November 22, 2019

Ms. Janine Boyette
Response and Remediation SME
Alyeska Pipeline Service Company
P.O. BOX 196660
Anchorage, AK 99519-6660

Re: RGV-35A Well Installation, Revision 1

Dear Ms. Boyette,

At the request of Alyeska Pipeline Service Company (Alyeska), SLR International Corporation (SLR) has prepared this letter report presenting groundwater well installation and sampling at Remote Gate Valve (RGV)-35A on the Trans Alaska Pipeline System (TAPS). The well installations were completed in response to a request for additional groundwater characterization from the Alaska Department of Environmental Conservation (ADEC). The installation, sampling, and analytical results for the monitoring wells are summarized in this document.

SITE BACKGROUND

Several crude oil release investigations have been conducted at RGV-35A, most recently a heavy sheen was discovered on water within the corrugated metal pipe surrounding the valve in August 2018 during excavation of the vertical bypass risers. An investigation was conducted at the site from late August to early September, 2018, including removal of crude-stained soil from around the valve below the static water table. The investigation also included installation by hand of nine shallow borings completed as groundwater sampling points to depths of 2.5 to 6 feet (ft) below ground surface (bgs). All shallow groundwater analytical results were below cleanup levels for petroleum hydrocarbons. Exceedances in soil were limited to a small area of crude-stained soil in the southwest edge of the valve excavation at a depth of approximately 6 to 8 ft bgs (SLR, 2019). The depth of crude staining in the excavation was below the collection depth of soil and groundwater samples from around the valve.

SITE SETTING AND LITHOLOGY

The valve is located on a large gravel pad at milepost 194 of the TAPS (Figure 1). The gravel pad at the valve slopes gently east-southeast towards a wooded area. The pad is composed of 4 to 5 ft of compacted fill material overlaying native alluvial deposits from the Dietrich river channel. The pad fill material has a high silt content as evidence by pooled rainwater and poor well recharge rates for shallow groundwater sampling points (SLR, 2019). The nearest surface water is located in a wooded area, approximately 150 ft east of the valve. A dry channel of the Dietrich River subject to seasonal flows runs approximately 130 ft west of the valve.

WELL INSTALLATION AND SAMPLING

Three monitoring wells (MW-191, MW-192, and MW-193) were installed in borings near the valve and pipeline to evaluate potential groundwater impacts from historical crude releases from the valve and to determine the depth and flow direction of the groundwater table (Figure 2). The wells were installed in a triangular arrangement, approximately 50 ft north, east, and west of the valve to aid in the determination of groundwater flow direction. Well installation, development, and sampling were conducted in accordance with ADEC's *Monitoring Well Guidance* and *Field Sampling Guidance* (ADEC, 2013 and 2017b). Field activities were documented in the photograph log, field logbook, and boring and well construction logs included as Attachments 1, 2, and 3, respectively. The position and elevation of the monitoring wells was collected by Alyeska's survey contractor and is included as Attachment 4.

Soil Borings and Sampling

Soil borings for well installation were drilled to 11.6 to 13.5 feet below ground surface using a track-mounted GeoProbe® direct-push drill rig. Soil from each boring was collected in 5-foot drive intervals with an MC5 sampler lined with a 2-inch diameter polyethylene Macro-Core® liner. Each recovered soil core was opened immediately upon retrieval for screening and sampling. Soil lithology was classified consistent with Standard Practice for Description and Identification of Soil (ASTM International, 2017) as general guidance. Borings were logged continuously from the surface to total depth and observations recorded on boring logs.

Cores from each boring were screened for signs of petroleum hydrocarbon contamination using a photoionization detector (PID) and the heated headspace method (ADEC, 2017b). Two soil analytical samples were collected from boring MW-191 including "upper" sample collected from the vadose zone soil interval with the highest in situ PID screening value at 3 ft bgs, and a "lower" sample collected from the interval immediately above the observed saturated zone at 5 ft bgs. For borings MW-192 and MW-193, only lower samples were collected from immediately above the apparent water table at 3.5 and 3.75 ft bgs, respectively. No upper sample was collected for MW-192 and MW-193 because no indications of hydrocarbon impacts were identified based on PID screening along all recovered soil intervals to the full depth of the borings. Soil boring sample intervals and PID results are summarized in Table 1.

Soil samples were collected for analysis of gasoline and diesel range organics (GRO and DRO), residual range organics (RRO), petroleum volatile organic compounds (PVOCs), and polynuclear aromatic hydrocarbons (PAH) by ADEC-approved soil analytical methods. One duplicate soil sample was collected for sampling quality control.

Well Installation, Development, and Sampling

Monitoring Wells were installed in completed borings and consisted of 1-inch polyvinyl chloride (PVC) blank riser pipe and 5 ft long, 0.010-inch slot PVC well screens with a 10/20 Colorado sand pack extending upward from the bottom of each well to one foot above the well screen. The screens were set at depths of 12.5 to 13.4 ft bgs to span the approximate depths of crude impacted soil observed in the valve excavation in order to characterize the potential lateral spread of hydrocarbons. The annular space from the sandpack upwards to the flush-mount steel monument was sealed with hydrated bentonite. The monuments were buried approximately 6-inches below the ground surface.

Monitoring wells were developed by surging using a Waterra® foot valve, followed by pumping with a peristaltic pump until clear water was produced. The wells were allowed to rest overnight before sampling.

Monitoring wells were sampled by standard low-flow sampling methodology in accordance with ADEC's *Field Sampling Guidance* (ADEC, 2017b). Groundwater samples collected were submitted to SGS North America, Inc (SGS) in Fairbanks, Alaska for analysis of GRO, DRO, RRO, PVOCs, and PAH by ADEC-approved groundwater analytical methods. One duplicate groundwater sample was collected for sampling quality control.

Analytical Methods

Soil and groundwater samples were submitted to SGS North America, Inc. (SGS) of Anchorage, Alaska, an ADEC-accredited laboratory. Samples were analyzed for petroleum hydrocarbons by the following soil and groundwater analytical methods:

- **GRO**: Alaska Method 101;
- **DRO and RRO**: Alaska Method 102/103;
- **VOCs** (petroleum hydrocarbon list): US Environmental Protection Agency (USEPA) Method 8260D; and
- **PAHs**: USEPA Method SW8270D-SIM (selective ion monitoring).

Waste Disposition and Treatment

Wastes generated was limited to soil cuttings and well development and sampling purge water. A 4-inch auger was utilized to reduce the volume of soil cuttings generated. Soil cuttings were drummed, transported to Pump Station 5, and later disposed of as clean soil based on analytical results. Monitoring well purge water was free of sheen and was treated by a two-stage sediment and granulated activated carbon filtration system prior to discharge to the pad surface.

FINDINGS

Findings of the investigation including groundwater flow direction and analytical results for soil and groundwater are summarized below. Analytical results for soil and groundwater are presented in Tables 2 and 3, respectively and groundwater flow direction is shown on Figure 2.

Groundwater Flow Direction

Groundwater flow direction was evaluated using groundwater elevations measured in the three new wells, collected the day after installation to allow for stabilization. Elevations from the wells suggest a southwest flow towards the Dietrich river, with a moderate gradient of 0.0043 to 0.0066 ft per ft. Approximated groundwater flow contours and direction are shown on Figure 2.

Soil Analytical Results

Soil sample analytical results indicate that the historical crude oil release has not impacted shallow soils in borings MW-191, MW-192, and MW-193 which are located approximately 50 ft upgradient, downgradient, and cross-gradient, respectively. All soil analyte concentrations were non-detect or near the laboratory limit of detection, and well below the most stringent soil cleanup criteria as listed in Title 18 of the Alaska Administrative Code (AAC), Chapter 75 (18 AAC 75), *Oil and Other Hazardous Substances Pollution Control* (ADEC, 2018). These findings of no hydrocarbon impacts are consistent with analytical results for shallow

groundwater samples collected from nine wells and well points installed around the valve during the 2018 investigation (SLR, 2019). Cleanup levels and sample results are shown on Table 2.

Groundwater Analytical Results

Groundwater analytical results show no impacts from the historical crude leak or sheen at the valve. All analytical results were non-detect and below groundwater cleanup levels as presented in Table C of 18 AAC 75, (ADEC, 2018). Non-detect results for groundwater indicate that soils in the well screen interval are not impacted by potential lateral movement of hydrocarbons from crude remaining near the valve at depths of 6 to 8 ft bgs. Groundwater cleanup levels and analytical results are shown on Table 3.

Data Quality

All data were deemed useable, including qualified data, in accordance with ADEC guidance (ADEC, 2017a). A laboratory data quality assurance review (QAR) is included as Attachment 5.

CONCLUSIONS

Impacts to environmental media resulting from historical leaks at RGV-35A leak appear limited to the immediate vicinity of the valve identified during the prior investigation in 2018. Soil and groundwater sample results from the monitoring well installation described in this report do not indicate downgradient, lateral migration of petroleum hydrocarbons in shallow soils or the in underlying aquifer at depths corresponding to remaining crude-impacted soil near the valve.

Sincerely,
SLR International Corporation

Christophe Venot
Senior Scientist

Scott Rose
Principal Scientist

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Figure 1 – Site Location
Figure 2 – Monitoring Well Locations
Table 1 – Soil Screening Values
Table 2 – Soil Confirmation Sample Analytical Results
Attachment 1 – Photograph Log
Attachment 2 – Field Notebook
Attachment 3 – Field Forms
Attachment 4 – Survey Data
Attachment 5 – Laboratory Data Quality Assurance Review

REFERENCES:

Alaska Department of Environmental Conservation (ADEC), 2013. Monitoring Well Guidance. September.

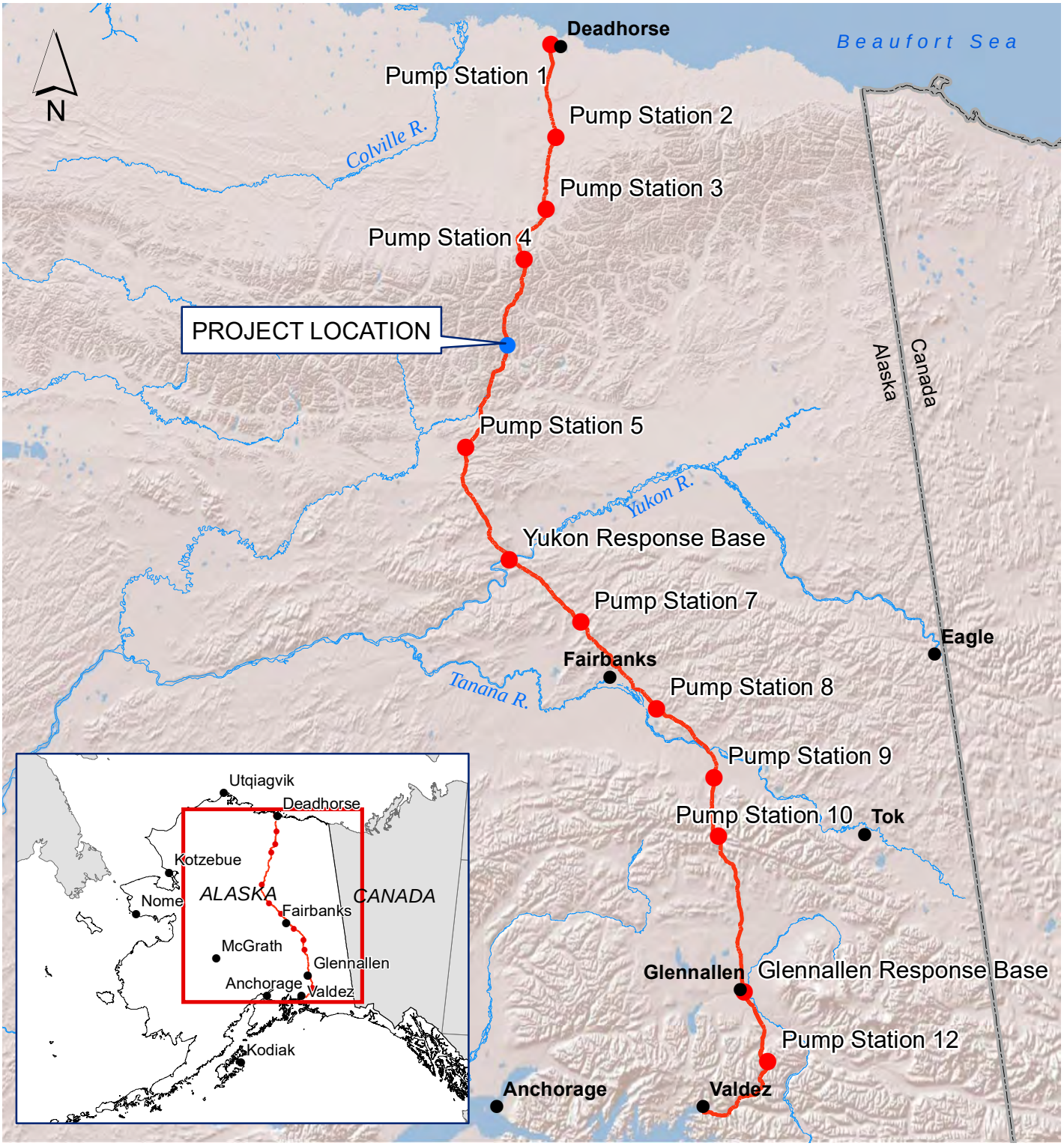
ADEC, 2017a. Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling. Technical Memorandum. March.

ADEC, 2017b. Field Sampling Guidance. August.

ADEC, 2018. Alaska Administrative Code (18 AAC 75), Oil and Other Hazardous Substances Pollution Control. As amended through October 27.

ASTM D2488-17, Standard Practice for Description and Identification of Soils (Visual-Manual Procedures), ASTM International, West Conshohocken, PA, 2017, www.astm.org

SLR International Corporation (SLR), 2019. RGV-35A Sheen Investigation



Legend

- City
- Pump Station
- Trans Alaska Pipeline

0 20 40 80 120 160 Miles

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY.
ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

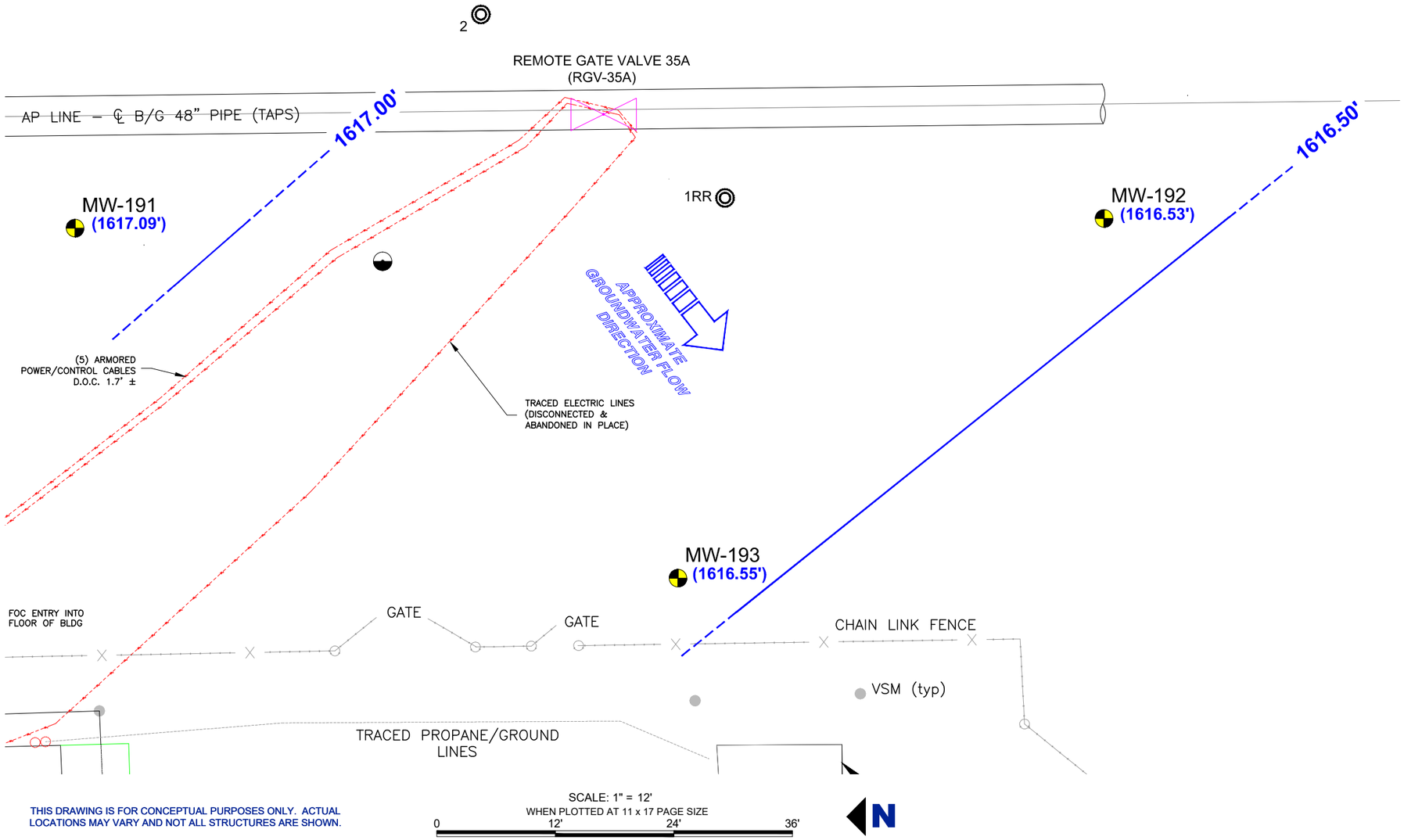
SLR

Site
ALYESKA PIPELINE SERVICE COMPANY
REMOTE GATE VALVE (RGV) - 35A
PIPELINE MILEPOST 194

Report
2019 REMOTE GATE VALVE (RGV) - 35A,
WELL INSTALLATION

Drawing
SITE LOCATION MAP

Drawing	August 2019	Scale	As Shown	Fig. No.
File Name	F1 RGV35A RPT_19.mxd	Project No.	105.01288.19038	1



THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

DRAWING NOTES

DRAWING IS BASED ON ALYESKA PIPELINE SERVICE COMPANY DRAWING NO. 194A0613, RGV35A OIL SPILL RESPONSE AS-BUILT TOPO, SHEET 1 OF 1, DWG DATE: 6/27/13

LEGEND

- MONITORING WELL LOCATION
- SOIL GAS PROBE
- THERMISTOR
- 1617.00' — GROUNDWATER CONTOUR AND ELEVATION (FEET ABOVE SEA LEVEL)

NOTE:

Soil and groundwater analytical results for MW-191, MW-192, and MW-193 were below all applicable cleanup levels for site contaminants of potential concern. Refer to Tables 2 and 3 for complete analytical results.

