,4-Trichlorobenzene	1.54U	92.3	103	111	92.3	109	118	67-129	6.30	(< 20)
1,2,4-Trimethylbenzene	3.08U	92.3	98.9	107	92.3	104	112	75-123	4.70	(< 20)
1,2-Dibromo-3-chloropropane	6.15U	92.3	101	109	92.3	102	111	61-132	1.70	(< 20)
1,2-Dibromoethane	0.0615U	92.3	100	109	92.3	98.9	107	78-122	1.60	(< 20)
1,2-Dichlorobenzene	1.54U	92.3	95.3	103	92.3	99.6	108	78-121	4.40	(< 20)
1,2-Dichloroethane	0.123U	92.3	102	110	92.3	101	110	73-128	0.42	(< 20)
1,2-Dichloropropane	0.615U	92.3	105	114	92.3	107	116	76-123	1.60	(< 20)
1,3,5-Trimethylbenzene	1.54U	92.3	99.5	108	92.3	103	112	73-124	3.80	(< 20)
1,3-Dichlorobenzene	1.54U	92.3	99	107	92.3	99.3	107	77-121	0.29	(< 20)
1,3-Dichloropropane	0.615U	92.3	97.1	105	92.3	96.1	104	77-121	1.10	(< 20)
1,4-Dichlorobenzene	1.54U	92.3	98.8	107	92.3	100	109	75-120	1.50	(< 20)
2,2-Dichloropropane	1.54U	92.3	116	126	92.3	117	127	67-133	0.93	(< 20)
2-Butanone (MEK)	15.4U	277	311	112	277	310	112	51-148	0.39	(< 20)
2-Chlorotoluene	1.54U	92.3	99.2	107	92.3	101	110	75-122	2.10	(< 20)
2-Hexanone	6.15U	277	306	110	277	304	110	53-145	0.70	(< 20)
4-Chlorotoluene	1.54U	92.3	98.7	107	92.3	101	109	72-124	1.90	(< 20)
4-Isopropyltoluene	6.15U	92.3	97.6	106	92.3	102	110	73-127	4.30	(< 20)
4-Methyl-2-pentanone (MIBK)	15.4U	277	316	114	277	315	114	65-135	0.41	(< 20)
Acetone	15.4U	277	270	98	277	274	99	36-164	1.60	(< 20)
Benzene	0.770U	92.3	105	114	92.3	107	116	77-121	1.20	(< 20)
Bromobenzene	1.54U	92.3	98.3	106	92.3	100	108	78-121	1.80	(< 20)
Bromochloromethane	1.54U	92.3	104	113	92.3	103	111	78-125	1.10	(< 20)
Bromodichloromethane	0.123U	92.3	103	112	92.3	103	112	75-127	0.20	(< 20)
Bromoform	1.54U	92.3	104	112	92.3	102	110	67-132	1.50	(< 20)
Bromomethane	1.23U	92.3	109	118	92.3	97.3	105	53-143	11.50	(< 20)
Carbon disulfide	6.15U	139	177	128	139	174	125	63-132	1.90	(< 20)
Carbon tetrachloride	0.770U	92.3	107	116	92.3	109	118	70-135	1.70	(< 20)
Chlorobenzene	1.54U	92.3	99.9	108	92.3	101	110	79-120	1.30	(< 20)

Print Date: 01/28/2020 3:28:41PM

Matrix Spike Summary

Original Sample ID: 1549525
MS Sample ID: 1549514 MS
MSD Sample ID: 1549515 MSD

QC for Samples: 1200231004

Analysis Date: 01/17/2020 15:32
Analysis Date: 01/17/2020 13:57
Analysis Date: 01/17/2020 14:13
Matrix: Soil/Solid (dry weight)

Results by **SW8260C**

		Matrix Spike (ug/Kg)				Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
Chloroethane	12.3U	92.3	94	102		92.3	93.9	102		59-139	0.14	(< 20)
Chloroform	0.246U	92.3	98.7	107		92.3	100	108		78-123	1.50	(< 20)
Chloromethane	1.54U	92.3	99.1	107		92.3	98.5	107		50-136	0.59	(< 20)
cis-1,2-Dichloroethene	1.54U	92.3	105	114		92.3	107	116		77-123	1.70	(< 20)
cis-1,3-Dichloropropene	0.770U	92.3	105	114		92.3	106	115		74-126	0.85	(< 20)
Dibromochloromethane	0.308U	92.3	102	111		92.3	102	110		74-126	0.77	(< 20)
Dibromomethane	1.54U	92.3	111	120		92.3	109	118		78-125	1.20	(< 20)
Dichlorodifluoromethane	3.08U	92.3	99.2	107		92.3	98.8	107		29-149	0.39	(< 20)
Ethylbenzene	1.54U	92.3	102	111		92.3	103	112		76-122	0.73	(< 20)
Freon-113	6.15U	139	163	118		139	165	119		66-136	1.20	(< 20)
Hexachlorobutadiene	1.23U	92.3	131	142	*	92.3	132	143	*	61-135	0.45	(< 20)
Isopropylbenzene (Cumene)	1.54U	92.3	98.6	107		92.3	100	109		68-134	1.80	(< 20)
Methyl-t-butyl ether	6.15U	139	162	117		139	153	111		73-125	5.60	(< 20)
Naphthalene	2.19J	92.3	107	113		92.3	113	120		62-129	5.30	(< 20)
n-Butylbenzene	1.54U	92.3	99.2	107		92.3	105	114		70-128	5.70	(< 20)
n-Propylbenzene	1.54U	92.3	100	108		92.3	104	113		73-125	4.30	(< 20)
o-Xylene	1.54U	92.3	103	112		92.3	104	113		77-123	0.51	(< 20)
P & M -Xylene	3.08U	185	205	111		185	208	113		77-124	1.80	(< 20)
sec-Butylbenzene	1.54U	92.3	101	109		92.3	106	115		73-126	4.90	(< 20)
Styrene	1.54U	92.3	101	110		92.3	100	108		76-124	1.10	(< 20)
tert-Butylbenzene	1.54U	92.3	98	106		92.3	103	111		73-125	4.60	(< 20)
Tetrachloroethene	0.770U	92.3	111	120		92.3	112	121		73-128	0.62	(< 20)
Toluene	1.54U	92.3	101	109		92.3	102	110		77-121	1.20	(< 20)
trans-1,2-Dichloroethene	1.54U	92.3	108	117		92.3	106	115		74-125	1.90	(< 20)
trans-1,3-Dichloropropene	0.770U	92.3	103	111		92.3	102	111		71-130	0.46	(< 20)
Trichloroethene	0.308U	92.3	112	121		92.3	113	122		77-123	0.97	(< 20)
Trichlorofluoromethane	3.08U	92.3	105	114		92.3	104	113		62-140	1.00	(< 20)
Vinyl acetate	6.15U	92.3	112	121		92.3	112	121		50-151	0.30	(< 20)
Vinyl chloride	0.0493U	92.3	95.1	103		92.3	100	108		56-135	5.00	(< 20)
Xylenes (total)	4.62U	277	308	111		277	312	113		78-124	1.40	(< 20)
Surrogates												
1,2-Dichloroethane-D4 (surr)		92.3	93.2	101		92.3	92.8	100		71-136	0.40	
4-Bromofluorobenzene (surr)		154	115	75		154	117	76		55-151	1.60	
Toluene-d8 (surr)		92.3	91.1	99		92.3	91.5	99		85-116	0.42	

Print Date: 01/28/2020 3:28:41PM

Matrix Spike Summary

Original Sample ID: 1549525
MS Sample ID: 1549514 MS
MSD Sample ID: 1549515 MSD

QC for Samples: 1200231004

Analysis Date:
Analysis Date: 01/17/2020 13:57
Analysis Date: 01/17/2020 14:13
Matrix: Soil/Solid (dry weight)

Results by **SW8260C**

		Matrix Spike (%)			Spike Duplicate (%)				
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL

Batch Information

Analytical Batch: VMS19771
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: KAJ
Analytical Date/Time: 1/17/2020 1:57:00PM

Prep Batch: VXX35389
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 1/17/2020 6:00:00AM
Prep Initial Wt./Vol.: 406.09g
Prep Extract Vol: 25.00mL

Print Date: 01/28/2020 3:28:41PM

Method Blank

Blank ID: MB for HBN 1803870 [VXX/35390]
Blank Lab ID: 1549526

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231001, 1200231002, 1200231003, 1200231004

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.816J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	86.6	50-150		%

Batch Information

Analytical Batch: VFC15075
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 1/17/2020 1:27:00PM

Prep Batch: VXX35390
Prep Method: SW5035A
Prep Date/Time: 1/17/2020 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [VXX35390]
Blank Spike Lab ID: 1549529
Date Analyzed: 01/17/2020 12:51

Spike Duplicate ID: LCSD for HBN 1200231 [VXX35390]
Spike Duplicate Lab ID: 1549530
Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231001, 1200231002, 1200231003, 1200231004