Site
ALYESKA PIPELINE SERVICE COMPANY
REMOTE GATE VALVE (RGV) - 35A PIPELINE
MILEPOST 194

Report
2019 REMOTE GATE VALVE (RGV) - 35A
WELL INSTALLATION REPORT

Drawing
MONITORING WELL LOCATIONS

Date September 2019	Scale 1" = 12 Feet	Fig. No. 2
File Name F2 RGV-35A RPT_19	Project No. 105.01288.19038	

SLR

Table 1: Well and Boring Summary
RGV-35A Well Installation

Boring ID	Analytical Sample		PID Heated Headspace Screening Value (ppm)	Depth to Water		Top of PVC Casing[3] (ft bgs)	Well Screen Interval (ft bgs)
	Name	Interval (ft bgs)		Boring[1] (ft bgs)	Well[2] (ft bgs)		
MW-191	MW191-1	1.0	10.4	≤ 3.75	2.96	0.852	8.45 - 13.45
	MW191-3	3.0	9.0				
	MW191-5	5.0	8.2				
MW-192	MW192-3.5	3.5	0.0	3.5	3.01	0.720	7.61 - 12.61
MW-193	MW193-3.75	3.75	0.0	4-5	4.12	0.975	6.63 - 11.63

Notes and Abbreviations

[1] As estimated from soil cores during drilling

[2] Adjusted for depth PVC casing below pad using surveyed depth

[3] Calculated from site survey data included as report Attachment 4

ft bgs feet below ground surface

PID photoionization detector

ppm parts per million

≤ less than or equal to

Table 2: Soil Sample Analytical Results
RGV-35A Well Installation

Compound in milligrams per kilogram (mg/kg)	Screening Criteria		Sample Location[C]						
	18 AAC 75.341, Tables B1 and B2 Under 40 Zone[A]	18 AAC 75.341, Tables B1 and B2 Migration to Groundwater[B]	Primary: MW191-1 29-Jul-19 1199584002	Duplicate: MW199-1 29-Jul-19 1199584005	MW191-3 29-Jul-19 1199584003	MW191-5 29-Jul-19 1199584004	MW192-3.5 29-Jul-19 1199584001	MW193-3.75 29-Jul-19 1199584006	TB-1 29-Jul-19 1199584007
			Conc.[D]	Conc.[D]	Conc.[D]	Conc.[D]	Conc.[D]	Conc.[D]	Conc.[D]
Fuels (AK101, 102, and 103)									
Gasoline Range Organics	1400	300	[1.08] UB	[1.08] ND	[1.15] UB	[1.05] UB	[1.18] UB	[1.17] ND	0.766 J
Diesel Range Organics	10250	250	[10.7] ND	[10.8] ND	[10.7] ND	[11.3] ND	[10.7] ND	[11.2] ND	--
Residual Range Organics	10000	11000	9.04 J	15.9 J	6.82 J	7.97 J	11.7 J	37.7	--
Petroleum Volatile Organic Compounds (SW8260C)									
1,2,4-Trimethylbenzene	43	0.61	[0.0216] ND	[0.0215] ND	[0.0229] ND	[0.0209] ND	[0.0234] ND	[0.0234] ND	[0.0251] ND
1,2-Dibromoethane	0.42	0.00024	[0.000433] ND	[0.00043] ND	[0.00046] ND	[0.000419] ND	[0.000469] ND	[0.000467] ND	[0.0005] ND
1,2-Dichloroethane	5.5	0.0055	[0.000865] ND	[0.00086] ND	[0.00092] ND	[0.00084] ND	[0.00094] ND	[0.000935] ND	[0.001] ND
1,3,5-Trimethylbenzene	37	0.66	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
Benzene	11	0.022	[0.0054] ND	[0.0054] ND	[0.00575] ND	[0.00525] ND	[0.00585] ND	[0.00585] ND	[0.0063] ND
Ethylbenzene	49	0.13	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
Isopropylbenzene (Cumene)	54	5.6	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
Methyl-t-butyl ether	670	0.4	[0.0433] ND	[0.043] ND	[0.046] ND	[0.0419] ND	[0.0469] ND	[0.0467] ND	[0.05] ND
Naphthalene	29	0.038	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
n-Butylbenzene	20	23	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
o-Xylene	--	--	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
P & M -Xylene	--	--	[0.0216] ND	[0.0215] ND	[0.0229] ND	[0.0209] ND	[0.0234] ND	[0.0234] ND	[0.0251] ND
sec-Butylbenzene	28	42	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
tert-Butylbenzene	36	11	[0.0108] ND	[0.0108] ND	[0.0115] ND	[0.0105] ND	[0.0118] ND	[0.0117] ND	[0.0126] ND
Toluene	200	6.7	[0.0108] UB	[0.0108] UB	[0.0115] UB	[0.0105] ND	[0.0118] UB	[0.0117] ND	0.00922 J
Xylenes (total)	57	1.5	[0.0216] ND	[0.0215] ND	[0.0229] ND	[0.0209] ND	[0.0234] ND	[0.0234] ND	[0.0251] ND
PAH SIM (SW8270D)									
Acenaphthene	4600	37	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Acenaphthylene	2300	18	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Anthracene	23000	390	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Benzo(a)Anthracene	14	0.7	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Benzo[a]pyrene	1.5	1.9	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Benzo[b]Fluoranthene	15	20	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Benzo[g,h,i]perylene	2300	15000	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Benzo[k]fluoranthene	150	190	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Chrysene	1500	600	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Dibenzo[a,h]anthracene	1.5	6.3	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Fluoranthene	3100	590	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Fluorene	3100	36	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Indeno[1,2,3-c,d] pyrene	15	65	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Naphthalene	29	0.038	[0.0107] ND	[0.0108] ND	[0.0108] ND	[0.0112] ND	[0.0107] ND	[0.0112] ND	--
Phenanthrene	2300	39	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Pyrene	2300	87	[0.0134] ND	[0.0134] ND	[0.0134] ND	[0.0141] ND	[0.0134] ND	[0.014] ND	--
Percent Solids (SM21 2540G)									
Total Solids	--	--	92.2	92	92.9	87.7	93.1	89.3	--

Notes:

3.6	**BOLD** values indicate an exceedance of Method Two cleanup levels for the Under 40 Inch Zone.[A]
0.237	**BOLD** and yellow highlighted values indicate an exceedance of Method Two cleanup levels for Migration to Groundwater.[B]
[0.00362]	Green values indicate undetectable results with LODs above applicable ADEC screening criteria.
A	ADEC Method Two cleanup levels for the Under 40 Inch Zone, lowest of ingestion or inhalation, 18 AAC 75.341, Tables B1 and B2 (October 27, 2018).
B	ADEC Method Two cleanup levels Migration to Groundwater for the Under 40 Inch Zone, 18 AAC 75.341, Tables B1 and B2 (October 27, 2018).
C	The field sample identification number, date collected, and laboratory sample identification number are provided.
D	For detected results, the sample result is listed in mg/kg in this column. If an analyte was not detected, then the LOD is shown in [ ].
E	Total values were the summation of detected compounds only. If compounds were not detected, then the highest LOD was listed.

Abbreviations

--	Not applicable or screening criteria does not exist for this compound
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska
DL	detection limit
LOD	limit of detection
LOQ	limit of quantitation
mg/kg	milligrams per kilogram
PAH	polycyclic aromatic hydrocarbons
SIM	selective ion monitoring
SM	Standard Methods

Data Flags:

[x.xx] ND	The number in brackets is the LOD.
J	Estimated value below the LOQ, but above the DL.
UB	A UB flag indicates non-detect due to an associated blank contamination. Blank detection is greater than sample detection or both the blank and sample detection were below the LOD. The greater of the sample detection or LOD was reported in brackets and qualified as non-detect.

Table 3: Groundwater Sample Analytical Results
RGV-35A Well Installation

Compound in milligrams per liter (mg/L)	18 AAC 75, Table C, Groundwater Cleanup Levels[A]	Sample Location[B]				
		Primary: MW-191 30-Jul-19 1199584008	**Duplicate:** MW-199 30-Jul-19 1199584011	MW-192 30-Jul-19 1199584010	MW-193 30-Jul-19 1199584009	TB-2 30-Jul-19 1199584012
		Conc.[C]	**Conc.[C]**	**Conc.[C]**	**Conc.[C]**	**Conc.[C]**
Fuels (AK101, 102, and 103)						
Gasoline Range Organics	2.2	[0.05] ND	0.046 J	[0.05] ND	[0.05] ND	[0.05] ND
Diesel Range Organics	1.5	[0.288] ND	[0.3] ND	[0.294] ND	[0.288] ND	--
Residual Range Organics	1.1	[0.24] ND	[0.25] ND	[0.245] ND	[0.24] ND	--
Petroleum Volatile Organic Compounds (SW8260C)						
1,2,4-Trimethylbenzene	0.056	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
1,2-Dibromoethane	0.000075	[0.0000375] ND	[0.0000375] ND	[0.0000375] ND	[0.0000375] ND	[0.0000375] ND
1,2-Dichloroethane	0.0017	[0.00025] ND	[0.00025] ND	[0.00025] ND	[0.00025] ND	[0.00025] ND
1,3,5-Trimethylbenzene	0.06	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
Benzene	0.0046	[0.0002] ND	[0.0002] ND	[0.0002] ND	[0.0002] ND	[0.0002] ND
Ethylbenzene	0.015	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
Isopropylbenzene (Cumene)	0.45	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
Methyl-t-butyl ether	0.14	[0.005] ND	[0.005] ND	[0.005] ND	[0.005] ND	[0.005] ND
Naphthalene	0.0017	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
n-Butylbenzene	1	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
o-Xylene	--	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
P & M -Xylene	--	[0.001] ND	[0.001] ND	[0.001] ND	[0.001] ND	[0.001] ND
sec-Butylbenzene	2	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
tert-Butylbenzene	0.69	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
Toluene	1.1	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND	[0.0005] ND
Xylenes (total)[D]	0.19	[0.001] ND	[0.001] ND	[0.001] ND	[0.001] ND	[0.001] ND
PAH SIM (SW8270D LV)						
Acenaphthene	0.53	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Acenaphthylene	0.26	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Anthracene	0.043	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Benzo(a)Anthracene	0.0003	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Benzo[a]pyrene	0.00025	[0.0000098] ND	[0.0000098] ND	[0.0000096] ND	[0.00000945] ND	--
Benzo[b]Fluoranthene	0.0025	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Benzo[g,h,i]perylene	0.00026	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Benzo[k]fluoranthene	0.0008	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Chrysene	0.002	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Dibenzo[a,h]anthracene	0.00025	[0.0000098] ND	[0.0000098] ND	[0.0000096] ND	[0.00000945] ND	--
Fluoranthene	0.26	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Fluorene	0.29	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Indeno[1,2,3-c,d] pyrene	0.00019	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Naphthalene	0.0017	[0.000049] ND	[0.000049] ND	[0.0000481] ND	[0.0000471] ND	--
Phenanthrene	0.17	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--
Pyrene	0.12	[0.0000245] ND	[0.0000245] ND	[0.000024] ND	[0.0000236] ND	--

Notes:

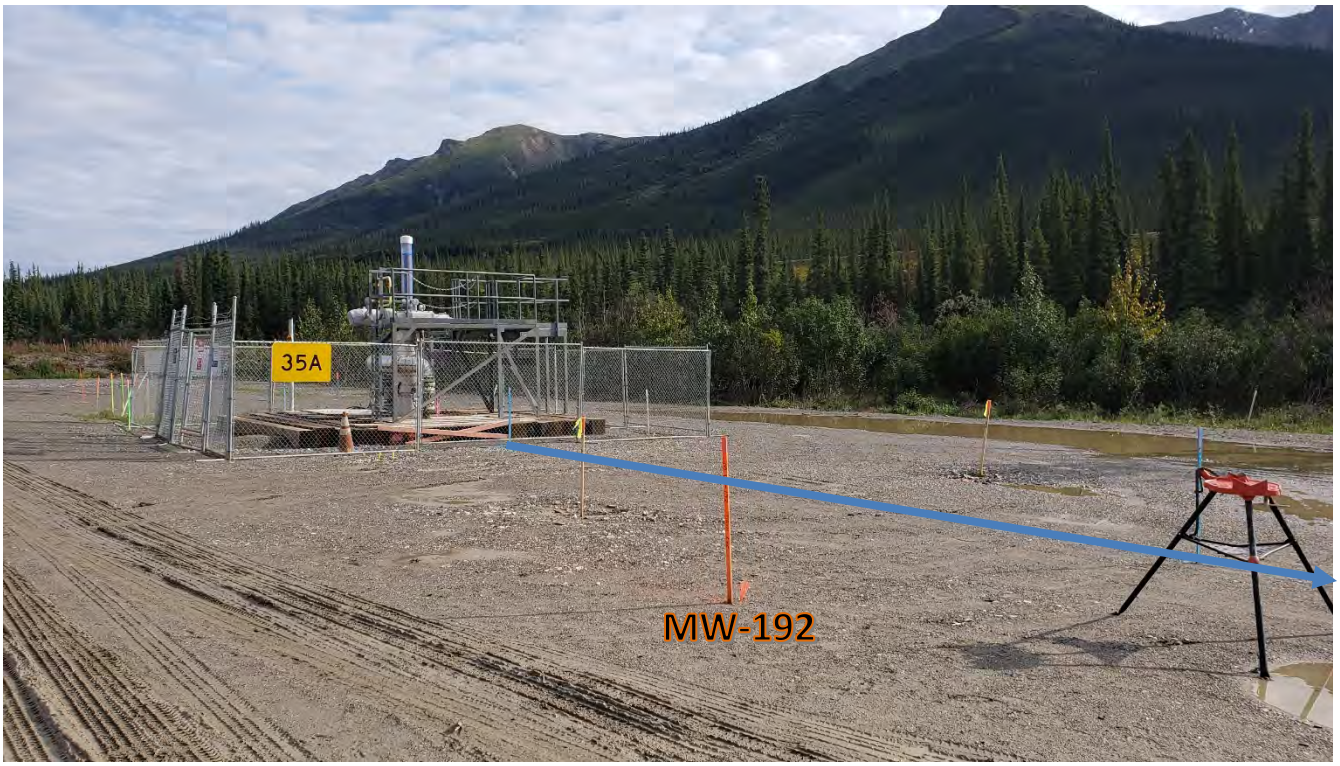
0.015	**BOLD** and values indicate an exceedance of ADEC 18 AAC 75, Table C Groundwater criteria[A]
A	Values from ADEC 18 AAC 75, Table C, Groundwater Cleanup Levels (October 27, 2018).
B	Field sample identification, date collected, and laboratory sample identification number are provided.
C	Sample result for detected values are listed in mg/L in this column. The LOD is shown for non-detect results.
D	Total values are the summation of detected compounds only. The highest LOD was listed for ND analytes.

Data Flags:

[x.xx] ND	The number in brackets is the LOD.
J	Estimated value below the LOQ, but above the DL.

Abbreviations:

--	Not applicable or screening criteria does not exist for this	LOQ	limit of quantitation
AAC	Alaska Administrative Code	LV	low volume
ADEC	Alaska Department of Environmental Conservation	SIM	selective ion monitoring
DL	detection limit	mg/L	milligrams per liter
LOD	limit of detection		



Photograph 1: Monitoring well (MW) MW-192 location and pipeline flow direction (blue), view looking to pipeline north.

Photograph 2: MW-191 (left) and MW-193 (right) locations and pipeline flow direction (blue), view looking to pipeline south.

SLR	RGV-35A Well Installation Report
SITE PHOTOGRAPHS July 29-30, 2019	Job No: 105.01288.18038

Photograph 3: MW-192 soil cores retrieved for soil logging and classification.

Photograph 4: Closeup of alluvial gravel from MW-191.

Photograph 5: Completed monitoring well MW-191 with buried flush-mount monument.

Photograph 6: Groundwater sampling at MW-193.

SLR	RGV-35A Well Installation Report
SITE PHOTOGRAPHS July 29-30, 2019	Job No: 105.01288.18038

RGV-35A Well Installation 7/28/19

C. VENOT, R. COURSEY-WILLIS (SLR)

0810- C.V. Depart for ANC. Airport
1050- Arrive in Fairbanks
1100- RCW meet at airport, tailgate Safety meeting.
1100-1245 - prepare equipment & load truck.
1250- Depart for PS05 w/ Drillers.
1800- Arrive at PS05, Drillers depart for ~~P~~ Coldfoot Camp.
1800-1930 - break for dinner.
1930-2015 - project email/planning.

End of Day

CVenot
7/28/19

RGV-35A Well Install 7/29/19

0600 - CV + RCW depart for Coldfoot
0700- Meet drillers, tailgate Safety Meeting
0725- Depart for RGV-35A.
0851- Complete PID Calibration
0852- Survey arrives on site
0930 - PrCM Jason Green on site, discuss project. Survey still checking points.
1107 - begin drilling MW-192, collect Soil with MC7 ( ) Macrocore Sampler. DTW ~5 ft, Collect Soil Sample above Water at ~3.5 ft, No upper Sample due to 0.0 PID in ~~all~~ entire Core.
1208 - Collect Sample MW-192-3.5 GRO, PVOC, DRO, PAH
1210 - Set Well at 13 ft bgs, Screen 8-13 ft in cleaner alluvial gravels. Auger necessary to keep hole from collapsing
1310 - Setup on MW-191.
1320- Commence MW-192 development using QWater Surge valve. Initial water is very silty. 7 gal pumped.
1410- pump on MW-192 w/ peristaltic at full speed (~500 mL/min), water clearing. 7 gal pumped.
1420- MW-191 - 5-10 ft Sample stuck in MC7 Sampler. ~~Drill to 13 ft bgs~~ Re-Drill hole
1425- Collect Sample MW-191-1 / MW-199-1 @ "1445"

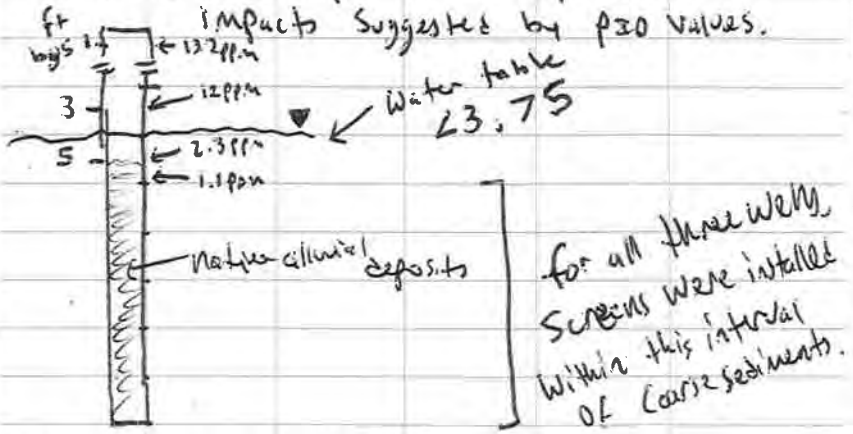
RGV-35A Well installation 7/29/19

1436 - MW-192 development complete, 15 gal pumped. DTW = 4.36 - 1.53 = 3.83 ft, water is very clear.

1443 - Skip-over for MW-191, Drill to 5ft bgs with auger, no samples.

1500 - Collect Sample MW191-3 above water table - not sure how close to saturated soil

1506 - collect Sample MW191-5 below water table to attempt to bound potential soil impacts suggested by PID values.



1600 - Start MW193.

1610 - collect Sample MW193-3.75 above water. Saturated Sediments, estimated between 4-5 ft. Native Soils at 5ft, will drill to left to Set well in alluvial gravels.

Note - 2nd Soil Sample not Collected, no PID Values above 0.0ppm, therefore Samples only

RGV-35A Well installation 7/29/19

immediately above the water table.

1620 - begin development of MW192 using Qwater developer valve 7gal purges, Very Silty water.

1635 - Switch to peristaltic pump for MW-192 development. DTW = 3.28 ft bgs

1650 - Set MW-193 Well with 2" PVC because drillers Short on 1" PVC. 0.010"-slot Screen for all wells.

1700 - 1750 - Surge MW-193 w/ waterra developer, pump 15 gallons out.

1750 - 1810 - Finish development with 2x peristaltic pumps, 5 gallon purges. Water clear.

1820 - Clean up and depart Site.

1905 - Arrive in Coldfoot, break for dinner.

2100 - 2130 - daily wrap-up email

END OF DAY

C VENOT
7/29/19

C.Vuenot, R. Coursey-Willis, 105.01289.19038

RGV-35A Well Sampling 7/30/19

0600 - Depart Coldfoot for RGV-35A

0705 - Arrive at site, tailgate Safety Meeting w/ drillers.

0800 - Filter Development Water and discharge to pad. NO pre-filter water had any Sheen.

0825 - Start MW-191 Sampling purge.

0850 - Sample MW-191 for GRO, BTEX, DRO, RRO, PAH.

0920 - gauge MW-10, DTW = 4.71 ft.

0930 - Sample MW-193

1025 - Sample MW-192 with dup MW-199 at "1100"

1054 - Clofout permit w/ Jason Greene

1100-1150 - Cleanup Site, Re-bury wells and mark w/whisker flags. Take swing-tie Measurements.

1150 - Depart for PS05.

1340 - Arrive at PS05, leave Soil drum in Soil drum loading area, label drum as "Non-hazardous" w/ADEC labels.

1400 - Depart for Fairbanks

1915 - Arrive in Fairbanks, unload equipment.

1950 - End of day.

C Vuenot 7/30/19

RGV-35A WELL INSTALLATION

C.VUENOT, R. COURSEY-WILLIS 7/31/19

0700 - At office, Check Samples (Soil + water). Sample MW-199 has 2x HCl, due to ~~inadvertent~~ inadvertent transfer from HCl preserved bottle to new HCl preserved bottle. Noted this on COC and bottle label.

1000 - Ship field equipment and drop Samples at SGS

1140 - 1250 - Return flight, travel to home.

END FIELDWORK.

C. Vuenot

7/31/19

Water Parameter Meter Calibration Log

SLR

Date: 7/30/19 Time: 0720 Calibration By: CV / RCW

Meter Manufacturer and Identification #:

temp: 9.8°C

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00	7.00	CC610590	3/19/21	5/30/19	6.89	7.13	± 0.10
	4.00						4.09	± 0.10
	10.00	10.19	CC508774	7/9/19	7/6/20	10.20	10.22	± 0.10
Sp Cond (mS/cm)	1.413	1.020	CC17956	7/10/19	12/15/19	1.790	1.420	± 10%
ORP (mV)	240	240mV	1600	7/9/19	5/2022	243.2	240.0	----------
DO*	717.2mm Hg	100% sat	—	—	—	9.8 mg/L	10.40 mg/L	± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: _____ Time: _____ Calibration By: _____

Meter Manufacturer and Identification #: _____

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00							± 0.10
	4.00							± 0.10
	10.00							± 0.10
Sp Cond (mS/cm)	1.413							± 10%
ORP (mV)	240							----------
DO*								± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

Date: _____ Time: _____ Calibration By: _____

Meter Manufacturer and Identification #: _____

Parameter	Standard	True Value	Lot #	Date Opened	Expiration Date	PreCalibration Reading	Reading After Calibration	Calibration Acceptance Criteria
pH	7.00							± 0.10
	4.00							± 0.10
	10.00							± 0.10
Sp Cond (mS/cm)	1.413							± 10%
ORP (mV)	240							----------
DO*								± 2%

If parameter not included in sampling event, fill in box with NA (not applicable)

* Note that the True Value for DO is dependent on pressure and altitude; reference the DO Calibration Table

SLR

PID Calibration Log

Calibration Date: 7/29/19	Calibration Time: 0851	Calibration By:		
Instrument: MiniRAE	Serial #: 110-014198	Zero Gas	Span Gas 1	Calibration with Acceptable Range?
		ambient air	isobutylene (100 ppm)	
Meter Response: Good		0 ppm	97.1 ppm	yes (circled) / no
Notes				

Calibration Date:	Calibration Time:	Calibration By:		
Instrument: N	Serial #	Zero Gas	Span Gas 1	Calibration with Acceptable Range?
		ambient air	isobutylene (100 ppm)	
Meter Response				yes / no
Notes				

Calibration Date:	Calibration Time:	Calibration By:		
Instrument	Serial #	Zero Gas	Span Gas 1	Calibration with Acceptable Range?
		ambient air	isobutylene (100 ppm)	
Meter Response				yes / no
Notes				

Calibration Date:	Calibration Time:	Calibration By:		
Instrument	Serial #	Zero Gas	Span Gas 1	Calibration with Acceptable Range?
		ambient air	isobutylene (100 ppm)	
Meter Response				yes / no
Notes				

Calibration Date:	Calibration Time:	Calibration By:		
Instrument	Serial #	Zero Gas	Span Gas 1	Calibration with Acceptable Range?
		ambient air	isobutylene (100 ppm)	
Meter Response				yes / no
Notes				

Calibration Date:	Calibration Time:	Calibration By:		
Instrument	Serial #	Zero Gas	Span Gas 1	Calibration with Acceptable Range
		ambient air	isobutylene (100 ppm)	
Meter Response				yes / no
Notes				

Calibration Date:	Calibration Time:	Calibration By:		
Instrument	Serial #	Zero Gas	Span Gas 1	Calibration with Acceptable Range
		ambient air	isobutylene (100 ppm)	
Meter Response				yes / no
Notes				

SLR

Boring Log

CLIENT & SITE NAME:	BORING ID: MW-192
Project #: 105.01288.19038	Logged By: C.VERNOY
Start Date/Time: 1106 7/29/19	Drilling Contractor: Discovery
Completion Date/Time:	Driller's Name (License [y/n]): N/A

BOREHOLE DETAIL

Drill Method: ☒ HSA ☐ Direct Push ☐ Rotary (mud/air) ☐ Sonic ☐ Other:

Rig (Make/Model): Geoprobe 7822DT

Sampling Method: MC7

Borehole diameter (in.): 4.25/3.25

Borehole Total Depth (ft bgs): 13.79

Water Level (ft bgs): 3.63 Date/Time: 7/29 1436

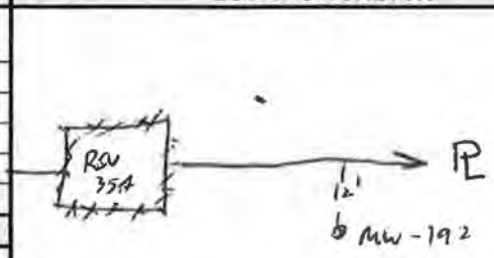
WELL DETAIL

Completed as Well: ☐ No ☐ Yes, Temporary ☐ Yes, Extraction ☒ Yes, Permanent (if YES, complete a well log)

Well ID: MW-192

Water Level in well (ft bgs): Date/Time:

LOCATION SKETCH



DRILLING LOG

GRAVEL (3 – 0.08 in)	SAND (0.08 – 0.003 in)	SILT (< 0.003 in)	CLAY (no grains visible)	HIGH ORGANIC (< 50% mineral soil)
GW GP GM GC	SW SP SM SC	ML	CL OL MH CH OH	PT

Drive Interval	Blow Counts (per 6") or Drill Effort	Recovery (% or ft)	USCS CODE /Lithology Sketch	PID PPM (in situ)	Depth ft bgs	Description Interval – primary MATERIAL TYPE; secondary material type; color; % coarse material; % fine material; grain angularity; moisture; sheen/stain; odor; consistency; unit type (e.g., overburden / fill / native / other); **Sample ID** (if applicable)
0-5	—	3.5ft	GM/ML SM/GM	0.0 0.0 0.0 0.0 0.0		0-3 brown/gray Silty GRAVEL/gravelly SILT, ~~angular~~ w/ f-c Sand, gravel is angular; dense, damp to moist 3-3.5 brown/gray Silty GRAVEL/SAND, M. dense, damp no sheen/odor. (FILL) PID HH: ___ at ___ ft bgs
5-10		3.0		0.0 0.0 0.0		MW192-3 Sample 5-7.3 - Same 7.3-8 Gray Sandy GRAVEL with Silt, gravel are rounded to angular, wet, ns/no, (river gravels) PID HH: ___ at ___ ft bgs
10-13				0.0 0.0 0.0		~~8-9.2~~ 10-11.25 - Sand 11.25-11.75 - Gray SAND (f-m) w/ little M Sand, wet m dense 11.75-13 Gray Sandy GRAVEL with trace Silt, dense, wet gravels are angular to subrounded. PID HH: ___ at ___ ft bgs
						PID HH: ___ at ___ ft bgs

Notes: (indicate IDW containerization and disposal methods; PID model) HH = heated headspace screening

Well development 1320-1436, 15 gallons, pumped till clear. NO drawdown

SLR

Boring Log / Well Construction

CLIENT & SITE NAME: MW-191		BORING ID: MW-191
Project #: 105.01288.19638		Logged By: CIVENOT

DRILLING LOG

GRAVEL (3 – 0.08 in)	SAND (0.08 – 0.003 in)	SILT (< 0.003 in)	CLAY (no grains visible)	HIGH ORGANIC (< 50% mineral soil)
GW GP GM GC	SW SP SM SC	ML	CL OL MH CH OH	PT

Drive Interval	Blow Counts (per 6") or Drill Effort	Recovery (% or ft)	USCS CODE /Lithology Sketch	PID PPM (in situ)	Depth ft bgs	Description Interval – primary MATERIAL TYPE; secondary material type; color; % coarse material; % fine material; grain angularity; moisture; sheen/stain; odor; consistency; unit type (e.g., overburden / fill / native / other); **Sample ID** (if applicable).
						0.77 bentonite backfill PID HH: ____ at ___ ft bgs
						6.37 bentonite 7.37 8.37 PID HH: ____ at ___ ft bgs
						10/20 sand 13.37 native soil PID HH: ____ at ___ ft bgs
						PID HH: ____ at ___ ft bgs
						Survey datum of casing = 0.852 ft bgs ; Top of Monument = 0.416 ft bgs PID HH: ____ at ___ ft bgs
						PID HH: ____ at ___ ft bgs

Notes: (indicate IDW containerization and disposal methods; PID model). HH = heated headspace screening

SLR

Boring Log

CLIENT & SITE NAME:		BORING ID: MW-191
Project #: 105-01288.19038 RGV-75A		Logged By: C.VENT
Start Date/Time: 7/29/19 @ 1310		Drilling Contractor: Discovery
Completion Date/Time: 7/29/19		Driller's Name (License ~~n/a~~): Gary

BOREHOLE DETAIL

Drill Method: ☑ HSA ☒ Direct Push ☐ Rotary (mud/air) ☐ Sonic ☐ Other:

Rig (Make/Model): Geoprobe 7822DT

Sampling Method: MC7

Borehole diameter (in.): 4.25 / 3.25

Borehole Total Depth (ft bgs):

Water Level (ft bgs): Date/Time:

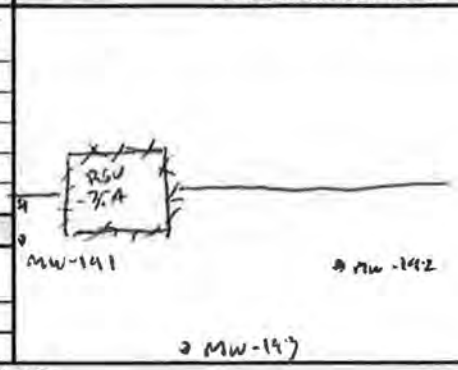
WELL DETAIL

Completed as Well: ☐ No ☒ Yes, Temporary ☐ Yes, Extraction ☐ Yes, Permanent (if YES, complete a well log)

Well ID: MW-191

Water Level in well (ft bgs): Date/Time:

LOCATION SKETCH



DRILLING LOG

GRAVEL (3 – 0.08 in)	SAND (0.08 – 0.003 in)	SILT (< 0.003 in)	CLAY (no grains visible)	HIGH ORGANIC (< 50% mineral soil)
GW GP GM GC	SW SP SM SC	ML	CL OL MH CH OH	PT

Drive Interval	Blow Counts (per 6") or Drill Effort	Recovery (% or ft)	USCS CODE /Lithology Sketch	PID PPM (in situ)	Depth ft bgs	Description
0 - 5		3	GM/ML	13.0 ~~10.4~~ 12.2 12.0		0-3 brown/gray Silty GRAVEL/gravelly SILT with f-c Sand; ~~f grave~~ and trace bubbles; Gravels are angular, dense/hard, damp (top) to moist (bottom), (fill) SAMPLE: MW191-1 / MW199-1 @ 1445, MW191-3 @ 1500 PID HH: ___ at ___ ft bgs
5 - 10		3.5	ML / GP	2.3 1.1 0.0 0.0		5-10 no recovery, Step-out & re-drill. 5-5.5 - ~~Sandy clayey~~ brown gravelly SILT with trace sand, wet, hard, no sheen/odor. 5.5 - Gray sandy GRAVEL with trace silt, loose, wet SAMPLE MW191-5 @ 1606 PID HH: ___ at ___ ft bgs
10 - 13						10-13 - Same as 5-5. PID HH: ___ at ___ ft bgs
						Heaks headspace (ppm) 1.0ft = 10.4 3.0ft = 9.0 5.0ft = 8.2 PID HH: ___ at ___ ft bgs

Notes: (indicate IDW containerization and disposal methods; PID model). HH = heated headspace screening

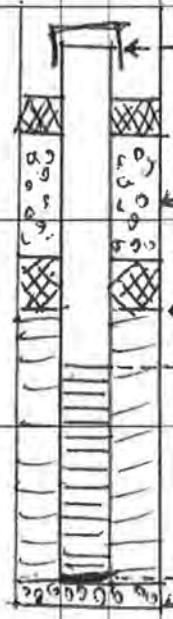
SLR

Boring Log

CLIENT & SITE NAME: ARSC / RGV-35A	BORING ID: MW 19R
Project #:	Logged By:

DRILLING LOG

GRAVEL (3 – 0.08 in)	SAND (0.08 – 0.003 in)	SILT (< 0.003 in)	CLAY (no grains visible)	HIGH ORGANIC (< 50% mineral soil)
GW GP GM GC	SW SP SM SC	ML	CL OL MH CH OH	PT

Drive Interval	Blow Counts (per 6") or Drill Effort	Recovery (% or ft)	USCS CODE /Lithology Sketch	PID PPM (in situ)	Depth ft bgs	Description Interval – primary MATERIAL TYPE; secondary material type; color; % coarse material; % fine material; grain angularity; moisture; sheen/stain; odor; consistency; unit type (e.g., overburden / fill / native / other); **Sample ID** (if applicable).
						0.65 Top of Casing 1.65 bentonite (1.65) backfill PID HH: ___ at ___ ft bgs
						5.54 bentonite 6.54 7.54 PID HH: ___ at ___ ft bgs
						12.54 13.0 Sluff PID HH: ___ at ___ ft bgs
						Survey data: top of Casing is 0.72 ft bgs top of Monument is 0.403 ft bgs PID HH: ___ at ___ ft bgs
						PID HH: ___ at ___ ft bgs
						PID HH: ___ at ___ ft bgs

Notes: (indicate IDW containerization and disposal methods; PID model). HH = heated headspace screening

SLR

Boring Log

CLIENT & SITE NAME:	BORING ID: MW193
Project #: 105-01288.19036	Logged By: CURRY
Start Date/Time: 7/24/19 1600	Drilling Contractor: Discovery
Completion Date/Time: 7/29/19 1650	Driller's Name (License [y/n]):

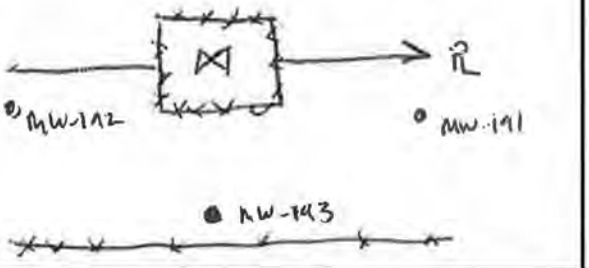
BOREHOLE DETAIL

Drill Method: ☒ HSA ☒ Direct Push ☐ Rotary (mud/air) ☐ Sonic ☐ Other:
Rig (Make/Model): Geoprobe 7822DT
Sampling Method: MC7
Borehole diameter (in.): 4.5"/3.25"
Borehole Total Depth (ft bgs): 13
Water Level (ft bgs): Date/Time:

WELL DETAIL

Completed as Well: ☐ No ☐ Yes, Temporary ☐ Yes, Extraction ☒ Yes, Permanent (If YES, complete a well log)
Well ID: MW-193
Water Level in well (ft bgs): Date/Time:

LOCATION SKETCH



DRILLING LOG

GRAVEL (3 – 0.08 in)	SAND (0.08 – 0.003 in)	SILT (< 0.003 in)	CLAY (no grains visible)	HIGH ORGANIC (< 50% mineral soil)
GW GP GM GC	SW SP SM SC	ML	CL OL MH CH OH	PT

Drive Interval	Blow Counts (per 6") or Drill Effort	Recovery (% or ft)	USCS CODE /Lithology Sketch	PID PPM (in situ)	Depth ft bgs	Description
0 – 5		3.75ft	GP/ML	0.0	0.0	0-3 Gray/brown ~~silty/gravelly~~ Silty GRAVEL/gravelly Sand, with ~~trace~~ Sand, damp (top) to moist (bottom); gravels are angular (fill), dense/hard?
			SM	0.0		3-3.75 gray Silty/ SAND (M-C) ~~with gravel~~ gravelly, dense, damp
						PID HH: ___ at ___ ft bgs
5 – 10		3.1	GP	0.0	0.0	Sample MW193-3.75 @ 1016
				0.0		5-8.1 - gray Sandy GRAVEL with silt, loose, wet; gravels are subangular to subrounded, and generally elongated, (alluvial deposits)
						PID HH: ___ at ___ ft bgs
10 – 12.5		2.5	SP	0.0	0.0	10-10.4 - Gray M-C SAND with trace fine gravels, loose, ~~saturated~~ wet.
			GP	0.0		10.4-12.5 - Sandy GRAVEL with Silt ~~and~~, & loose, wet, Gravels are subangular to angular, generally elongated.
						12.0 - cobble
						PID HH: ___ at ___ ft bgs
						heater headspace @ 3.75ft = 0.0 ppm.
						PID HH: ___ at ___ ft bgs

Notes: (indicate IDW containerization and disposal methods; PID model). HH = heated headspace screening

SLR

Boring Log / Well Construction

MW-193

CLIENT & SITE NAME:	BORING ID:
Project #: 105.01288.19038	Logged By: C. VENOT

DRILLING LOG

GRAVEL (3 – 0.08 in)	SAND (0.08 – 0.003 in)	SILT (< 0.003 in)	CLAY (no grains visible)	HIGH ORGANIC (< 50% mineral soil)
GW GP GM GC	SW SP SM SC	ML	CL OL MH CH OH	PT

Drive Interval	Blow Counts (per 6") or Drill Effort	Recovery (% or ft)	USCS CODE /Lithology Sketch	PID PPM (in situ)	Depth ft bgs	Description Interval – primary MATERIAL TYPE; secondary material type; color; % coarse material; % fine material; grain angularity; moisture; sheen/stain; odor; consistency; unit type (e.g., overburden / fill / native / other); **Sample ID** (if applicable).
					0	
					1.05	Top of casing
					2	bentonite
					5.2	bentonite
					6.2	PID HH: ____ at ____ ft bgs
					6.7	Top of 2" 0.010"-slot PVC
						10/20 sand
						PID HH: ____ at ____ ft bgs
					11.7	
					12.5	SILFT
						PID HH: ____ at ____ ft bgs
						Survey data - Top of casing - 0.852 ft bgs Top of Monument - 0.418 ft bgs
						PID HH: ____ at ____ ft bgs
						PID HH: ____ at ____ ft bgs
						PID HH: ____ at ____ ft bgs