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	104	12.5	12.9	103	(60-120)	1.40	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	83.9	84	1.25	88.2	88	(50-150)	5.00	

Batch Information

Analytical Batch: **VFC15075**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX35390**
Prep Method: **SW5035A**
Prep Date/Time: **01/17/2020 08:00**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1803882 [VXX/35391]
Blank Lab ID: 1549546

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	1.00U	2.00	0.620	ug/Kg
1,1,2-Trichloroethane	0.400U	0.800	0.250	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	1.00U	2.00	0.620	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	0.500U	1.00	0.310	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	1.00U	2.00	0.620	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	50.0U	100	25.0	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Acetone	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	1.00U	2.00	0.620	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	10.0U	20.0	6.20	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg

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Method Blank

Blank ID: MB for HBN 1803882 [VXX/35391]
Blank Lab ID: 1549546

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloroform	2.00U	4.00	0.620	ug/Kg
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	2.50U	5.00	0.620	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	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
n-Propylbenzene	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
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	2.50U	5.00	1.50	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	0.400U	0.800	0.250	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	71-136		%
4-Bromofluorobenzene (surr)	102	55-151		%
Toluene-d8 (surr)	97.9	85-116		%

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Method Blank

Blank ID: MB for HBN 1803882 [VXX/35391]
Blank Lab ID: 1549546

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS19772
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: KAJ
Analytical Date/Time: 1/20/2020 10:29:00AM

Prep Batch: VXX35391
Prep Method: SW5035A
Prep Date/Time: 1/20/2020 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 01/28/2020 3:28:48PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [VXX35391]
Blank Spike Lab ID: 1549547
Date Analyzed: 01/20/2020 10:52

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

	Blank Spike (ug/Kg)			
Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	750	785	105	(78-125)
1,1,1-Trichloroethane	750	850	113	(73-130)
1,1,2,2-Tetrachloroethane	750	804	107	(70-124)
1,1,2-Trichloroethane	750	833	111	(78-121)
1,1-Dichloroethane	750	779	104	(76-125)
1,1-Dichloroethene	750	848	113	(70-131)
1,1-Dichloropropene	750	892	119	(76-125)
1,2,3-Trichlorobenzene	750	758	101	(66-130)
1,2,3-Trichloropropane	750	784	105	(73-125)
1,2,4-Trichlorobenzene	750	764	102	(67-129)
1,2,4-Trimethylbenzene	750	759	101	(75-123)
1,2-Dibromo-3-chloropropane	750	807	108	(61-132)
1,2-Dibromoethane	750	811	108	(78-122)
1,2-Dichlorobenzene	750	719	96	(78-121)
1,2-Dichloroethane	750	830	111	(73-128)
1,2-Dichloropropane	750	851	113	(76-123)
1,3,5-Trimethylbenzene	750	724	97	(73-124)
1,3-Dichlorobenzene	750	737	98	(77-121)
1,3-Dichloropropane	750	790	105	(77-121)
1,4-Dichlorobenzene	750	765	102	(75-120)
2,2-Dichloropropane	750	913	122	(67-133)
2-Butanone (MEK)	2250	2620	117	(51-148)
2-Chlorotoluene	750	741	99	(75-122)
2-Hexanone	2250	2530	113	(53-145)
4-Chlorotoluene	750	723	96	(72-124)
4-Isopropyltoluene	750	705	94	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2650	118	(65-135)
Acetone	2250	2360	105	(36-164)
Benzene	750	837	112	(77-121)
Bromobenzene	750	761	102	(78-121)
Bromochloromethane	750	827	110	(78-125)
Bromodichloromethane	750	836	111	(75-127)
Bromoform	750	841	112	(67-132)
Bromomethane	750	695	93	(53-143)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [VXX35391]
Blank Spike Lab ID: 1549547
Date Analyzed: 01/20/2020 10:52