Notes: (indicate IDW containerization and disposal methods; PID model). HH = heated headspace screening

SLR

Groundwater Sampling Form

Site/Client Name: APSC RGU-35A		**Well ID:** MW-191	
Project #: 105.01288.19038		Sample ID: MW-191	
Sampled By: C.VENOT		Sample Time: 0850	Sample Date: 7/30/19
Weather Conditions: Sunny ~60°F		Duplicate ID: —	
Sampling Method: ☒ Low Flow ☐ Other		MS/MSD ☐ Yes ☒ No	Trip Blank Required: ☒ Yes ☐ No

Well Information

Well Type: ☒ Permanent ☐ Temporary	Well Diameter 1 in.	Screen Interval: ~~8.37~~ 8.37 ft BGS to ~~12.60~~ 13.77 ft BGS
Well Condition: ☒ Good ☐ Fair ☐ Poor (if fair or poor explain in Notes)		Stickup ☐ Yes ☒ No; If yes, ~~-0.77~~ ft above ground

12.0 -0.418 ft

Gauging/Purging Information

Depth to Water (ft BTOC):	2.11	Tubing/Pump Depth (ft. BTOC):	10
Total Depth (ft BTOC):	12.60	Purge Start Time (24-hr)	0823
Depth to Product (ft. BTOC)	—	Purge End Time (24-hr)	0849
Product Thickness (ft)	—	Total Purge Time (min)	26

LOW FLOW: Max Draw Down = (Tubing Depth – Top of Screen Depth)____ X 0.25 = ____(ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;

Min. purge volume if required: purge volume (gal) = volume of water/ft____(gal/ft) X Water column thickness____(ft) X # of casing volumes____ = ____gal

Well Diameter – gal/ft	1" – 0.041 gal/ft	2" – 0.163 gal/ft	4" – 0.653 gal/ft	6" – 1.469 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

Time (24-hr)	Flow Rate (mL/minute)	Purge Volume (L)	Temp (°C) (± 3 %)	Specific Conductance (µS/cm°) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max___ft)
0825	250	0	8.85	574	1.57	7.32	242.9	Low	2.09	0.02
0831	250	1.5L	8.00	438	0.51	6.77	260.4	Low	2.09	0.02
0836	250	2.750L	7.41	646	0.44	6.72	230.1	Low	2.09	0.02
0840	250		7.88	646	0.41	6.91	187.6	Low	2.09	0.02
0843	250		7.84	645	0.42	7.08	135.6	Low	2.09	0.02
0846	250		7.81	645	0.40	7.12	106.0	None	2.10	0.01
0849	250		7.02	644	0.41	7.16	74.2	None	2.10	0.01
Parameter Stable (Check applicable)			✓	✓	✓	✓	✗			

Sample Color:	Clear	**Sample Odor:**	None	**Sheen:**	None

Analytical Sampling

Analyses	Check Applicable	Comments
GRO		
PVOC		
DRO/RRO		
PAH LV		

Notes:
* Top of PVC Casing is 0.852 ft bgs *
* Top of Monument is 0.418 ft bgs *

Equipment: Pump Type Peristaltic Tubing (Type/Length) 12 ft PTFE-lined Bailer Type —

Water Level Meter ____ Multi-Parameter Meter (Make/SN#) YSI 556

Turbidity Meter (Make/SN#) — Filter Lot # —

Purge Water Handling: ☐ Discharged to surface ☐ Containerized ☒ Treated (how?) Sediment + GAC

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

SLR

Groundwater Sampling Form

Site/Client Name: AESC / AGN-33A		**Well ID:** MW-192	
Project #: 105.01288.19038		Sample ID: MW-192	
Sampled By: C.VENOT		Sample Time: 1025	Sample Date: 7/30/19
Weather Conditions: Sunny ~60°F		Duplicate ID: MW-199 @ 1100	
Sampling Method: ☒ Low Flow ☐ Other______		MS/MSD ☐ Yes ☒ No	Trip Blank Required: ☒ Yes ☐ No

Well Information

Well Type: ☒ Permanent ☐ Temporary	Well Diameter 1 in.	Screen Interval: ~~6.84~~ 7.54 ft BGS to ~~11.84~~ 12.54 ft BGS
Well Condition: ☒ Good ☐ Fair ☐ Poor (if fair or poor explain in Notes)		Stickup ☐ Yes ☒ No; If yes, -.65 ft above ground

-0.403ft (Rev 9/19 CW)

Gauging/Purging Information

Depth to Water (ft BTOC): 2.29	Tubing/Pump Depth (ft. BTOC): 9.3
Total Depth (ft BTOC): 11.89	Purge Start Time (24-hr): 0959
Depth to Product (ft. BTOC): —	Purge End Time (24-hr): 1023
Product Thickness (ft): —	Total Purge Time (min): 24

LOW FLOW: **Max Draw Down** = (Tubing Depth – Top of Screen Depth)______ X 0.25 = ______(ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;

Min. purge volume if required: purge volume (gal) = volume of water/ft______(gal/ft) X Water column thickness______(ft) X # of casing volumes______ = ______gal

Well Diameter – gal/ft	1" – 0.041 gal/ft	2" – 0.163 gal/ft	4" – 0.653 gal/ft	6" – 1.469 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

Time (24-hr)	Flow Rate (liter/minute)	Purge Volume (gal)	Temp (°C) (± 3 %)	Specific Conductance (µS/cm°) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) (± 10%, or <5 NTU)	DTW (ft BTOC)	Drawdown (ft) (Max____ft)
1000	250	0	8.31	647	2.14	7.68	137.6	low	2.33	0.04
1003	↓	↓	7.39	679	1.02	7.60	81.0	low	2.33	0.04
1006			7.20	638	0.70	7.59	8.4	low	2.40	0.11
1013			7.15	637	0.57	7.36	-16.3	none	2.40	0.11
1016			7.07	637	0.48	7.38	-59.3	none	2.40	0.11
1020			7.04	636	0.42	7.39	-208.3	none	2.40	0.11
1023		3L	7.05	636	0.41	7.42	-302.1	none	2.40	0.11
Parameter Stable (Check applicable)			✓	✓		✓	X			

Sample Color: None	**Sample Odor:** None	**Sheen:** None

Analytical Sampling

Analyses	Check Applicable	Comments
PAH		
DRO NRO		
GRO MN		
PVOC		

Notes: Monument depth is 0.403 ft bgs based on Survey measurements. Top of Casing is 0.720 ft bgs.

Equipment: Pump Type Peristaltic Tubing (Type/Length) 1/4" OD PTFE-lined Bailer Type —

Water Level Meter______ Multi-Parameter Meter (Make/SN#) YSI 556

Turbidity Meter (Make/SN#)______ Filter Lot #______

Purge Water Handling: ☐ Discharged to surface ☐ Containerized ☒ Treated (how?) Sediment + GAC filter.

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

[illegible]

SLR

Groundwater Sampling Form

Site/Client Name: RGU-35A / ADSC		**Well ID:** MW-193	
Project #: 105.02589.19038		Sample ID: MW-193	
Sampled By: C. Foot		Sample Time: 09	Sample Date: 7/3/19
Weather Conditions: Part Cloudy, 60°F		Duplicate ID: —	
Sampling Method: ☒ Low Flow ☐ Other		MS/MSD ☐ Yes ☒ No	Trip Blank Required: ☒ Yes ☐ No

Well Information

Well Type: ☒ Permanent ☐ Temporary	Well Diameter 2 in.	Screen Interval: 5.65 ft BGS to 10.65 ft BGS
Well Condition: ☒ Good ☐ Fair ☐ Poor (if fair or poor explain in Notes)		Stickup ☐ Yes ☒ No; If yes, -1.05 ft above ground

-0.66ft TOC 9/6 CW

Gauging/Purging Information

Depth to Water (ft BTOC): 3.14	Tubing/Pump Depth (ft. BTOC): 8.1
Total Depth (ft BTOC): 10.65	Purge Start Time (24-hr) 0909
Depth to Product (ft. BTOC) —	Purge End Time (24-hr) 0928
Product Thickness (ft) —	Total Purge Time (min) 11

LOW FLOW: **Max Draw Down** = (Tubing Depth – Top of Screen Depth)_____ X 0.25 = _____(ft); if screen interval is not known or water table is below top of screen, then use default value of 0.3 ft.;

Min. purge volume if required: purge volume (gal) = volume of water/ft_____(gal/ft) X Water column thickness_____(ft) X # of casing volumes_____ = _____gal

Well Diameter – gal/ft	1" – 0.041 gal/ft	2" – 0.163 gal/ft	4" – 0.653 gal/ft	6" – 1.469 gal/ft

Water Quality Parameters

(Achieve stable parameters for 3 consecutive reading, 4 parameters if practical [each reading taken after pumping a minimum of 1 flow through cell volume])

Time (24-hr)	Flow Rate (liter/ minute)	Purge Volume ~~(gal)~~ L	Temp (°C) (± 3 %)	Specific Conductance (µS/cm°) (± 3%)	DO (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10mV)	Turbidity (NTU) ~~(± 10% or <5 NTU)~~	DTW (ft BTOC)	Drawdown (ft) (Max____ft)
0912	250	1.0	7.67	657	0.51	7.48	94.2	Low	3.13	0.01
0915	↓	1.75	7.55	657	0.41	7.48	80.8	low	3.13	0.01
0918		↓	7.50	657	0.39	7.44	70.2	low	3.13	0.01
0923			7.58	656	0.38	7.38	63.4	Low	3.13	0.01
0925			7.61	656	0.35	7.44	44.1	low	3.13	0.01
0928	↓	14.5	7.62	656	0.36	7.44	47.5	low	3.13	0.01
Parameter Stable (Check applicable)			✓	✓	✓	✓	X	✓	✓	

Sample Color: Clear	**Sample Odor:** None	**Sheen:** None

Analytical Sampling

Analyses	Check Applicable	Comments
GRO		
ADC		
DRO/RRO		
PAH		

Notes: Monument elevation from Survey is -0.66ft
Top of casing is -0.975 ft

Equipment: Pump Type Peristaltic Tubing (Type/Length) 1/4" PETE-Liner Bailer Type —
Water Level Meter Solinst 120 Multi-Parameter Meter (Make/SN#) YSI 556
Turbidity Meter (Make/SN#)_____ Filter Lot #_____

Purge Water Handling: ☐ Discharged to surface ☐ Containerized ☒ Treated (how?) GAC / Sediment Filter

BGS = Below Ground Surface, BTOC= Below Top of Casing, NA = Not Applicable

2019 MP 194 RGV-35A Monitor Well Asbuilt Locations

Area	WELL	TYPE	NORTHING	EASTING	N. EDGE 2" PVC ELEV.	TOP CASING ELEV.	TOP GRAVEL PAD ELEV.
RGV-35A GRAVEL PAD							
	MW-191	Flushmount	5043697.396	1665393.894	1620.048	1620.482	1620.900
	MW-192	Flushmount	5043593.200	1665394.875	1619.539	1619.856	1620.259
	MW-193	Flushmount	5043636.337	1665358.473	1620.663	1620.978	1621.638
	NOTE: NEW MONITOR WELLS WERE DRILLED AND INSTALLED ON JULY 29 & 30, 2019 REFERENCE FIELD BOOKS 235-143, Pg.46-48 & FILE 23514343.csv COORDINATES & ELEV. ARE NAD83 ALASKA STATE PLANE ZONE 4, ELEV. NAVD88						

REPORT

LABORATORY DATA
QUALITY ASSURANCE REVIEW

RGV-35A WELL INSTALLATION
SAMPLING SUPPORT

RGV-35A
ALYESKA PIPELINE SERVICE COMPANY

September 2019

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SLR Project Number 105.01288.19038

ACRONYMS AND ABBREVIATIONS

%	percent
AAC	Alaska Administrative Code
AK	Alaska
ADEC	Alaska Department of Environmental Conservation
°C	degrees Celsius
CCV	continuing calibration verification
COC	chain of custody
DL	detection limit
DRO	diesel range organics
EDD	electronic data deliverable
USEPA	United States Environmental Protection Agency
GRO	gasoline range organics
ID	identifier
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
LV	low volume
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
ND	not detected
NFG	National Functional Guidelines
PAH	polynuclear aromatic hydrocarbons
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
PVOC	petroleum volatile organic compounds
QA	quality assurance
QAR	quality assurance review
QC	quality control
RGV-35A	remote gate valve 35A
RPD	relative percent difference
RRO	residual range organics
SDG	sample delivery group
SGS	SGS North America, Inc.
SIM	selective ion monitoring
SLR	SLR International Corporation

Introduction

This report summarizes a review of analytical data for groundwater and soil samples collected on July 29, 2019 and July 30, 2019 in support of well installation at the Remote Gate Valve (RGV)-35A site. Samples were collected by SLR International Corporation (SLR). SGS North America, Inc. (SGS) provided analytical support to the project. SGS maintains a current Alaska Department of Environmental Conservation (ADEC) Contaminated Sites approval number (UST-005) for analytical methods of interest, as applicable. Table 1 provides a summary of the work order, sample receipt, matrices, analytical methods, and analytes.

Table 1 Sample Receipt and Matrix Summary

SDG	Matrix	Date Collected	Date Received by Laboratory	Temperature Blank	Analytical Method	Analyte
1199584	Soil	07/29/2019	**Fairbanks** 07/31/2019	**Fairbanks** Cooler 1: 0.1°C Cooler 2: 0.2°C	AK101 AK102 AK103 SW8260C SW8270D	GRO DRO RRO PVOC PAH SIM
	Groundwater	07/30/2019	**Anchorage** 08/01/2019	**Anchorage** Cooler 1: 1.8°C Cooler 2: 3.4°C	AK101 AK102 AK103 SW8260C SW8270D LV	GRO DRO RRO PVOC PAH SIM

Acronyms:

°C – degrees Celsius
AK – Alaska
DRO – diesel range organics
GRO – gasoline range organics
LV – low volume
PAH – polynuclear aromatic hydrocarbons
PVOC – petroleum volatile organic compounds
RRO – residual range organics
SDG – sample delivery group
SIM – selective ion monitoring

The laboratory final report was provided as a Level II deliverable and included documentation of the delivery group chain of custody (COC) and sample receipt condition. A Microsoft Access compatible electronic data deliverable (EDD) for the report was also provided. The laboratory report is provided as Attachment 2.

Quality Assurance Program

A quality assurance (QA) program was followed for this project that addressed project administration, sampling, quality control (QC), and data review. SLR adhered to required and established sampling and COC protocols. The select laboratory maintains an internal QA program and standard operating procedures.

The analytical data was reviewed for consistency with any project specific requirements, *ADEC Technical Memorandum, Environmental Laboratory Data and Quality Assurance* (ADEC, 2017) requirements, *National Functional Guidelines for Superfund Organic Methods Data Review* (NFG, United States Environmental Protection Agency [USEPA], 2017), analytical method criteria and laboratory criteria. An ADEC Laboratory Data Review Checklist was completed for the SDG and was included as Attachment 1 to this Quality Assurance Review (QAR). A review for any anomalies to the project requirements for precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) are noted in this QAR, and any data qualifications discussed.

The data review included the following, as applicable:

- Reviewing COC records for completeness, signatures, and dates;
- Identifying any sample receipt or preservation anomalies that could impact data quality;
- Verifying that QC blanks (e.g., field blanks, equipment blanks, trip blanks, method blanks, etc.); were properly prepared, identified, and analyzed;
- Evaluating whether laboratory reporting limits met project goals;
- Reviewing calibration verification recoveries, to include confirming that the laboratory did not identify any Continuing Calibration Verification (CCV) recoveries or other calibration related criteria as being outside applicable acceptance limits;
- Reviewing the case narrative for any discussion of any internal standard recoveries outside of acceptance limits. Internal standard performance was not otherwise presented in the report or in the electronic data deliverable and was reviewed only from the case narrative;
- Verifying that surrogate analyses were within recovery acceptance limits;
- Verifying that Laboratory Control Sample (LCS), Laboratory Control Sample Duplicate (LCSD), Matrix Spike (MS), and Matrix Spike Duplicate (MSD) recoveries were within acceptance limits;
- Evaluating the result relative percent difference (RPD) between primary and duplicate field samples, LCS/LCSD, and MS/MSD; and
- Providing an overall assessment of laboratory data quality and qualifying sample results as necessary.

Data Qualifications

As part of this QAR, qualifiers (i.e. flags) were applied to data as determined necessary based on specified criteria, or professional judgement. In all cases, the basis for qualification and the applied data flag are discussed in this QAR. Table 2 provides a list of potential qualifiers (i.e., flags). These data flags were appended to the data as appropriate.

Table 2 Data Qualifiers

Lab Qualifier (Flag)	NFG Qualifier (Flag)	Equivalent Project Qualifier (Flag)[1,2,3]	Definition
U	U	**ND**	The analyte was analyzed for, but was not detected (ND) above the detection limit (DL).
J	NJ	**J**	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample between the limit of quantitation (LOQ) and the DL. This qualifier is appended by the laboratory.
--	J	Q	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample, due to one or more laboratory quality control criteria (e.g., LCS recovery, surrogate spike recovery) failed or matrix effect. Where applicable, a "+" or "-" was appended to indicate a high bias, or a low bias respectively.
--	UJ	UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
--	--	**B**	Blank contamination: The analyte was positively identified in the blank (e.g., trip blank and/or method blank) associated with the sample and the concentration reported for the sample was less than five times that of the blank (ten times for metals and common laboratory contaminants methylene chloride and acetone). Where applicable, "U" was appended prior to the "B" to indicate the blank detection was greater than the sample detection and the result is likely a false positive or both the blank detection and sample detection were below the limit of detection (LOD). The greater of the sample detection or LOD was reported in brackets.

Notes:

1 - Flags were appended to the data where applicable. The table presents laboratory, NFG and project equivalent qualifiers.

2 - Only flags in **bold** were applicable and appended to data for this project.

3 – For historical purposes, ND was used in place of "U."

A discussion of the project data quality relative to PARCCS goals and summary of any anomalies or failures requiring data qualifiers follows.

Data Validation

Data Packages
The data packages were checked for transcription errors, omissions, or other anomalies. Issues noted with regards to the data packages are noted below.

- The COC noted that for the receipt of samples in Anchorage, cooler identifier (ID) 1 had a temperature of 3.4°C, and cooler ID 2 was 1.8°C. However, the sample receipt form noted that cooler ID 1 was 1.8°C, and 2 was 3.4°C. Per email conversation with SGS, the sample receipt form was correct; cooler ID 1 was 1.8°C, and 2 was 3.4°C. Both temperatures were within acceptable criteria, and no samples were impacted.

Sample Receipt
The sample receipt documentation was checked for anomalies. No issues were noted with regards to the receipt of the samples.

Preservation (Chemical and Temperature)
Samples were appropriately preserved and were submitted to SGS. Issues noted with regard to sample preservation are noted below.

- For samples MW-192 and MW-199, the sample receipt form noted that their secondary containers for the analysis of PAH were preserved with HCl. Per email conversation with SGS, these containers were not used for analysis. No data were impacted.

- For sample MW-199, the COC noted that one of two containers for the analysis of DRO/RRO had twice as much HCl as required for preservation. Presumably, this container was not used for analysis. No data were impacted.

Holding Times
All sample analysis was conducted within holding time criteria.

Laboratory Method Blanks
Analytes detected in method blanks at or above the LOD are noted in Table 3. Affected results associated with the method blank detection that were less than or equal to five times that of the blank, were qualified as shown in the table. Associated results of ND were considered unaffected and were not listed in the table. Since a high bias was indicated and all impacted results were well below the applicable ADEC criteria of 300 milligrams per kilogram (mg/kg) for GRO, data were considered minimally impacted. Laboratory method blanks were analyzed at the appropriate frequencies and all data were usable as qualified.

Table 3 Method Blank Detection and Affected Samples

Sample ID	Matrix	Batch	Method (Analyte)	Lab Result with Flag (mg/kg)[1]	LOD (mg/kg)	Reported Result with Flag (mg/kg)[1]
Method Blank	Soil	VXX34595	AK101 (GRO)	0.91 J	1.25	NA
MW191-1				0.719 J	1.08	[1.08] UB
MW191-3				0.712 J	1.15	[1.15] UB
MW191-5				0.681 J	1.05	[1.05] UB
MW192-3.5				0.762 J	1.18	[1.18] UB

Notes:
1 – Per NFG and SLR guidelines where blank detection is greater than the sample detection or both the blank detection and sample detection were below the LOD, the greater of the sample detection or LOD was reported in brackets and qualified as non-detect. A UB flag indicates non-detect due to this associated blank contamination.
Acronyms:
NA – not applicable

Trip Blanks

Trip blanks were analyzed at the appropriate frequencies for all appropriate volatile analyses (GRO by AK 101 and PVOC by SW8260C). Trip blank with detections are noted in Table 4. Associated sample results of ND or greater than five times that of the blank (ten-fold for common laboratory contaminants) were considered unaffected and were not presented in the table. Associated detected results less than five times the blank detections were qualified as shown in the table. Since a high bias was indicated, and all affected results were below the applicable ADEC cleanup levels of 300 mg/kg for GRO and 6.7 mg/kg for toluene, data usability was minimally impacted and all data were usable as qualified.

Table 4 Trip Blank Detections and Affected Samples

Sample ID	Matrix	Method (Analyte)	Lab Result with Flag (mg/kg)[1]	LOD (mg/kg)	Reported Result with Flag (mg/kg)[1]
TB-1	Soil	AK101 (GRO)	0.766 J	1.25	0.766 J
MW191-1			0.719 J	1.08	[1.08] UB
MW191-3			0.712 J	1.15	[1.15] UB
MW191-5			0.681 J	1.05	[1.05] UB
MW192-3.5			0.762 J	1.18	[1.18] UB
TB-1	Soil	SW8260C (Toluene)	0.00922 J	0.0126	0.00922 J
MW191-1			0.00693 J	0.0108	[0.0108] UB
MW191-3			0.00735 J	0.0115	[0.0115] UB
MW192-3.5			0.00809 J	0.0118	[0.0118] UB
MW199-1			0.00703 J	0.0108	[0.0108] UB

Notes:
1 – Per NFG and SLR guidelines where blank detection is greater than the sample detection or both the blank detection and sample detection were below the LOD, the greater of the sample detection or LOD was reported in brackets and qualified as non-detect. A UB flag indicates non-detect due to this associated blank contamination.

Reporting Limits

Results of ND were reported at the LOD and all LODs were at or below applicable cleanup levels, except as noted below. LODs for groundwater samples were compared to 18 Alaska Administrative Code (AAC) 75, *Oil and Other Hazardous Substances Pollution Control,* section 75.345 Table C, *Groundwater Cleanup Levels* (ADEC, 2018). LODs for soil samples were compared to 18 AAC 75, section 75.341 Tables B1 and B2, *Method Two Soil Cleanup Levels for the Under 40 Inch Zone and Migration to Groundwater* (ADEC, 2018).

- For 1,2-dibromoethane by Method SW8260C, the LODs did not meet the ADEC Migration to Groundwater cleanup level. All samples for this report were reported at the LOD as ND and it was considered unnecessary to re-evaluate 1,2-dibromoethane by Method SW8260C SIM because all detections and LODS for 1,2-dibromoethane by Method SW8260C SIM were below ADEC Migration to Groundwater criteria for the 2018 site investigation (SLR, 2018). All data were usable without qualification.

Continuous Calibration Verifications

All CCV recoveries were within acceptable limits as reviewed in the EDDs except as noted below, and CCVs were analyzed at the appropriate frequencies. CCV data was included only in the EDDs, not in the case narratives.

- For methyl-t-butyl ether by Method SW8260C, the opening CCV for batch VMS 19262 recovered at 134 percent (%), over the limit of 120%. Since a high bias was indicated, and all associated results were ND, data usability was not impacted. All data were usable without qualification.

Internal Standards

No internal standards were noted in the case narratives as outside of acceptance limits. Internal standard performance criteria were considered met.

Surrogate Recovery Results

All surrogate recoveries were within analytical method and SGS percent recovery acceptance limits. Surrogate analysis was performed at the required frequencies.

Laboratory Control Samples and Laboratory Control Duplicate Samples

All LCS and LCSD recoveries and RPDs were within analytical method and SGS percent recovery acceptance limits except as noted below. LCS and LCSDs were analyzed at the appropriate frequencies.

- For methyl-t-butyl ether by Method SW8260C, the LCS for batch VXX 34565 recovered at 134%, over the limit of 124%. Since a high bias was indicated, and all associated results were ND, data usability was not impacted. All data were usable without qualification.

Matrix Spike and Matrix Spike Duplicate Samples

MS/MSD percent recoveries outside of acceptable limits are noted below. All impacted results were ND values with LODs well below applicable ADEC cleanup levels. MS and MSDs were analyzed at the appropriate frequencies and data usability was not impacted.

- For PAH by Method SW8270D, several analytes for the MS and MSD in batch XXX41912 recovered over the acceptable limits. The associated LCS recovery for all analytes were within acceptable limits, establishing batch accuracy, and all associated sample results were ND. For these reasons, and because a high bias was indicated, only the parent sample was recommended for qualification. However, the parent sample was non-project specific. All data were usable without qualification.

Field Duplicates

The frequency of field duplicates satisfied the requirement of one per 10 samples or less per matrix and analyte for groundwater and soil samples. The field duplicate sample frequency is presented in Table 5 and parent sample/field duplicate pairs are presented in Table 6. Field duplicates were submitted blind to the laboratory. Field duplicate evaluation is summarized as follows:

- All parent sample/field duplicate RPDs were within ADEC recommended limits of 30% for water and 50% for soil samples.

- Samples with both results below the LOQ (J flagged or ND) were considered acceptable without qualification.

Table 5 Field Duplicate Frequency, Methods, and Analytes

Matrix	Analytical Method	Analyte	Number of Primary Samples	Number of Field Duplicates
Soil	AK101	GRO	5	1
	AK102	DRO	5	1
	AK103	RRO	5	1
	SW8260C	PVOC	5	1
	SW8270D	PAH SIM	5	1
Groundwater	AK101	GRO	4	1
	AK102	DRO	4	1
	AK103	RRO	4	1
	SW8260C	PVOC	4	1
	SW8270D LV	PAH SIM	4	1

Table 6 Field Duplicate Identification

Sample Type	Parent Sample ID	Duplicate Sample ID	All RPDs acceptable (Y/N)
Soil	MW191-1	MW199-1	Y
Groundwater	MW-191	MW-199	Y

Laboratory Duplicate Samples

Laboratory duplicates were analyzed for percent solids by Method SM 21 2540G and all duplicate RPDs were within acceptable limits.

Overall Assessment

Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity Summary

- Precision: Precision goals were met.
- Accuracy: Accuracy goals were met, except as noted in the Data Packages, Sample Receipt, CCV, LCS/LCSD, and MS/MSD sections.
- Representativeness: Representativeness goals were met. The samples were collected from usual locations in accordance with applicable requirements and guidance documents.
- Comparability: Comparability goals were met. SGS laboratory provided analytical support for all methods.
- Completeness: Completeness goals were met. The data were 100% complete with respect to analysis because no data were rejected.
- Sensitivity: Sensitivity goals were met, except as noted in the Laboratory Method Blanks, Trip Blanks, and Reporting Limits sections.

This data were considered of good quality and acceptable for use with the noted limitations and qualifications in this QAR. No data were rejected.

References

ADEC, 2017. *Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling*. Technical Memorandum. March.

ADEC, 2018. 18 AAC 75, *Oil and Other Hazardous Substances Pollution Control*. As amended October 27.

USEPA, 2017. *National Functional Guidelines for Superfund Organic Methods Data Review*. January.

SLR International Corporation (SLR), 2018. *RGV 35A Environmental Investigation Report*. February.

Attachments

Attachment 1 – ADEC Laboratory Data Review Checklist
Attachment 2 – Laboratory Deliverable

Attachment 1

ADEC Laboratory Data Review Checklist

Laboratory Data Review Checklist

Completed by:

Francesca Risse

Title:

Staff Engineer

Date:

August 22, 2019

CS Report Name:

RGV-35A Well Installation

Report Date:

August 15, 2019

Consultant Firm:

SLR International Corporation

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1199584

ADEC File Number:

Not applicable

Hazard Identification Number:

Not applicable

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   (●) Yes ( ) No Comments:

   SGS North America, Inc. (SGS) received and performed all analyses on the samples. SGS maintains ADEC CS approval Number UST-005.

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

   (●) Yes ( ) No Comments:

   No other laboratory was used.

2. Chain of Custody (COC)

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

   (●) Yes ( ) No Comments:

   b. Correct analyses requested?

   (●) Yes ( ) No Comments:

3. Laboratory Sample Receipt Documentation

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

   (●) Yes ( ) No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ( ) Yes (●) No Comments:

   For samples MW-192 and MW-199, the sample receipt form noted that their secondary containers for the analysis of PAH were preserved with HCl. Per email conversation with SGS, these containers were not used for analysis.
   For sample MW-199, the COC noted that one of two containers for the analysis of DRO/RRO had twice as much HCl as required for preservation. Presumably, this container was not used for analysis.

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   (●) Yes ( ) No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

(●) Yes ( ) No Comments:

Sample preservation discrepancies were noted.
The COC noted that for the receipt of samples in Anchorage, cooler ID 1 had a temperature of 3.4°C, and cooler ID 2 was 1.8°C. However, the sample receipt form noted that cooler ID 1 was 1.8°C, and 2 was 3.4°C. Per email conversation with SGS, the sample receipt form was correct; cooler ID 1 was 1.8°C, and 2 was 3.4°C. Both temperatures were within acceptable criteria.

e. Data quality or usability affected?

Comments:

No impact.

4. Case Narrative

a. Present and understandable?

(●) Yes ( ) No Comments:

b. Discrepancies, errors or QC failures identified by the lab?

(●) Yes ( ) No Comments:

c. Were all corrective actions documented?

(●) Yes ( ) No Comments:

Not applicable, no actions needed.

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

Comments:

No impact.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(●) Yes ( ) No Comments:

b. All applicable holding times met?

(●) Yes ( ) No Comments:

c. All soils reported on a dry weight basis?

(●) Yes ( ) No Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

( ) Yes (●) No Comments:

For 1,2-dibromoethane by Method SW8260C, the LODs did not meet the ADEC Migration to Groundwater cleanup level. All samples for this report were reported at the LOD as ND and it was considered unnecessary to re-evaluate 1,2-dibromoethane by Method SW8260C SIM because all detections and LODS for 1,2-dibromoethane by Method SW8260C SIM were below ADEC Migration to Groundwater criteria for the 2018 site investigation (SLR, 2018). All data were usable without qualification.

e. Data quality or usability affected?

Comments:

Data usability not affected.

6. QC Samples

a. Method Blank

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

(●) Yes ( ) No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

(●) Yes ( ) No Comments:

There was one soil method blank detection between the DL and LOD for GRO.

iii. If above LOQ, what samples are affected?

Comments:

No detections were above the LOQ.
For the GRO blank detection between the DL and LOD, samples that were affected were MW191-1, MW191-3, MW191-5, and MW192-3.5.

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

(●) Yes ( ) No Comments:

The associated sample detections that were less than the blank detection and/or the LOD, or where both the blank and sample detections were less than the LOD, were qualified with "UB" to as non-detect with an associated blank contamination.

v. Data quality or usability affected?

Comments:

All data were usable as qualified.N

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

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

(●) Yes ( ) No Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

(●) Yes ( ) No Comments:

Not applicable, no metals or inorganics.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

( ) Yes (●) No Comments:

For methyl-t-butyl ether by Method SW8260C, the LCS for batch VXX 34565 recovered at 134%, over the limit of 124%.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

(●) Yes ( ) No Comments:

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

Comments:

For the %R exceedance, no samples were affected.

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

(●) Yes ( ) No Comments:

Since a high bias was indicated for the %R, and all associated results were non-detect, data usability was not impacted. All data were usable without qualification.

vii. Data quality or usability affected?

Comments:

No impact.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

(●) Yes ( ) No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

(•) Yes ( ) No Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

(•) Yes ( ) No Comments:

Not applicable.

iv. Data quality or usability affected?

Comments:

No impact.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

(•) Yes ( ) No Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

( ) Yes ( ) No Comments:

Yes.

iii. All results less than LOQ?

(•) Yes ( ) No Comments:

There was one trip blank detection for GRO and one for toluene between the DL and LOD.

iv. If above LOQ, what samples are affected?

Comments:

For the GRO detection between the DL and LOD, affected samples were MW191-1, MW191-3, MW191-5, and MW192-3.5.
For the toluene detection between the DL and LOD, affected samples were MW191-1, MW191-3, MW192-3.5, and MW199-1.
The associated sample detections that were less than the blank detection and/or the LOD, or where both the blank and sample detections were less than the LOD, were qualified with "UB" to as non-detect with an associated blank contamination.

v. Data quality or usability affected?

Comments:

All data usable as qualified.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

(•) Yes ( ) No Comments:

ii. Submitted blind to lab?

(•) Yes ( ) No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

(•) Yes ( ) No Comments:

iv. Data quality or usability affected?

Comments:

No impact.

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

( ) Yes ( ) No (•) Not Applicable

i. All results less than LOQ?

(•) Yes ( ) No Comments:

Not applicable.

ii. If above LOQ, what samples are affected?

Comments:

Not applicable.

iii. Data quality or usability affected?

No impact.

Comments:

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

   a. Defined and appropriate?

      (•) Yes ( ) No Comments:

Attachment 2

Laboratory Deliverable

(Data packages)

Laboratory Report of Analysis

To: Alyeska Pipeline Srv Co.
4601 Business Park Blvd K42
Anchorage, AK 99503
(907)222-1112

Report Number: **1199584**

Client Project: **105.01288.19038 RGV-35A**

Dear Scott Rose,

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 Justin 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.

Justin Nelson Date
Project Manager
Justin.Nelson@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: **Alyeska Pipeline Srv Co.**
SGS Project: **1199584**
Project Name/Site: **105.01288.19038 RGV-35A**
Project Contact: **Scott Rose**

Refer to sample receipt form for information on sample condition.

LCS for HBN 1797362 [VXX/34565 (1523100) LCS

8260C - LCS recoveries for methyl-t-butyl ether does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

1194207013MS (1522899) MS

8270D SIM - PAH MS recovery for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

1194207013MSD (1522900) MSD

8270D SIM - PAH MSD recovery for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIM (PAH)				
1194207013	LABREFQC	XMS11608	Benzo[k]fluoranthene	RP

Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

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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, 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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW192-3.5	1199584001	07/29/2019	08/01/2019	Soil/Solid (dry weight)
MW191-1	1199584002	07/29/2019	08/01/2019	Soil/Solid (dry weight)
MW191-3	1199584003	07/29/2019	08/01/2019	Soil/Solid (dry weight)
MW191-5	1199584004	07/29/2019	08/01/2019	Soil/Solid (dry weight)
MW199-1	1199584005	07/29/2019	08/01/2019	Soil/Solid (dry weight)
MW193-3.75	1199584006	07/29/2019	08/01/2019	Soil/Solid (dry weight)
TB-1	1199584007	07/29/2019	08/01/2019	Soil/Solid (dry weight)
MW-191	1199584008	07/30/2019	08/01/2019	Water (Surface, Eff., Ground)
MW-193	1199584009	07/30/2019	08/01/2019	Water (Surface, Eff., Ground)
MW-192	1199584010	07/30/2019	08/01/2019	Water (Surface, Eff., Ground)
MW-199	1199584011	07/30/2019	08/01/2019	Water (Surface, Eff., Ground)
TB-2	1199584012	07/30/2019	08/01/2019	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (S)
AK101	Gasoline Range Organics (W)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted
SW8260C	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **MW192-3.5**
Lab Sample ID: 1199584001
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS- Petroleum VOC Group

Parameter	Result	Units
Residual Range Organics	11.7J	mg/Kg
Gasoline Range Organics	0.762J	mg/Kg
Toluene	8.09J	ug/Kg

Client Sample ID: **MW191-1**
Lab Sample ID: 1199584002
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS- Petroleum VOC Group

Parameter	Result	Units
Residual Range Organics	9.04J	mg/Kg
Gasoline Range Organics	0.719J	mg/Kg
Toluene	6.93J	ug/Kg

Client Sample ID: **MW191-3**
Lab Sample ID: 1199584003
Semivolatile Organic Fuels
Volatile Fuels
Volatile GC/MS- Petroleum VOC Group

Parameter	Result	Units
Residual Range Organics	6.82J	mg/Kg
Gasoline Range Organics	0.712J	mg/Kg
Toluene	7.35J	ug/Kg

Client Sample ID: **MW191-5**
Lab Sample ID: 1199584004
Semivolatile Organic Fuels
Volatile Fuels

Parameter	Result	Units
Residual Range Organics	7.97J	mg/Kg
Gasoline Range Organics	0.681J	mg/Kg

Client Sample ID: **MW199-1**
Lab Sample ID: 1199584005
Semivolatile Organic Fuels
Volatile GC/MS- Petroleum VOC Group

Parameter	Result	Units
Residual Range Organics	15.9J	mg/Kg
Toluene	7.03J	ug/Kg

Client Sample ID: **MW193-3.75**
Lab Sample ID: 1199584006
Semivolatile Organic Fuels

Parameter	Result	Units
Residual Range Organics	37.7	mg/Kg

Client Sample ID: **TB-1**
Lab Sample ID: 1199584007
Volatile Fuels
Volatile GC/MS- Petroleum VOC Group

Parameter	Result	Units
Gasoline Range Organics	0.766J	mg/Kg
Toluene	9.22J	ug/Kg

Client Sample ID: **MW-199**
Lab Sample ID: 1199584011
Volatile Fuels

Parameter	Result	Units
Gasoline Range Organics	0.0460J	mg/L

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Results of **MW192-3.5**

Client Sample ID: **MW192-3.5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584001
Lab Project ID: 1199584

Collection Date: 07/29/19 12:08
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):93.1
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Acenaphthylene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Anthracene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Benzo(a)Anthracene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Benzo[a]pyrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Benzo[b]Fluoranthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Benzo[g,h,i]perylene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Benzo[k]fluoranthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Chrysene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Dibenzo[a,h]anthracene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Fluoranthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Fluorene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Indeno[1,2,3-c,d] pyrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Naphthalene	10.7	U	21.3	5.34	ug/Kg	1		08/06/19 19:06
Phenanthrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Pyrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:06
Surrogates								
2-Methylnaphthalene-d10 (surr)	78.8		58-103		%	1		08/06/19 19:06
Fluoranthene-d10 (surr)	78.8		54-113		%	1		08/06/19 19:06

Batch Information

Analytical Batch: XMS11608
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 19:06
Container ID: 1199584001-A

Prep Batch: XXX41912
Prep Method: SW3550C
Prep Date/Time: 08/02/19 09:43
Prep Initial Wt./Vol.: 22.639 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW192-3.5**

Client Sample ID: **MW192-3.5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584001
Lab Project ID: 1199584