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

	Blank Spike (ug/Kg)			
Parameter	Spike	Result	Rec (%)	CL
Carbon disulfide	1130	1380	122	(63-132)
Carbon tetrachloride	750	837	112	(70-135)
Chlorobenzene	750	801	107	(79-120)
Chloroethane	750	745	99	(59-139)
Chloroform	750	785	105	(78-123)
Chloromethane	750	753	100	(50-136)
cis-1,2-Dichloroethene	750	830	111	(77-123)
cis-1,3-Dichloropropene	750	849	113	(74-126)
Dibromochloromethane	750	827	110	(74-126)
Dibromomethane	750	898	120	(78-125)
Dichlorodifluoromethane	750	720	96	(29-149)
Ethylbenzene	750	803	107	(76-122)
Freon-113	1130	1290	114	(66-136)
Hexachlorobutadiene	750	708	95	(61-135)
Isopropylbenzene (Cumene)	750	758	101	(68-134)
Methylene chloride	750	806	107	(70-128)
Methyl-t-butyl ether	1130	1330	118	(73-125)
Naphthalene	750	828	110	(62-129)
n-Butylbenzene	750	667	89	(70-128)
n-Propylbenzene	750	723	96	(73-125)
o-Xylene	750	810	108	(77-123)
P & M -Xylene	1500	1610	107	(77-124)
sec-Butylbenzene	750	701	93	(73-126)
Styrene	750	808	108	(76-124)
tert-Butylbenzene	750	701	94	(73-125)
Tetrachloroethene	750	854	114	(73-128)
Toluene	750	793	106	(77-121)
trans-1,2-Dichloroethene	750	836	111	(74-125)
trans-1,3-Dichloropropene	750	833	111	(71-130)
Trichloroethene	750	887	118	(77-123)
Trichlorofluoromethane	750	822	110	(62-140)
Vinyl acetate	750	925	123	(50-151)
Vinyl chloride	750	794	106	(56-135)
Xylenes (total)	2250	2420	108	(78-124)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [VXX35391]
Blank Spike Lab ID: 1549547
Date Analyzed: 01/20/2020 10:52

Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

	Blank Spike (ug/Kg)			
Parameter	Spike	Result	Rec (%)	CL
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	102	102	(71-136)
4-Bromofluorobenzene (surr)	750	95.2	95	(55-151)
Toluene-d8 (surr)	750	99.5	100	(85-116)

Batch Information

Analytical Batch: **VMS19772**
Analytical Method: **SW8260C**
Instrument: **VRA Agilent GC/MS 7890B/5977A**
Analyst: **KAJ**

Prep Batch: **VXX35391**
Prep Method: **SW5035A**
Prep Date/Time: **01/20/2020 06:00**
Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 01/28/2020 3:28:50PM

Matrix Spike Summary

Original Sample ID: 1549548
MS Sample ID: 1549549 MS
MSD Sample ID: 1549550 MSD

Analysis Date: 01/20/2020 12:39
Analysis Date: 01/20/2020 11:17
Analysis Date: 01/20/2020 11:34
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

		Matrix Spike (ug/Kg)				Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	11.1U	832	906	109		832	891	107		78-125	1.70	(< 20)
1,1,1-Trichloroethane	13.9U	832	1020	123		832	995	120		73-130	2.40	(< 20)
1,1,2,2-Tetrachloroethane	1.11U	832	958	115		832	984	118		70-124	2.70	(< 20)
1,1,2-Trichloroethane	0.444U	832	950	114		832	938	113		78-121	1.20	(< 20)
1,1-Dichloroethane	13.9U	832	935	112		832	922	111		76-125	1.40	(< 20)
1,1-Dichloroethene	13.9U	832	1020	123		832	985	118		70-131	3.40	(< 20)
1,1-Dichloropropene	13.9U	832	1060	128	*	832	1050	126	*	76-125	1.60	(< 20)
1,2,3-Trichlorobenzene	27.8U	832	964	116		832	1040	125		66-130	7.60	(< 20)
1,2,3-Trichloropropane	1.11U	832	908	109		832	934	112		73-125	2.80	(< 20)
1,2,4-Trichlorobenzene	13.9U	832	946	114		832	1000	121		67-129	6.00	(< 20)
1,2,4-Trimethylbenzene	27.8U	832	909	109		832	949	114		75-123	4.30	(< 20)
1,2-Dibromo-3-chloropropane	55.5U	832	945	114		832	985	118		61-132	4.10	(< 20)
1,2-Dibromoethane	0.555U	832	932	112		832	909	109		78-122	2.50	(< 20)
1,2-Dichlorobenzene	13.9U	832	867	104		832	892	107		78-121	2.90	(< 20)
1,2-Dichloroethane	1.11U	832	955	115		832	951	114		73-128	0.48	(< 20)
1,2-Dichloropropane	5.55U	832	988	119		832	984	118		76-123	0.42	(< 20)
1,3,5-Trimethylbenzene	13.9U	832	893	107		832	929	112		73-124	4.00	(< 20)
1,3-Dichlorobenzene	13.9U	832	899	108		832	918	110		77-121	2.20	(< 20)
1,3-Dichloropropane	5.55U	832	909	109		832	893	107		77-121	1.80	(< 20)
1,4-Dichlorobenzene	13.9U	832	915	110		832	928	112		75-120	1.40	(< 20)
2,2-Dichloropropane	13.9U	832	1100	133		832	1070	129		67-133	3.00	(< 20)
2-Butanone (MEK)	139U	2500	3040	122		2500	3040	122		51-148	0.04	(< 20)
2-Chlorotoluene	13.9U	832	889	107		832	924	111		75-122	3.90	(< 20)
2-Hexanone	55.5U	2500	2940	118		2500	2900	116		53-145	1.40	(< 20)
4-Chlorotoluene	13.9U	832	887	107		832	918	110		72-124	3.40	(< 20)
4-Isopropyltoluene	55.5U	832	876	105		832	932	112		73-127	6.20	(< 20)
4-Methyl-2-pentanone (MIBK)	139U	2500	3040	122		2500	3040	122		65-135	0.06	(< 20)
Acetone	139U	2500	2660	107		2500	2740	110		36-164	3.10	(< 20)
Benzene	6.95U	832	1000	120		832	992	119		77-121	1.00	(< 20)
Bromobenzene	13.9U	832	899	108		832	910	109		78-121	1.30	(< 20)
Bromochloromethane	13.9U	832	964	116		832	938	113		78-125	2.70	(< 20)
Bromodichloromethane	1.11U	832	970	117		832	961	116		75-127	0.92	(< 20)
Bromoform	13.9U	832	973	117		832	946	114		67-132	2.80	(< 20)
Bromomethane	11.1U	832	926	111		832	867	104		53-143	6.60	(< 20)
Carbon disulfide	55.5U	1250	1660	133	*	1250	1580	126		63-132	5.40	(< 20)
Carbon tetrachloride	6.95U	832	1010	121		832	986	119		70-135	2.40	(< 20)
Chlorobenzene	13.9U	832	938	113		832	929	112		79-120	0.98	(< 20)