Collection Date: 07/29/19 12:08
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):93.1
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	10.7	U	21.3	6.60	mg/Kg	1		08/06/19 09:36
Surrogates								
5a Androstane (surr)	83.2		50-150		%	1		08/06/19 09:36

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/06/19 09:36
Container ID: 1199584001-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.269 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	11.7	J	21.3	6.60	mg/Kg	1		08/06/19 09:36
Surrogates								
n-Triacontane-d62 (surr)	95.6		50-150		%	1		08/06/19 09:36

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/06/19 09:36
Container ID: 1199584001-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.269 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW192-3.5**

Client Sample ID: **MW192-3.5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584001
Lab Project ID: 1199584

Collection Date: 07/29/19 12:08
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):93.1
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.762	J	2.35	0.704	mg/Kg	1		08/07/19 01:19
Surrogates								
4-Bromofluorobenzene (surr)	87.3		50-150		%	1		08/07/19 01:19

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 01:19
Container ID: 1199584001-B

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 07/29/19 12:08
Prep Initial Wt./Vol.: 67.975 g
Prep Extract Vol: 29.6873 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW192-3.5**

Client Sample ID: **MW192-3.5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584001
Lab Project ID: 1199584

Collection Date: 07/29/19 12:08
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):93.1
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	23.4	U	46.9	14.1	ug/Kg	1		08/05/19 07:58
1,2-Dibromoethane	0.469	U	0.938	0.291	ug/Kg	1		08/05/19 07:58
1,2-Dichloroethane	0.940	U	1.88	0.582	ug/Kg	1		08/05/19 07:58
1,3,5-Trimethylbenzene	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
Benzene	5.85	U	11.7	3.66	ug/Kg	1		08/05/19 07:58
Ethylbenzene	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
Isopropylbenzene (Cumene)	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
Methyl-t-butyl ether	46.9	U	93.8	29.1	ug/Kg	1		08/05/19 07:58
Naphthalene	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
n-Butylbenzene	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
o-Xylene	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
P & M -Xylene	23.4	U	46.9	14.1	ug/Kg	1		08/05/19 07:58
sec-Butylbenzene	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
tert-Butylbenzene	11.8	U	23.5	7.32	ug/Kg	1		08/05/19 07:58
Toluene	8.09	J	23.5	7.32	ug/Kg	1		08/05/19 07:58
Xylenes (total)	35.2	U	70.4	21.4	ug/Kg	1		08/05/19 07:58
Surrogates								
1,2-Dichloroethane-D4 (surr)	97.5		71-136		%	1		08/05/19 07:58
4-Bromofluorobenzene (surr)	95.6		55-151		%	1		08/05/19 07:58
Toluene-d8 (surr)	99.5		85-116		%	1		08/05/19 07:58

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/05/19 07:58
Container ID: 1199584001-B

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 07/29/19 12:08
Prep Initial Wt./Vol.: 67.975 g
Prep Extract Vol: 29.6873 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-1**

Client Sample ID: **MW191-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584002
Lab Project ID: 1199584

Collection Date: 07/29/19 14:25
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.2
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Acenaphthylene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Anthracene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Benzo(a)Anthracene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Benzo[a]pyrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Benzo[b]Fluoranthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Benzo[g,h,i]perylene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Benzo[k]fluoranthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Chrysene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Dibenzo[a,h]anthracene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Fluoranthene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Fluorene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Indeno[1,2,3-c,d] pyrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Naphthalene	10.7	U	21.4	5.34	ug/Kg	1		08/06/19 19:27
Phenanthrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Pyrene	13.4	U	26.7	6.67	ug/Kg	1		08/06/19 19:27
Surrogates								
2-Methylnaphthalene-d10 (surr)	76.1		58-103		%	1		08/06/19 19:27
Fluoranthene-d10 (surr)	77.1		54-113		%	1		08/06/19 19:27

Batch Information

Analytical Batch: XMS11608
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 19:27
Container ID: 1199584002-A

Prep Batch: XXX41912
Prep Method: SW3550C
Prep Date/Time: 08/02/19 09:43
Prep Initial Wt./Vol.: 22.847 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-1**

Client Sample ID: **MW191-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584002
Lab Project ID: 1199584

Collection Date: 07/29/19 14:25
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.2
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	10.7	U	21.4	6.65	mg/Kg	1		08/06/19 09:46
Surrogates								
5a Androstane (surr)	81.3		50-150		%	1		08/06/19 09:46

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/06/19 09:46
Container ID: 1199584002-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.343 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	9.04	J	21.4	6.65	mg/Kg	1		08/06/19 09:46
Surrogates								
n-Triacontane-d62 (surr)	93.2		50-150		%	1		08/06/19 09:46

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/06/19 09:46
Container ID: 1199584002-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.343 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-1**

Client Sample ID: **MW191-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584002
Lab Project ID: 1199584

Collection Date: 07/29/19 14:25
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.2
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.719	J	2.16	0.649	mg/Kg	1		08/07/19 01:37
Surrogates								
4-Bromofluorobenzene (surr)	93.7		50-150		%	1		08/07/19 01:37

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 01:37
Container ID: 1199584002-B

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 07/29/19 14:25
Prep Initial Wt./Vol.: 77.733 g
Prep Extract Vol: 31.0331 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-1**

Client Sample ID: **MW191-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584002
Lab Project ID: 1199584

Collection Date: 07/29/19 14:25
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.2
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	21.6	U	43.3	13.0	ug/Kg	1		08/05/19 08:13
1,2-Dibromoethane	0.433	U	0.866	0.268	ug/Kg	1		08/05/19 08:13
1,2-Dichloroethane	0.865	U	1.73	0.537	ug/Kg	1		08/05/19 08:13
1,3,5-Trimethylbenzene	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
Benzene	5.40	U	10.8	3.38	ug/Kg	1		08/05/19 08:13
Ethylbenzene	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
Isopropylbenzene (Cumene)	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
Methyl-t-butyl ether	43.3	U	86.6	26.8	ug/Kg	1		08/05/19 08:13
Naphthalene	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
n-Butylbenzene	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
o-Xylene	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
P & M -Xylene	21.6	U	43.3	13.0	ug/Kg	1		08/05/19 08:13
sec-Butylbenzene	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
tert-Butylbenzene	10.8	U	21.6	6.75	ug/Kg	1		08/05/19 08:13
Toluene	6.93	J	21.6	6.75	ug/Kg	1		08/05/19 08:13
Xylenes (total)	32.5	U	64.9	19.7	ug/Kg	1		08/05/19 08:13
Surrogates								
1,2-Dichloroethane-D4 (surr)	97.1		71-136		%	1		08/05/19 08:13
4-Bromofluorobenzene (surr)	108		55-151		%	1		08/05/19 08:13
Toluene-d8 (surr)	100		85-116		%	1		08/05/19 08:13

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/05/19 08:13
Container ID: 1199584002-B

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 07/29/19 14:25
Prep Initial Wt./Vol.: 77.733 g
Prep Extract Vol: 31.0331 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-3**

Client Sample ID: **MW191-3**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584003
Lab Project ID: 1199584

Collection Date: 07/29/19 15:00
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.9
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Acenaphthylene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Anthracene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Benzo(a)Anthracene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Benzo[a]pyrene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Benzo[b]Fluoranthene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Benzo[g,h,i]perylene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Benzo[k]fluoranthene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Chrysene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Dibenzo[a,h]anthracene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Fluoranthene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Fluorene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Indeno[1,2,3-c,d] pyrene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Naphthalene	10.8	U	21.5	5.37	ug/Kg	1		08/06/19 12:45
Phenanthrene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Pyrene	13.4	U	26.9	6.72	ug/Kg	1		08/06/19 12:45
Surrogates								
2-Methylnaphthalene-d10 (surr)	75.6		58-103		%	1		08/06/19 12:45
Fluoranthene-d10 (surr)	70.4		54-113		%	1		08/06/19 12:45

Batch Information

Analytical Batch: XMS11606
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 12:45
Container ID: 1199584003-A

Prep Batch: XXX41916
Prep Method: SW3550C
Prep Date/Time: 08/02/19 15:51
Prep Initial Wt./Vol.: 22.539 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-3**

Client Sample ID: **MW191-3**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584003
Lab Project ID: 1199584

Collection Date: 07/29/19 15:00
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	10.7	U	21.4	6.65	mg/Kg	1		08/06/19 09:55
Surrogates								
5a Androstane (surr)	80.6		50-150		%	1		08/06/19 09:55

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/06/19 09:55
Container ID: 1199584003-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.118 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	6.82	J	21.4	6.65	mg/Kg	1		08/06/19 09:55
Surrogates								
n-Triacontane-d62 (surr)	92.7		50-150		%	1		08/06/19 09:55

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/06/19 09:55
Container ID: 1199584003-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.118 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-3**

Client Sample ID: **MW191-3**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584003
Lab Project ID: 1199584

Collection Date: 07/29/19 15:00
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.712	J	2.30	0.689	mg/Kg	1		08/07/19 01:55
Surrogates								
4-Bromofluorobenzene (surr)	88.2		50-150		%	1		08/07/19 01:55

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 01:55
Container ID: 1199584003-B

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 07/29/19 15:00
Prep Initial Wt./Vol.: 70.27 g
Prep Extract Vol: 29.9904 mL

Results of **MW191-3**

Client Sample ID: **MW191-3**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584003
Lab Project ID: 1199584

Collection Date: 07/29/19 15:00
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.9
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	22.9	U	45.9	13.8	ug/Kg	1		08/05/19 08:29
1,2-Dibromoethane	0.460	U	0.919	0.285	ug/Kg	1		08/05/19 08:29
1,2-Dichloroethane	0.920	U	1.84	0.570	ug/Kg	1		08/05/19 08:29
1,3,5-Trimethylbenzene	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
Benzene	5.75	U	11.5	3.58	ug/Kg	1		08/05/19 08:29
Ethylbenzene	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
Isopropylbenzene (Cumene)	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
Methyl-t-butyl ether	46.0	U	91.9	28.5	ug/Kg	1		08/05/19 08:29
Naphthalene	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
n-Butylbenzene	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
o-Xylene	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
P & M -Xylene	22.9	U	45.9	13.8	ug/Kg	1		08/05/19 08:29
sec-Butylbenzene	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
tert-Butylbenzene	11.5	U	23.0	7.17	ug/Kg	1		08/05/19 08:29
Toluene	7.35	J	23.0	7.17	ug/Kg	1		08/05/19 08:29
Xylenes (total)	34.5	U	68.9	20.9	ug/Kg	1		08/05/19 08:29
Surrogates								
1,2-Dichloroethane-D4 (surr)	97.5		71-136		%	1		08/05/19 08:29
4-Bromofluorobenzene (surr)	97.4		55-151		%	1		08/05/19 08:29
Toluene-d8 (surr)	98.9		85-116		%	1		08/05/19 08:29

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/05/19 08:29
Container ID: 1199584003-B

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 07/29/19 15:00
Prep Initial Wt./Vol.: 70.27 g
Prep Extract Vol: 29.9904 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-5**

Client Sample ID: **MW191-5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584004
Lab Project ID: 1199584

Collection Date: 07/29/19 15:06
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.7
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Acenaphthylene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Anthracene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Benzo(a)Anthracene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Benzo[a]pyrene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Benzo[b]Fluoranthene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Benzo[g,h,i]perylene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Benzo[k]fluoranthene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Chrysene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Dibenzo[a,h]anthracene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Fluoranthene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Fluorene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Indeno[1,2,3-c,d] pyrene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Naphthalene	11.2	U	22.4	5.61	ug/Kg	1		08/06/19 13:05
Phenanthrene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Pyrene	14.1	U	28.1	7.02	ug/Kg	1		08/06/19 13:05
Surrogates								
2-Methylnaphthalene-d10 (surr)	76.6		58-103		%	1		08/06/19 13:05
Fluoranthene-d10 (surr)	73.4		54-113		%	1		08/06/19 13:05

Batch Information

Analytical Batch: XMS11606
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 13:05
Container ID: 1199584004-A

Prep Batch: XXX41916
Prep Method: SW3550C
Prep Date/Time: 08/02/19 15:51
Prep Initial Wt./Vol.: 22.844 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-5**

Client Sample ID: **MW191-5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584004
Lab Project ID: 1199584

Collection Date: 07/29/19 15:06
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.7
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	11.3	U	22.5	6.97	mg/Kg	1		08/06/19 10:05
Surrogates								
5a Androstane (surr)	81.8		50-150		%	1		08/06/19 10:05

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/06/19 10:05
Container ID: 1199584004-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.398 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	7.97	J	22.5	6.97	mg/Kg	1		08/06/19 10:05
Surrogates								
n-Triacontane-d62 (surr)	92.3		50-150		%	1		08/06/19 10:05

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/06/19 10:05
Container ID: 1199584004-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.398 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-5**

Client Sample ID: **MW191-5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584004
Lab Project ID: 1199584

Collection Date: 07/29/19 15:06
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.7
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.681	J	2.10	0.629	mg/Kg	1		08/07/19 02:30
Surrogates								
4-Bromofluorobenzene (surr)	97.3		50-150		%	1		08/07/19 02:30

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 02:30
Container ID: 1199584004-B

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 07/29/19 15:06
Prep Initial Wt./Vol.: 101.963 g
Prep Extract Vol: 37.4948 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW191-5**

Client Sample ID: **MW191-5**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584004
Lab Project ID: 1199584

Collection Date: 07/29/19 15:06
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.7
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	20.9	U	41.9	12.6	ug/Kg	1		08/05/19 08:44
1,2-Dibromoethane	0.419	U	0.838	0.260	ug/Kg	1		08/05/19 08:44
1,2-Dichloroethane	0.840	U	1.68	0.520	ug/Kg	1		08/05/19 08:44
1,3,5-Trimethylbenzene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
Benzene	5.25	U	10.5	3.27	ug/Kg	1		08/05/19 08:44
Ethylbenzene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
Isopropylbenzene (Cumene)	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
Methyl-t-butyl ether	41.9	U	83.8	26.0	ug/Kg	1		08/05/19 08:44
Naphthalene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
n-Butylbenzene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
o-Xylene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
P & M -Xylene	20.9	U	41.9	12.6	ug/Kg	1		08/05/19 08:44
sec-Butylbenzene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
tert-Butylbenzene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
Toluene	10.5	U	21.0	6.54	ug/Kg	1		08/05/19 08:44
Xylenes (total)	31.4	U	62.9	19.1	ug/Kg	1		08/05/19 08:44
Surrogates								
1,2-Dichloroethane-D4 (surr)	98.2		71-136		%	1		08/05/19 08:44
4-Bromofluorobenzene (surr)	116		55-151		%	1		08/05/19 08:44
Toluene-d8 (surr)	99.7		85-116		%	1		08/05/19 08:44

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/05/19 08:44
Container ID: 1199584004-B

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 07/29/19 15:06
Prep Initial Wt./Vol.: 101.963 g
Prep Extract Vol: 37.4948 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW199-1**

Client Sample ID: **MW199-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584005
Lab Project ID: 1199584

Collection Date: 07/29/19 14:45
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.0
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Acenaphthylene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Anthracene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Benzo(a)Anthracene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Benzo[a]pyrene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Benzo[b]Fluoranthene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Benzo[g,h,i]perylene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Benzo[k]fluoranthene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Chrysene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Dibenzo[a,h]anthracene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Fluoranthene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Fluorene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Indeno[1,2,3-c,d] pyrene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Naphthalene	10.8	U	21.6	5.39	ug/Kg	1		08/06/19 13:26
Phenanthrene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Pyrene	13.4	U	26.9	6.74	ug/Kg	1		08/06/19 13:26
Surrogates								
2-Methylnaphthalene-d10 (surr)	77.8		58-103		%	1		08/06/19 13:26
Fluoranthene-d10 (surr)	73.2		54-113		%	1		08/06/19 13:26

Batch Information

Analytical Batch: XMS11606
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 13:26
Container ID: 1199584005-A

Prep Batch: XXX41916
Prep Method: SW3550C
Prep Date/Time: 08/02/19 15:51
Prep Initial Wt./Vol.: 22.698 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW199-1**

Client Sample ID: **MW199-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584005
Lab Project ID: 1199584

Collection Date: 07/29/19 14:45
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	10.8	U	21.5	6.66	mg/Kg	1		08/06/19 10:14
Surrogates								
5a Androstane (surr)	78.4		50-150		%	1		08/06/19 10:14

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/06/19 10:14
Container ID: 1199584005-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.382 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	15.9	J	21.5	6.66	mg/Kg	1		08/06/19 10:14
Surrogates								
n-Triacontane-d62 (surr)	89.1		50-150		%	1		08/06/19 10:14

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/06/19 10:14
Container ID: 1199584005-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.382 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW199-1**

Client Sample ID: **MW199-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584005
Lab Project ID: 1199584

Collection Date: 07/29/19 14:45
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.0
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.08	U	2.15	0.645	mg/Kg	1		08/07/19 02:48
Surrogates								
4-Bromofluorobenzene (surr)	94.6		50-150		%	1		08/07/19 02:48

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 02:48
Container ID: 1199584005-B

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 07/29/19 14:45
Prep Initial Wt./Vol.: 79.279 g
Prep Extract Vol: 31.3735 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW199-1**

Client Sample ID: **MW199-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584005
Lab Project ID: 1199584

Collection Date: 07/29/19 14:45
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):92.0
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	21.5	U	43.0	12.9	ug/Kg	1		08/05/19 09:00
1,2-Dibromoethane	0.430	U	0.861	0.267	ug/Kg	1		08/05/19 09:00
1,2-Dichloroethane	0.860	U	1.72	0.534	ug/Kg	1		08/05/19 09:00
1,3,5-Trimethylbenzene	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
Benzene	5.40	U	10.8	3.36	ug/Kg	1		08/05/19 09:00
Ethylbenzene	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
Isopropylbenzene (Cumene)	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
Methyl-t-butyl ether	43.0	U	86.1	26.7	ug/Kg	1		08/05/19 09:00
Naphthalene	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
n-Butylbenzene	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
o-Xylene	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
P & M -Xylene	21.5	U	43.0	12.9	ug/Kg	1		08/05/19 09:00
sec-Butylbenzene	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
tert-Butylbenzene	10.8	U	21.5	6.71	ug/Kg	1		08/05/19 09:00
Toluene	7.03	J	21.5	6.71	ug/Kg	1		08/05/19 09:00
Xylenes (total)	32.3	U	64.5	19.6	ug/Kg	1		08/05/19 09:00
Surrogates								
1,2-Dichloroethane-D4 (surr)	98.7		71-136		%	1		08/05/19 09:00
4-Bromofluorobenzene (surr)	110		55-151		%	1		08/05/19 09:00
Toluene-d8 (surr)	101		85-116		%	1		08/05/19 09:00

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/05/19 09:00
Container ID: 1199584005-B

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 07/29/19 14:45
Prep Initial Wt./Vol.: 79.279 g
Prep Extract Vol: 31.3735 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW193-3.75**

Client Sample ID: **MW193-3.75**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584006
Lab Project ID: 1199584

Collection Date: 07/29/19 16:16
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):89.3
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Acenaphthylene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Anthracene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Benzo(a)Anthracene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Benzo[a]pyrene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Benzo[b]Fluoranthene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Benzo[g,h,i]perylene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Benzo[k]fluoranthene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Chrysene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Dibenzo[a,h]anthracene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Fluoranthene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Fluorene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Indeno[1,2,3-c,d] pyrene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Naphthalene	11.2	U	22.4	5.60	ug/Kg	1		08/06/19 14:27
Phenanthrene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Pyrene	14.0	U	28.0	7.00	ug/Kg	1		08/06/19 14:27
Surrogates								
2-Methylnaphthalene-d10 (surr)	72.1		58-103		%	1		08/06/19 14:27
Fluoranthene-d10 (surr)	65.4		54-113		%	1		08/06/19 14:27