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Matrix Spike Summary

Original Sample ID: 1549548
MS Sample ID: 1549549 MS
MSD Sample ID: 1549550 MSD

Analysis Date: 01/20/2020 12:39
Analysis Date: 01/20/2020 11:17
Analysis Date: 01/20/2020 11:34
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chloroethane	111U	832	848	102	832	810	97	59-139	4.60	(< 20)
Chloroform	2.22U	832	933	112	832	922	111	78-123	1.20	(< 20)
Chloromethane	13.9U	832	907	109	832	864	104	50-136	4.90	(< 20)
cis-1,2-Dichloroethene	13.9U	832	995	120	832	974	117	77-123	2.10	(< 20)
cis-1,3-Dichloropropene	6.95U	832	990	119	832	981	118	74-126	0.94	(< 20)
Dibromochloromethane	2.77U	832	948	114	832	932	112	74-126	1.70	(< 20)
Dibromomethane	13.9U	832	1030	124	832	1020	123	78-125	1.00	(< 20)
Dichlorodifluoromethane	27.8U	832	832	100	832	776	93	29-149	7.00	(< 20)
Ethylbenzene	13.9U	832	951	114	832	950	114	76-122	0.08	(< 20)
Freon-113	55.5U	1250	1560	125	1250	1510	121	66-136	2.90	(< 20)
Hexachlorobutadiene	11.1U	832	1120	135	832	1140	137 *	61-135	1.50	(< 20)
Isopropylbenzene (Cumene)	13.9U	832	927	111	832	919	110	68-134	0.89	(< 20)
Methylene chloride	55.5U	832	939	113	832	938	113	70-128	0.15	(< 20)
Methyl-t-butyl ether	55.5U	1250	1550	124	1250	1530	123	73-125	1.20	(< 20)
Naphthalene	21.4J	832	1020	120	832	1090	128	62-129	6.50	(< 20)
n-Butylbenzene	13.9U	832	859	103	832	948	114	70-128	9.90	(< 20)
n-Propylbenzene	13.9U	832	900	108	832	922	111	73-125	2.40	(< 20)
o-Xylene	13.9U	832	969	117	832	964	116	77-123	0.58	(< 20)
P & M -Xylene	27.8U	1660	1920	116	1660	1910	115	77-124	0.49	(< 20)
sec-Butylbenzene	13.9U	832	899	108	832	952	114	73-126	5.70	(< 20)
Styrene	13.9U	832	941	113	832	922	111	76-124	2.00	(< 20)
tert-Butylbenzene	13.9U	832	883	106	832	940	113	73-125	6.30	(< 20)
Tetrachloroethene	6.95U	832	1020	122	832	1010	121	73-128	0.82	(< 20)
Toluene	13.9U	832	939	113	832	922	111	77-121	1.80	(< 20)
trans-1,2-Dichloroethene	13.9U	832	1010	122	832	973	117	74-125	4.00	(< 20)
trans-1,3-Dichloropropene	6.95U	832	957	115	832	940	113	71-130	1.80	(< 20)
Trichloroethene	2.77U	832	1050	127 *	832	1030	124 *	77-123	1.90	(< 20)
Trichlorofluoromethane	27.8U	832	927	111	832	893	107	62-140	3.70	(< 20)
Vinyl acetate	55.5U	832	1050	126	832	1040	125	50-151	1.10	(< 20)
Vinyl chloride	0.444U	832	878	106	832	873	105	56-135	0.57	(< 20)
Xylenes (total)	41.6U	2500	2890	116	2500	2880	115	78-124	0.52	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		832	845	102	832	852	102	71-136	0.75	
4-Bromofluorobenzene (surr)		1220	995	82	1220	1030	85	55-151	3.60	
Toluene-d8 (surr)		832	822	99	832	805	97	85-116	2.10	

Print Date: 01/28/2020 3:28:52PM

Matrix Spike Summary

Original Sample ID: 1549548
MS Sample ID: 1549549 MS
MSD Sample ID: 1549550 MSD

Analysis Date:
Analysis Date: 01/20/2020 11:17
Analysis Date: 01/20/2020 11:34
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1200231001, 1200231002, 1200231003, 1200231004

Results by **SW8260C**

		Matrix Spike (%)			Spike Duplicate (%)				
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL

Batch Information

Analytical Batch: VMS19772
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: KAJ
Analytical Date/Time: 1/20/2020 11:17:01AM

Prep Batch: VXX35391
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 1/20/2020 6:00:00AM
Prep Initial Wt./Vol.: 307.19g
Prep Extract Vol: 170.41mL

Print Date: 01/28/2020 3:28:52PM

Method Blank

Blank ID: MB for HBN 1803961 [XXX/42758]
Blank Lab ID: 1549843

Matrix: Soil/Solid (dry weight)

QC for Samples:
1200231001, 1200231002, 1200231003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	93.6	60-120		%

Batch Information

Analytical Batch: XFC15529
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: DSD
Analytical Date/Time: 1/27/2020 5:40:00PM

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 1/23/2020 10:38:37AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

Print Date: 01/28/2020 3:28:55PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200231 [XXX42758]
Blank Spike Lab ID: 1549844
Date Analyzed: 01/27/2020 18:00

Spike Duplicate ID: LCSD for HBN 1200231 [XXX42758]
Spike Duplicate Lab ID: 1549845
Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231001, 1200231002, 1200231003

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	833	782	94	833	772	93	(75-125)	1.30	(< 20)
Surrogates									
5a Androstane (surr)	16.7	101	101	16.7	100	100	(60-120)	0.13	

Batch Information

Analytical Batch: **XFC15529**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **DSD**

Prep Batch: **XXX42758**
Prep Method: **SW3550C**
Prep Date/Time: **01/23/2020 10:38**
Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/Kg 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 1803961 [XXX/42758]
Blank Lab ID: 1549843

QC for Samples:
1200231001, 1200231002, 1200231003

Matrix: Soil/Solid (dry weight)

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	50.0U	100	43.0	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	107	60-120		%

Batch Information

Analytical Batch: XFC15529
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: DSD
Analytical Date/Time: 1/27/2020 5:40:00PM

Prep Batch: XXX42758
Prep Method: SW3550C
Prep Date/Time: 1/23/2020 10:38:37AM
Prep Initial Wt./Vol.: 30 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 1200231 [XXX42758]
Blank Spike Lab ID: 1549844
Date Analyzed: 01/27/2020 18:00

Spike Duplicate ID: LCSD for HBN 1200231 [XXX42758]
Spike Duplicate Lab ID: 1549845
Matrix: Soil/Solid (dry weight)

QC for Samples: 1200231001, 1200231002, 1200231003

Results by **AK103**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	833	730	88	833	725	87	(60-120)	0.61	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	16.7	110	110	16.7	101	101	(60-120)	7.60	

Batch Information

Analytical Batch: **XFC15529**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **DSD**

Prep Batch: **XXX42758**
Prep Method: **SW3550C**
Prep Date/Time: **01/23/2020 10:38**
Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