Batch Information

Analytical Batch: XMS11606
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 08/06/19 14:27
Container ID: 1199584006-A

Prep Batch: XXX41916
Prep Method: SW3550C
Prep Date/Time: 08/02/19 15:51
Prep Initial Wt./Vol.: 22.515 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW193-3.75**

Client Sample ID: **MW193-3.75**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584006
Lab Project ID: 1199584

Collection Date: 07/29/19 16:16
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):89.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	11.2	U	22.3	6.93	mg/Kg	1		08/06/19 10:24
Surrogates								
5a Androstane (surr)	77.9		50-150		%	1		08/06/19 10:24

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/06/19 10:24
Container ID: 1199584006-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.074 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	37.7		22.3	6.93	mg/Kg	1		08/06/19 10:24
Surrogates								
n-Triacontane-d62 (surr)	87.2		50-150		%	1		08/06/19 10:24

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/06/19 10:24
Container ID: 1199584006-A

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 08/05/19 08:59
Prep Initial Wt./Vol.: 30.074 g
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW193-3.75**

Client Sample ID: **MW193-3.75**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584006
Lab Project ID: 1199584

Collection Date: 07/29/19 16:16
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):89.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.17	U	2.34	0.701	mg/Kg	1		08/07/19 03:05
Surrogates								
4-Bromofluorobenzene (surr)	61.3		50-150		%	1		08/07/19 03:05

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 03:05
Container ID: 1199584006-B

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 07/29/19 16:16
Prep Initial Wt./Vol.: 80.743 g
Prep Extract Vol: 33.6643 mL

Results of **MW193-3.75**

Client Sample ID: **MW193-3.75**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584006
Lab Project ID: 1199584

Collection Date: 07/29/19 16:16
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):89.3
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	23.4	U	46.7	14.0	ug/Kg	1		08/05/19 09:15
1,2-Dibromoethane	0.467	U	0.934	0.290	ug/Kg	1		08/05/19 09:15
1,2-Dichloroethane	0.935	U	1.87	0.579	ug/Kg	1		08/05/19 09:15
1,3,5-Trimethylbenzene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
Benzene	5.85	U	11.7	3.64	ug/Kg	1		08/05/19 09:15
Ethylbenzene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
Isopropylbenzene (Cumene)	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
Methyl-t-butyl ether	46.7	U	93.4	29.0	ug/Kg	1		08/05/19 09:15
Naphthalene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
n-Butylbenzene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
o-Xylene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
P & M -Xylene	23.4	U	46.7	14.0	ug/Kg	1		08/05/19 09:15
sec-Butylbenzene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
tert-Butylbenzene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
Toluene	11.7	U	23.4	7.29	ug/Kg	1		08/05/19 09:15
Xylenes (total)	35.0	U	70.1	21.3	ug/Kg	1		08/05/19 09:15
Surrogates								
1,2-Dichloroethane-D4 (surr)	91		71-136		%	1		08/05/19 09:15
4-Bromofluorobenzene (surr)	74.8		55-151		%	1		08/05/19 09:15
Toluene-d8 (surr)	99.9		85-116		%	1		08/05/19 09:15

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/05/19 09:15
Container ID: 1199584006-B

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 07/29/19 16:16
Prep Initial Wt./Vol.: 80.743 g
Prep Extract Vol: 33.6643 mL

Results of **TB-1**

Client Sample ID: **TB-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584007
Lab Project ID: 1199584

Collection Date: 07/29/19 12:00
Received Date: 08/01/19 09:30
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	0.766	J	2.51	0.753	mg/Kg	1		08/06/19 22:57
Surrogates								
4-Bromofluorobenzene (surr)	92.5		50-150		%	1		08/06/19 22:57

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/06/19 22:57
Container ID: 1199584007-A

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 07/29/19 12:00
Prep Initial Wt./Vol.: 49.77 g
Prep Extract Vol: 25 mL

Results of **TB-1**

Client Sample ID: **TB-1**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584007
Lab Project ID: 1199584

Collection Date: 07/29/19 12:00
Received Date: 08/01/19 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	25.1	U	50.2	15.1	ug/Kg	1		08/05/19 05:54
1,2-Dibromoethane	0.500	U	1.00	0.311	ug/Kg	1		08/05/19 05:54
1,2-Dichloroethane	1.00	U	2.01	0.623	ug/Kg	1		08/05/19 05:54
1,3,5-Trimethylbenzene	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
Benzene	6.30	U	12.6	3.92	ug/Kg	1		08/05/19 05:54
Ethylbenzene	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
Isopropylbenzene (Cumene)	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
Methyl-t-butyl ether	50.0	U	100	31.1	ug/Kg	1		08/05/19 05:54
Naphthalene	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
n-Butylbenzene	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
o-Xylene	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
P & M -Xylene	25.1	U	50.2	15.1	ug/Kg	1		08/05/19 05:54
sec-Butylbenzene	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
tert-Butylbenzene	12.6	U	25.1	7.84	ug/Kg	1		08/05/19 05:54
Toluene	9.22	J	25.1	7.84	ug/Kg	1		08/06/19 03:20
Xylenes (total)	37.6	U	75.3	22.9	ug/Kg	1		08/05/19 05:54
Surrogates								
1,2-Dichloroethane-D4 (surr)	98.6		71-136		%	1		08/05/19 05:54
4-Bromofluorobenzene (surr)	102		55-151		%	1		08/05/19 05:54
Toluene-d8 (surr)	99.6		85-116		%	1		08/05/19 05:54

Batch Information

Analytical Batch: VMS19274
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/06/19 03:20
Container ID: 1199584007-A

Prep Batch: VXX34599
Prep Method: SW5035A
Prep Date/Time: 07/29/19 12:00
Prep Initial Wt./Vol.: 49.77 g
Prep Extract Vol: 25 mL

Analytical Batch: VMS19273
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/05/19 05:54
Container ID: 1199584007-A

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 07/29/19 12:00
Prep Initial Wt./Vol.: 49.77 g
Prep Extract Vol: 25 mL

Results of **MW-191**

Client Sample ID: **MW-191**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584008
Lab Project ID: 1199584

Collection Date: 07/30/19 08:50
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		08/05/19 16:11
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		08/05/19 16:11
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Fluorene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Naphthalene	0.0490	U	0.0980	0.0304	ug/L	1		08/05/19 16:11
Phenanthrene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 16:11
Surrogates								
2-Methylnaphthalene-d10 (surr)	77.7		47-106		%	1		08/05/19 16:11
Fluoranthene-d10 (surr)	78.5		24-116		%	1		08/05/19 16:11

Batch Information

Analytical Batch: XMS11603
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 16:11
Container ID: 1199584008-C

Prep Batch: XXX41921
Prep Method: SW3520C
Prep Date/Time: 08/03/19 08:49
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW-191**

Client Sample ID: **MW-191**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584008
Lab Project ID: 1199584

Collection Date: 07/30/19 08:50
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.288	U	0.577	0.173	mg/L	1		08/14/19 14:18
Surrogates								
5a Androstane (surr)	70.6		50-150		%	1		08/14/19 14:18

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/14/19 14:18
Container ID: 1199584008-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.240	U	0.481	0.144	mg/L	1		08/14/19 14:18
Surrogates								
n-Triacontane-d62 (surr)	85.7		50-150		%	1		08/14/19 14:18

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/14/19 14:18
Container ID: 1199584008-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **MW-191**

Client Sample ID: **MW-191**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584008
Lab Project ID: 1199584

Collection Date: 07/30/19 08:50
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		08/07/19 17:56
Surrogates								
4-Bromofluorobenzene (surr)	85		50-150		%	1		08/07/19 17:56

Batch Information

Analytical Batch: VFC14869
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 17:56
Container ID: 1199584008-F

Prep Batch: VXX34606
Prep Method: SW5030B
Prep Date/Time: 08/07/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-191**

Client Sample ID: **MW-191**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584008
Lab Project ID: 1199584

Collection Date: 07/30/19 08:50
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		08/02/19 21:53
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		08/02/19 21:53
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
Benzene	0.200	U	0.400	0.120	ug/L	1		08/02/19 21:53
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		08/02/19 21:53
Naphthalene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
o-Xylene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		08/02/19 21:53
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
Toluene	0.500	U	1.00	0.310	ug/L	1		08/02/19 21:53
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		08/02/19 21:53
Surrogates								
1,2-Dichloroethane-D4 (surr)	99.2		81-118		%	1		08/02/19 21:53
4-Bromofluorobenzene (surr)	97.2		85-114		%	1		08/02/19 21:53
Toluene-d8 (surr)	100		89-112		%	1		08/02/19 21:53

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/02/19 21:53
Container ID: 1199584008-H

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 08/02/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW-193**

Client Sample ID: **MW-193**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584009
Lab Project ID: 1199584

Collection Date: 07/30/19 09:30
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Acenaphthylene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Anthracene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	ug/L	1		08/05/19 16:32
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Chrysene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	ug/L	1		08/05/19 16:32
Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Fluorene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Naphthalene	0.0471	U	0.0943	0.0292	ug/L	1		08/05/19 16:32
Phenanthrene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Pyrene	0.0236	U	0.0472	0.0142	ug/L	1		08/05/19 16:32
Surrogates								
2-Methylnaphthalene-d10 (surr)	63.9		47-106		%	1		08/05/19 16:32
Fluoranthene-d10 (surr)	66		24-116		%	1		08/05/19 16:32

Batch Information

Analytical Batch: XMS11603
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 16:32
Container ID: 1199584009-C

Prep Batch: XXX41921
Prep Method: SW3520C
Prep Date/Time: 08/03/19 08:49
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Results of **MW-193**

Client Sample ID: **MW-193**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584009
Lab Project ID: 1199584

Collection Date: 07/30/19 09:30
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.288	U	0.577	0.173	mg/L	1		08/14/19 14:29
Surrogates								
5a Androstane (surr)	68.3		50-150		%	1		08/14/19 14:29

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/14/19 14:29
Container ID: 1199584009-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.240	U	0.481	0.144	mg/L	1		08/14/19 14:29
Surrogates								
n-Triacontane-d62 (surr)	86.4		50-150		%	1		08/14/19 14:29

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/14/19 14:29
Container ID: 1199584009-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW-193**

Client Sample ID: **MW-193**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584009
Lab Project ID: 1199584

Collection Date: 07/30/19 09:30
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		08/07/19 18:15
Surrogates								
4-Bromofluorobenzene (surr)	86.3		50-150		%	1		08/07/19 18:15

Batch Information

Analytical Batch: VFC14869
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 18:15
Container ID: 1199584009-F

Prep Batch: VXX34606
Prep Method: SW5030B
Prep Date/Time: 08/07/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-193**

Client Sample ID: **MW-193**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584009
Lab Project ID: 1199584

Collection Date: 07/30/19 09:30
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		08/02/19 22:08
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		08/02/19 22:08
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
Benzene	0.200	U	0.400	0.120	ug/L	1		08/02/19 22:08
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		08/02/19 22:08
Naphthalene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
o-Xylene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		08/02/19 22:08
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
Toluene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:08
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		08/02/19 22:08
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		08/02/19 22:08
4-Bromofluorobenzene (surr)	100		85-114		%	1		08/02/19 22:08
Toluene-d8 (surr)	101		89-112		%	1		08/02/19 22:08

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/02/19 22:08
Container ID: 1199584009-H

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 08/02/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW-192**

Client Sample ID: **MW-192**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584010
Lab Project ID: 1199584

Collection Date: 07/30/19 10:25
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		08/05/19 16:52
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		08/05/19 16:52
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Fluorene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Naphthalene	0.0481	U	0.0962	0.0298	ug/L	1		08/05/19 16:52
Phenanthrene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		08/05/19 16:52
Surrogates								
2-Methylnaphthalene-d10 (surr)	74		47-106		%	1		08/05/19 16:52
Fluoranthene-d10 (surr)	76.1		24-116		%	1		08/05/19 16:52

Batch Information

Analytical Batch: XMS11603
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 16:52
Container ID: 1199584010-C

Prep Batch: XXX41921
Prep Method: SW3520C
Prep Date/Time: 08/03/19 08:49
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW-192**

Client Sample ID: **MW-192**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584010
Lab Project ID: 1199584

Collection Date: 07/30/19 10:25
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.294	U	0.588	0.176	mg/L	1		08/14/19 14:39
Surrogates								
5a Androstane (surr)	67.3		50-150		%	1		08/14/19 14:39

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/14/19 14:39
Container ID: 1199584010-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.245	U	0.490	0.147	mg/L	1		08/14/19 14:39
Surrogates								
n-Triacontane-d62 (surr)	87.5		50-150		%	1		08/14/19 14:39

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/14/19 14:39
Container ID: 1199584010-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW-192**

Client Sample ID: **MW-192**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584010
Lab Project ID: 1199584

Collection Date: 07/30/19 10:25
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		08/07/19 18:33
Surrogates								
4-Bromofluorobenzene (surr)	82.9		50-150		%	1		08/07/19 18:33

Batch Information

Analytical Batch: VFC14869
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 18:33
Container ID: 1199584010-F

Prep Batch: VXX34606
Prep Method: SW5030B
Prep Date/Time: 08/07/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-192**

Client Sample ID: **MW-192**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584010
Lab Project ID: 1199584

Collection Date: 07/30/19 10:25
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
1,2-Dibromoethane	0.0375 U		0.0750	0.0180	ug/L	1		08/02/19 22:23
1,2-Dichloroethane	0.250 U		0.500	0.150	ug/L	1		08/02/19 22:23
1,3,5-Trimethylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
Benzene	0.200 U		0.400	0.120	ug/L	1		08/02/19 22:23
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		08/02/19 22:23
Naphthalene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
o-Xylene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		08/02/19 22:23
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
Toluene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:23
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		08/02/19 22:23
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		08/02/19 22:23
4-Bromofluorobenzene (surr)	98.3		85-114		%	1		08/02/19 22:23
Toluene-d8 (surr)	99.8		89-112		%	1		08/02/19 22:23

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/02/19 22:23
Container ID: 1199584010-H

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 08/02/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW-199**

Client Sample ID: **MW-199**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584011
Lab Project ID: 1199584

Collection Date: 07/30/19 11:00
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		08/05/19 17:13
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		08/05/19 17:13
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Fluorene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Naphthalene	0.0490	U	0.0980	0.0304	ug/L	1		08/05/19 17:13
Phenanthrene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		08/05/19 17:13
Surrogates								
2-Methylnaphthalene-d10 (surr)	73.1		47-106		%	1		08/05/19 17:13
Fluoranthene-d10 (surr)	73.5		24-116		%	1		08/05/19 17:13

Batch Information

Analytical Batch: XMS11603
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/05/19 17:13
Container ID: 1199584011-C

Prep Batch: XXX41921
Prep Method: SW3520C
Prep Date/Time: 08/03/19 08:49
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **MW-199**

Client Sample ID: **MW-199**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584011
Lab Project ID: 1199584

Collection Date: 07/30/19 11:00
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.300	U	0.600	0.180	mg/L	1		08/14/19 14:50
Surrogates								
5a Androstane (surr)	71.4		50-150		%	1		08/14/19 14:50

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 08/14/19 14:50
Container ID: 1199584011-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.250	U	0.500	0.150	mg/L	1		08/14/19 14:50
Surrogates								
n-Triacontane-d62 (surr)	86.3		50-150		%	1		08/14/19 14:50

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 08/14/19 14:50
Container ID: 1199584011-A

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 08/12/19 13:31
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of **MW-199**

Client Sample ID: **MW-199**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584011
Lab Project ID: 1199584

Collection Date: 07/30/19 11:00
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0460	J	0.100	0.0310	mg/L	1		08/07/19 18:51
Surrogates								
4-Bromofluorobenzene (surr)	87.2		50-150		%	1		08/07/19 18:51

Batch Information

Analytical Batch: VFC14869
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 18:51
Container ID: 1199584011-F

Prep Batch: VXX34606
Prep Method: SW5030B
Prep Date/Time: 08/07/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **MW-199**

Client Sample ID: **MW-199**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584011
Lab Project ID: 1199584

Collection Date: 07/30/19 11:00
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
1,2-Dibromoethane	0.0375 U		0.0750	0.0180	ug/L	1		08/02/19 22:37
1,2-Dichloroethane	0.250 U		0.500	0.150	ug/L	1		08/02/19 22:37
1,3,5-Trimethylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
Benzene	0.200 U		0.400	0.120	ug/L	1		08/02/19 22:37
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		08/02/19 22:37
Naphthalene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
o-Xylene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		08/02/19 22:37
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
Toluene	0.500 U		1.00	0.310	ug/L	1		08/02/19 22:37
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		08/02/19 22:37
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		08/02/19 22:37
4-Bromofluorobenzene (surr)	96.7		85-114		%	1		08/02/19 22:37
Toluene-d8 (surr)	102		89-112		%	1		08/02/19 22:37

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/02/19 22:37
Container ID: 1199584011-H

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 08/02/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Results of **TB-2**

Client Sample ID: **TB-2**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584012
Lab Project ID: 1199584

Collection Date: 07/30/19 08:00
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		08/07/19 14:02
Surrogates								
4-Bromofluorobenzene (surr)	83.2		50-150		%	1		08/07/19 14:02

Batch Information

Analytical Batch: VFC14869
Analytical Method: AK101
Analyst: NRB
Analytical Date/Time: 08/07/19 14:02
Container ID: 1199584012-B

Prep Batch: VXX34606
Prep Method: SW5030B
Prep Date/Time: 08/07/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **TB-2**

Client Sample ID: **TB-2**
Client Project ID: **105.01288.19038 RGV-35A**
Lab Sample ID: 1199584012
Lab Project ID: 1199584

Collection Date: 07/30/19 08:00
Received Date: 08/01/19 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		08/02/19 22:52
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		08/02/19 22:52
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
Benzene	0.200	U	0.400	0.120	ug/L	1		08/02/19 22:52
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		08/02/19 22:52
Naphthalene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
o-Xylene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		08/02/19 22:52
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
Toluene	0.500	U	1.00	0.310	ug/L	1		08/02/19 22:52
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		08/02/19 22:52
Surrogates								
1,2-Dichloroethane-D4 (surr)	99.8		81-118		%	1		08/02/19 22:52
4-Bromofluorobenzene (surr)	97.1		85-114		%	1		08/02/19 22:52
Toluene-d8 (surr)	100		89-112		%	1		08/02/19 22:52

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 08/02/19 22:52
Container ID: 1199584012-D

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 08/02/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:22PM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1797310 [SPT/10842]
Blank Lab ID: 1522874

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10842
Analytical Method: SM21 2540G
Instrument:
Analyst: MER
Analytical Date/Time: 8/2/2019 12:59:00AM

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

Duplicate Sample Summary

Original Sample ID: 1194221001
Duplicate Sample ID: 1522876
QC for Samples:

Analysis Date: 08/02/2019 00:59
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	91.0	90.5	%	0.56	(< 15)

Batch Information

Analytical Batch: SPT10842
Analytical Method: SM21 2540G
Instrument:
Analyst: MER

Print Date: 08/15/2019 1:57:26PM

Duplicate Sample Summary

Original Sample ID: 1199556001
Duplicate Sample ID: 1522877
Analysis Date: 08/02/2019 00:59
Matrix: Soil/Solid (dry weight)

QC for Samples:

1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	94.8	94.3	%	0.48	(< 15)