Print Date: 01/28/2020 3:29:02PM

SGS

SC
CHAII

1200231

Locations Nationwide
Alaska Maryland
New Jersey New York
North Carolina Florida

www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 1

Section 1

CLIENT: TPECI

CONTACT: E. Mundahl

PHONE #: 907-522-4337

PROJECT NAME: Northstar Pit Phase II

PROJECT/ PWSID/ PERMIT#:

REPORTS TO: TPECI

E-MAIL: EMundahl@tpeci.com

INVOICE TO: TPECI

QUOTE #:

P.O. #: 1405-41

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Comp Grab MI (Multi-incre-mental)	Analysis* DRO/RRO	GRO	VOC							REMARKS/LOC ID
(1) AB	OT-1	1/15/20	10:20	Soil	2	G	X	X	X							
(2) AB	OT-2		10:24		2	G	X	X	X							
(3) AB	OW-1		10:50		2	G	X	X	X							
(4) A																

Note: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS

Section 5

Relinquished By:	Date	Time	Received By:
(1)	1/16/20	14:05	
(2)			
(3)			
(4)	1/16/2020	1405	Received For Laboratory By: NSW

Section 4

DOD Project? Yes No

Data Deliverable Requirements:

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

Pro file # 335542 gm

Temp Blank °C: 3.9 D63 or Ambient [ ]

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Delivery Method: Hand Delivery [ ] Commerical Delivery [ ]

http://www.sgs.com/terms-and-conditions

F083-Blank_COC_Templates_2015-03-19

e-Sample Receipt Form

SGS Workorder #: **1200231**

1 2 0 0 2 3 1

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	Yes	1 Front
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
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: D63
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		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	
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. ***Note: If sample information on containers differs from COC, SGS will default to COC information	Yes	
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	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	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
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
1200231001-A	No Preservative Required	OK			
1200231001-B	Methanol field pres. 4 C	OK			
1200231002-A	No Preservative Required	OK			
1200231002-B	Methanol field pres. 4 C	OK			
1200231003-A	No Preservative Required	OK			
1200231003-B	Methanol field pres. 4 C	OK			
1200231004-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
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.
QN - Insufficient sample quantity provided.

Table 2. Soil: PID

Sample ID	Depth (ft)	PID Reading
		ppm
OT-1	1.5	316.1
OT-2	1.5	285.7
OW-1	8.0	37.5
OW-2	8.0	22.8

Table 3. Soil: DRO, RRO, GRO, BTEX

Sample ID	Depth (ft)	DRO	RRO	GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes
		250 mg/Kg	**11,000 mg/Kg**	**300 mg/Kg**	**0.022 mg/Kg**	**6.7 mg/Kg**	**0.13 mg/Kg**	**1.5 mg/Kg**
OT-1	1.5	**893**	114U	7.12	0.0146U	0.0536	0.0900	0.743
OT-2	1.5	681	112U	5.90	0.0117U	0.0321	0.0573	0.439
OW-1	8.0	**54,300**	**333,000**	9.36U	0.0491U	0.0983U	0.0983U	0.295U

Notes:

Bold indicates concentration exceed ADEC Method Two (Table B1) Under 40 Inch Zone Cleanup Level mirgration to groundwater.

J The quantitation is an estimate.

U Indicates the analyte was analyzed for but not detected.

Table 4. Soil: VOCs

Analyte	Cleanup Level mg/Kg	OT-1	OT-2	OW-1
1,1,1,2-Tetrachloroethane	0.022	0.0233U	0.0187U	0.0786U
1,1,1-Trichloroethane	32	0.0291U	0.0234U	0.0983U
1,1,2,2-Tetrachloroethane	0.0030	0.00233U	0.00187U	0.00786U*
1,1,2-Trichloroethane	0.0014	0.000933U	0.000749U	0.00314U*
1,1-Dichloroethane	0.092	0.0291U	0.0234U	0.0983U
1,1-Dichloroethene	None Available	0.0291U	0.0234U	0.0983U
1,1-Dichloropropene	None Available	0.0291U	0.0234U	0.0983U
1,2,3-Trichlorobenzene	0.15	0.0583U	0.0468U	0.197U*
1,2,3-Trichloropropane	0.000031	0.00233U*	0.00187U*	0.00786U*
1,2,4-Trichlorobenzene	0.082	0.0291U	0.0234U	0.0983U
1,2,4-Trimethylbenzene	0.61	**0.891**	**0.590**	0.197U
1,2-Dibromo-3-chloropropane	None Available	0.117U	0.0936U	0.393U
1,2-Dibromoethane	0.00024	0.00117U*	0.000936U*	0.00393U*
1,2-Dichlorobenzene	2.4	0.0291U	0.0234U	0.0983U
1,2-Dichloroethane	0.0055	0.00233U	0.00187U	0.00786U*
1,2-Dichloropropane	0.030	0.0117U	0.00936U	0.0393U
1,3,5-Trimethylbenzene	0.66	0.308	0.209	0.0983U
1,3-Dichlorobenzene	2.3	0.0291U	0.0234U	0.0983U
1,3-Dichloropropane	0.018	0.00117U	0.00936U	0.0393U
1,4-Dichlorobenzene	0.037	0.0291U	0.0234U	0.0983U
2,2-Dichloropropane	None Available	0.0291U	0.0234U	0.0983U
2-Butanone (MEK)	15	0.291U	0.234U	0.983U
2-Chlorotoluene	None Available	0.0291U	0.0234U	0.0983U
2-Hexanone	0.11	0.117U	0.0936U	0.393U
4-Chlorotoluene	None Available	0.0291U	0.0234U	0.0983U
4-Isopropyltoluene	None Available	0.117U	0.0936U	0.393U
4-Methyl-2-pentanone (MIBK)	18	0.291U	0.234U	0.0983U
Acetone	38	0.291U	0.234U	1.190
Benzene	0.022	0.0146U	0.0117U	0.0491U*
Bromobenzene	36	0.0291U	0.0234U	0.0983U
Bromochloromethane	None Available	0.0291U	0.0234U	0.0983U
Bromodichloromethane	0.00430	0.00233U	0.00187U	0.00786U*
Bromoform	0.10	0.0291U	0.0234U	0.0983U
Bromomethane	0.0240	0.0233U	0.0187U	0.0786U*
Carbon disulfide	2.90	0.117U	0.0936U	0.393U
Carbon tetrachloride	0.0210	0.0146U	0.0117U	0.0491U*
Chlorobenzene	0.46	0.0291U	0.0234U	0.0983U
Chloroethane	None Available	0.233U	0.187U	0.786U
Chloroform	0.00710	0.00466U	0.00374U	0.0157U*
Choromethane	0.610	0.0291U	0.0234U	0.0983U
cis-1,2-Dichloroethene	None Available	0.0291U	0.0234U	0.0983U
cis-1,3-Dichloropropene	None Available	0.0146U	0.0117U	0.0491U
Dibromochloromethane	0.00270	0.00583U	0.00468U	0.0197U*
Dibromomethane	0.0250	0.0291U	0.0234U	0.0983U*
Dichlorodifluoromethane	3.90	0.0583U	0.0468U	0.197U
Ethylbenzene	0.130	0.0900	0.0573	0.0983U
Freon-113	None Available	0.117U	0.0936U	0.393U
Hexachlorobutadiene	0.020	0.0233U	0.0187U	0.0786U*
Isopropylbenzene (Cumene)	5.60	0.0758	0.051	0.0983U
Methylene chloride	0.330	0.147	0.106	0.440
Methyl-t-butyl-ether	0.40	0.0117U	0.0936U	0.393U
Naphthalene	0.0380	**0.581**	0.366	0.0983U*
n-Butylbenzene	23.0	0.0291U	0.0234U	0.0983U
n-Propylbenzene	9.10	0.188	0.126	0.0983U
O-Xylene	None Available	0.308	0.184	0.0983U
P & M-Xylene	None Available	0.434	0.255	0.197U
sec-Butylbenzene	42.0	0.0871	0.0605	0.0983U
Styrene	10.0	0.0291U	0.0234U	0.0983U
tert-Butylbenzene	11.0	0.0291U	0.0234U	0.0983U
Tetrachloroethene	None Available	0.0146U	0.0117U	0.0491U
Toluene	6.70	0.0536	0.0321	0.0983U
trans-1,2-Dichloroethene	None Available	0.0291U	0.0234U	0.0983U
trans-1,3-Dichloropropene	None Available	0.0146U	0.0117U	0.0491U
Trichlorethene	None Available	0.00583U	0.00468U	0.0197U
Trichlorofluoromethane	41.0	0.0583U	0.0468U	0.197U
Vinyl acetate	1.10	0.117U	0.0936U	0.393U
Vinyl chloride	0.00080	0.000933U*	0.000749U	0.00314U*
Xylenes (total)	1.50	0.743	0.439	0.295U

Notes:

Bold indicates concentration exceed ADEC Method Two (Table B1) Under 40 Inch Zone

Cleanup Level migration to groundwater.

J The quantitation is an estimate.

U Indicates the analyte was analyzed for but not detected.

* Indicates LOQ was above Cleanup Level