Batch Information

Analytical Batch: SPT10842
Analytical Method: SM21 2540G
Instrument:
Analyst: MER

Print Date: 08/15/2019 1:57:26PM

Duplicate Sample Summary

Original Sample ID: 1199586001
Duplicate Sample ID: 1522878

Analysis Date: 08/02/2019 00:59
Matrix: Soil/Solid (dry weight)

QC for Samples:

1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	90.3	90.1	%	0.17	(< 15)

Batch Information

Analytical Batch: SPT10842
Analytical Method: SM21 2540G
Instrument:
Analyst: MER

Print Date: 08/15/2019 1:57:26PM

Method Blank

Blank ID: MB for HBN 1797362 [VXX/34565]
Blank Lab ID: 1523099

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199584008, 1199584009, 1199584010, 1199584011, 1199584012

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	107	81-118		%
4-Bromofluorobenzene (surr)	95.6	85-114		%
Toluene-d8 (surr)	95.4	89-112		%

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: CMC
Analytical Date/Time: 8/2/2019 2:31:00PM

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 8/2/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
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

Leaching Blank

Blank ID: LB for HBN 1797319 [TCLP/10176
Blank Lab ID: 1522933

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199584008, 1199584009, 1199584010, 1199584011, 1199584012

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	98.9	81-118		%
4-Bromofluorobenzene (surr)	99.1	85-114		%
Toluene-d8 (surr)	101	89-112		%

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: CMC
Analytical Date/Time: 8/2/2019 8:24:00PM

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 8/2/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Method Blank

Blank ID: SPW for HBN 1797317 [TCLP/1017
Blank Lab ID: 1522913

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1199584008, 1199584009, 1199584010, 1199584011, 1199584012

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Benzene	10.0U	20.0	6.00	ug/L
Ethylbenzene	25.0U	50.0	15.5	ug/L
o-Xylene	25.0U	50.0	15.5	ug/L
P & M -Xylene	50.0U	100	31.0	ug/L
Toluene	25.0U	50.0	15.5	ug/L
Xylenes (total)	75.0U	150	50.0	ug/L

Batch Information

Analytical Batch: VMS19262
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: CMC
Analytical Date/Time: 8/2/2019 8:09:00PM

Prep Batch: VXX34565
Prep Method: SW5030B
Prep Date/Time: 8/2/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [VXX34565]
Blank Spike Lab ID: 1523100
Date Analyzed: 08/02/2019 14:46

Spike Duplicate ID: LCSD for HBN 1199584 [VXX34565]
Spike Duplicate Lab ID: 1523101
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199584008, 1199584009, 1199584010, 1199584011, 1199584012

Results by **SW8260C**

	Blank Spike (ug/L)				Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)		Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	30.4	101		30	29.9	100	(79-124)	1.80	(< 20)
1,2-Dibromoethane	30	29.2	97		30	29.5	99	(77-121)	1.30	(< 20)
1,2-Dichloroethane	30	30.5	102		30	30.0	100	(73-128)	1.40	(< 20)
1,3,5-Trimethylbenzene	30	30.4	101		30	30.0	100	(75-124)	1.50	(< 20)
Benzene	30	28.0	93		30	27.6	92	(79-120)	1.50	(< 20)
Ethylbenzene	30	28.5	95		30	27.7	93	(79-121)	2.60	(< 20)
Isopropylbenzene (Cumene)	30	29.6	99		30	29.7	99	(72-131)	0.08	(< 20)
Methyl-t-butyl ether	45	60.2	134	*	45	55.4	123	(71-124)	8.40	(< 20)
Naphthalene	30	25.1	84		30	26.9	90	(61-128)	7.20	(< 20)
n-Butylbenzene	30	28.8	96		30	29.0	97	(75-128)	0.70	(< 20)
o-Xylene	30	27.9	93		30	27.6	92	(78-122)	1.10	(< 20)
P & M -Xylene	60	56.2	94		60	56.2	94	(80-121)	0.01	(< 20)
sec-Butylbenzene	30	29.5	98		30	29.2	97	(77-126)	1.20	(< 20)
tert-Butylbenzene	30	30.8	103		30	30.7	102	(78-124)	0.43	(< 20)
Toluene	30	26.8	89		30	26.4	88	(80-121)	1.70	(< 20)
Xylenes (total)	90	84.1	93		90	83.8	93	(79-121)	0.37	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)	30	103	103		30	103	103	(81-118)	0.12	
4-Bromofluorobenzene (surr)	30	97	97		30	96	96	(85-114)	0.99	
Toluene-d8 (surr)	30	96.3	96		30	97.7	98	(89-112)	1.50	

Batch Information

Analytical Batch: **VMS19262**
Analytical Method: **SW8260C**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **CMC**

Prep Batch: **VXX34565**
Prep Method: **SW5030B**
Prep Date/Time: **08/02/2019 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/15/2019 1:57:28PM

Method Blank

Blank ID: MB for HBN 1797560 [VXX/34595]
Blank Lab ID: 1523969

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006, 1199584007

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.910J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	93.5	50-150		%

Batch Information

Analytical Batch: VFC14867
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: NRB
Analytical Date/Time: 8/6/2019 10:21:00PM

Prep Batch: VXX34595
Prep Method: SW5035A
Prep Date/Time: 8/6/2019 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [VXX34595]
Blank Spike Lab ID: 1523970
Date Analyzed: 08/06/2019 21:45

Spike Duplicate ID: LCSD for HBN 1199584 [VXX34595]
Spike Duplicate Lab ID: 1523971
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006, 1199584007

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	12.5	14.5	116	12.5	14.2	114	(60-120)	2.40	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	97.9	98	1.25	96.3	96	(50-150)	1.70	

Batch Information

Analytical Batch: **VFC14867**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **NRB**

Prep Batch: **VXX34595**
Prep Method: **SW5035A**
Prep Date/Time: **08/06/2019 06:00**
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 1797581 [VXX/34598]
Blank Lab ID: 1524069

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006, 1199584007

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromoethane	0.500U	1.00	0.310	ug/Kg
1,2-Dichloroethane	1.00U	2.00	0.620	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	99.5	71-136		%
4-Bromofluorobenzene (surr)	99.3	55-151		%
Toluene-d8 (surr)	100	85-116		%

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 8/5/2019 3:50:00AM

Prep Batch: VXX34598
Prep Method: SW5035A
Prep Date/Time: 8/4/2019 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [VXX34598]
Blank Spike Lab ID: 1524070
Date Analyzed: 08/05/2019 04:06

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006, 1199584007

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,2,4-Trimethylbenzene	750	746	100	(75-123)
1,2-Dibromoethane	750	724	97	(78-122)
1,2-Dichloroethane	750	671	89	(73-128)
1,3,5-Trimethylbenzene	750	774	103	(73-124)
Benzene	750	765	102	(77-121)
Ethylbenzene	750	749	100	(76-122)
Isopropylbenzene (Cumene)	750	805	107	(68-134)
Methyl-t-butyl ether	1130	1070	95	(73-125)
Naphthalene	750	820	109	(62-129)
n-Butylbenzene	750	678	90	(70-128)
o-Xylene	750	736	98	(77-123)
P & M -Xylene	1500	1440	96	(77-124)
sec-Butylbenzene	750	699	93	(73-126)
tert-Butylbenzene	750	768	102	(73-125)
Toluene	750	683	91	(77-121)
Xylenes (total)	2250	2170	97	(78-124)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	91.8	92	(71-136)
4-Bromofluorobenzene (surr)	750	93.7	94	(55-151)
Toluene-d8 (surr)	750	99.2	99	(85-116)

Batch Information

Analytical Batch: **VMS19273**
Analytical Method: **SW8260C**
Instrument: **VRA Agilent GC/MS 7890B/5977A**
Analyst: **NRO**

Prep Batch: **VXX34598**
Prep Method: **SW5035A**
Prep Date/Time: **08/04/2019 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: 1194207010
MS Sample ID: 1524071 MS
MSD Sample ID: 1524072 MSD

Analysis Date: 08/05/2019 6:09
Analysis Date: 08/05/2019 4:21
Analysis Date: 08/05/2019 4:37
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006, 1199584007

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	18.3U	415	419	101	415	417	100	75-123	0.69	(< 20)
1,3,5-Trimethylbenzene	9.15U	415	432	104	415	428	103	73-124	0.93	(< 20)
Benzene	4.57U	415	420	101	415	427	103	77-121	1.60	(< 20)
Ethylbenzene	9.15U	415	406	98	415	414	100	76-122	1.80	(< 20)
Isopropylbenzene (Cumene)	9.15U	415	444	107	415	452	109	68-134	1.50	(< 20)
Methyl-t-butyl ether	36.5U	622	612	98	622	622	100	73-125	1.70	(< 20)
Naphthalene	41.7	415	539	120	415	540	120	62-129	0.14	(< 20)
n-Butylbenzene	9.15U	415	401	97	415	390	94	70-128	2.80	(< 20)
o-Xylene	6.19J	415	395	94	415	404	96	77-123	2.20	(< 20)
P & M -Xylene	18.3U	830	785	95	830	801	97	77-124	1.90	(< 20)
sec-Butylbenzene	9.15U	415	398	96	415	392	95	73-126	1.20	(< 20)
tert-Butylbenzene	9.15U	415	423	102	415	438	106	73-125	3.60	(< 20)
Toluene	9.15U	415	378	91	415	387	93	77-121	2.30	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		415	400	96	415	403	97	71-136	0.79	
4-Bromofluorobenzene (surr)		692	488	71	692	471	68	55-151	3.70	
Toluene-d8 (surr)		415	412	99	415	423	102	85-116	2.50	

Batch Information

Analytical Batch: VMS19273
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 8/5/2019 4:21:00AM

Prep Batch: VXX34598
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 8/4/2019 6:00:00AM
Prep Initial Wt./Vol.: 98.47g
Prep Extract Vol: 25.00mL

Print Date: 08/15/2019 1:57:33PM

Method Blank

Blank ID: MB for HBN 1797587 [VXX/34599]
Blank Lab ID: 1524091

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584007

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	91.1	71-136		%
4-Bromofluorobenzene (surr)	73.5	55-151		%
Toluene-d8 (surr)	110	85-116		%

Batch Information

Analytical Batch: VMS19274
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 8/5/2019 11:30:00PM

Prep Batch: VXX34599
Prep Method: SW5035A
Prep Date/Time: 8/5/2019 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [VXX34599]
Blank Spike Lab ID: 1524092
Date Analyzed: 08/05/2019 23:46

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584007

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Toluene	750	687	92	(77-121)
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	87.2	87	(71-136)
4-Bromofluorobenzene (surr)	750	89.4	89	(55-151)
Toluene-d8 (surr)	750	104	104	(85-116)

Batch Information

Analytical Batch: **VMS19274**
Analytical Method: **SW8260C**
Instrument: **VRA Agilent GC/MS 7890B/5977A**
Analyst: **NRO**

Prep Batch: **VXX34599**
Prep Method: **SW5035A**
Prep Date/Time: **08/05/2019 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: 1199587004
MS Sample ID: 1524093 MS
MSD Sample ID: 1524094 MSD

QC for Samples: 1199584007

Analysis Date: 08/06/2019 3:35
Analysis Date: 08/06/2019 1:16
Analysis Date: 08/06/2019 1:32
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
Toluene	28.4U	1362	1239	91	1362	1252	92	77-121	0.88	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		1362	1153	85	1362	1183	87	71-136	2.50	
4-Bromofluorobenzene (surr)		2270	1632	72	2270	1620	72	55-151	0.92	
Toluene-d8 (surr)		1362	1423	105	1362	1411	103	85-116	1.00	

Batch Information

Analytical Batch: VMS19274
Analytical Method: SW8260C
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: NRO
Analytical Date/Time: 8/6/2019 1:16:01AM

Prep Batch: VXX34599
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 8/5/2019 6:00:00AM
Prep Initial Wt./Vol.: 33.82g
Prep Extract Vol: 25.00mL

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Method Blank

Blank ID: MB for HBN 1797632 [VXX/34606]
Blank Lab ID: 1524286

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199584008, 1199584009, 1199584010, 1199584011, 1199584012

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	76	50-150		%

Batch Information

Analytical Batch: VFC14869
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: NRB
Analytical Date/Time: 8/7/2019 12:51:00PM

Prep Batch: VXX34606
Prep Method: SW5030B
Prep Date/Time: 8/7/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [VXX34606]
Blank Spike Lab ID: 1524287
Date Analyzed: 08/07/2019 13:26

Spike Duplicate ID: LCSD for HBN 1199584 [VXX34606]
Spike Duplicate Lab ID: 1524288
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199584008, 1199584009, 1199584010, 1199584011, 1199584012

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.06	106	1.00	0.995	100	(60-120)	6.00	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	88.6	89	0.0500	89.8	90	(50-150)	1.40	

Batch Information

Analytical Batch: **VFC14869**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **NRB**

Prep Batch: **VXX34606**
Prep Method: **SW5030B**
Prep Date/Time: **08/07/2019 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1797313 [XXX/41912]
Blank Lab ID: 1522897

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584001, 1199584002

Results by **8270D SIM (PAH)**

Parameter	Results	LOQ/CL	DL	Units
Acenaphthene	12.5U	25.0	6.25	ug/Kg
Acenaphthylene	12.5U	25.0	6.25	ug/Kg
Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/Kg
Chrysene	12.5U	25.0	6.25	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/Kg
Fluoranthene	12.5U	25.0	6.25	ug/Kg
Fluorene	12.5U	25.0	6.25	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/Kg
Naphthalene	10.0U	20.0	5.00	ug/Kg
Phenanthrene	12.5U	25.0	6.25	ug/Kg
Pyrene	12.5U	25.0	6.25	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	83.1	58-103		%
Fluoranthene-d10 (surr)	82.9	54-113		%

Batch Information

Analytical Batch: XMS11608
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 8/6/2019 11:35:00AM

Prep Batch: XXX41912
Prep Method: SW3550C
Prep Date/Time: 8/2/2019 9:43:27AM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [XXX41912]
Blank Spike Lab ID: 1522898
Date Analyzed: 08/06/2019 11:55

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584001, 1199584002

Results by **8270D SIM (PAH)**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	111	96.4	87	(44-111)
Acenaphthylene	111	105	95	(39-116)
Anthracene	111	99.4	90	(50-114)
Benzo(a)Anthracene	111	101	91	(54-122)
Benzo[a]pyrene	111	101	91	(50-125)
Benzo[b]Fluoranthene	111	102	92	(53-128)
Benzo[g,h,i]perylene	111	106	96	(49-127)
Benzo[k]fluoranthene	111	102	92	(56-123)
Chrysene	111	104	93	(57-118)
Dibenzo[a,h]anthracene	111	106	96	(50-129)
Fluoranthene	111	108	97	(55-119)
Fluorene	111	101	91	(47-114)
Indeno[1,2,3-c,d] pyrene	111	112	101	(49-130)
Naphthalene	111	101	91	(38-111)
Phenanthrene	111	98.0	88	(49-113)
Pyrene	111	112	101	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111	80.8	81	(58-103)
Fluoranthene-d10 (surr)	111	83.5	84	(54-113)

Batch Information

Analytical Batch: **XMS11608**
Analytical Method: **8270D SIM (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **DSD**

Prep Batch: **XXX41912**
Prep Method: **SW3550C**
Prep Date/Time: **08/02/2019 09:43**
Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1194207013
MS Sample ID: 1522899 MS
MSD Sample ID: 1522900 MSD

Analysis Date: 08/06/2019 12:16
Analysis Date: 08/06/2019 12:36
Analysis Date: 08/06/2019 12:57
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584001, 1199584002

Results by **8270D SIM (PAH)**

		Matrix Spike (ug/Kg)				Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
Acenaphthene	65.5U	117	108J	92		117	107J	91		44-111	1.30	(< 20)
Acenaphthylene	65.5U	117	119J	102		117	116J	99		39-116	2.40	(< 20)
Anthracene	65.5U	117	140	119	*	117	132	113		50-114	5.40	(< 20)
Benzo(a)Anthracene	77.8J	117	211	114		117	211	114		54-122	0.01	(< 20)
Benzo[a]pyrene	114J	117	260	125		117	262	127	*	50-125	0.95	(< 20)
Benzo[b]Fluoranthene	191	117	352	138	*	117	353	139	*	53-128	0.24	(< 20)
Benzo[g,h,i]perylene	214	117	389	150	*	117	391	151	*	49-127	0.49	(< 20)
Benzo[k]fluoranthene	64.6J	117	204	119		117	206	121		56-123	0.86	(< 20)
Chrysene	105J	117	247	122	*	117	248	123	*	57-118	0.49	(< 20)
Dibenzo[a,h]anthracene	65.5U	117	149	127		117	148	127		50-129	0.53	(< 20)
Fluoranthene	107J	117	253	125	*	117	251	123	*	55-119	1.00	(< 20)
Fluorene	65.5U	117	133	114		117	129J	110		47-114	3.80	(< 20)
Indeno[1,2,3-c,d] pyrene	136	117	296	137	*	117	299	139	*	49-130	0.77	(< 20)
Naphthalene	52.5U	117	132	113	*	117	124	106		38-111	6.20	(< 20)
Phenanthrene	91.8J	117	228	116	*	117	219	109		49-113	4.00	(< 20)
Pyrene	89.4J	117	238	127	*	117	232	123	*	55-117	2.00	(< 20)
Surrogates												
2-Methylnaphthalene-d10 (surr)		117	101	86		117	95.1	81		58-103	5.50	
Fluoranthene-d10 (surr)		117	103	88		117	100	86		54-113	2.80	

Batch Information

Analytical Batch: XMS11608
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 8/6/2019 12:36:00PM

Prep Batch: XXX41912
Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
Prep Date/Time: 8/2/2019 9:43:27AM
Prep Initial Wt./Vol.: 22.76g
Prep Extract Vol: 5.00mL

Print Date: 08/15/2019 1:57:43PM

Method Blank

Blank ID: MB for HBN 1797342 [XXX/41916]
Blank Lab ID: 1523023

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584003, 1199584004, 1199584005, 1199584006

Results by **8270D SIM (PAH)**

Parameter	Results	LOQ/CL	DL	Units
Acenaphthene	12.5U	25.0	6.25	ug/Kg
Acenaphthylene	12.5U	25.0	6.25	ug/Kg
Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/Kg
Chrysene	12.5U	25.0	6.25	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/Kg
Fluoranthene	12.5U	25.0	6.25	ug/Kg
Fluorene	12.5U	25.0	6.25	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/Kg
Naphthalene	10.0U	20.0	5.00	ug/Kg
Phenanthrene	12.5U	25.0	6.25	ug/Kg
Pyrene	12.5U	25.0	6.25	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	84.9	58-103		%
Fluoranthene-d10 (surr)	82.8	54-113		%

Batch Information

Analytical Batch: XMS11606
Analytical Method: 8270D SIM (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 8/6/2019 12:04:00PM

Prep Batch: XXX41916
Prep Method: SW3550C
Prep Date/Time: 8/2/2019 3:51:29PM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [XXX41916]
Blank Spike Lab ID: 1523024
Date Analyzed: 08/06/2019 12:24

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584003, 1199584004, 1199584005, 1199584006

Results by **8270D SIM (PAH)**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	111	97.5	88	(44-111)
Acenaphthylene	111	101	91	(39-116)
Anthracene	111	102	92	(50-114)
Benzo(a)Anthracene	111	98.9	89	(54-122)
Benzo[a]pyrene	111	97.7	88	(50-125)
Benzo[b]Fluoranthene	111	103	92	(53-128)
Benzo[g,h,i]perylene	111	98.4	89	(49-127)
Benzo[k]fluoranthene	111	98.3	89	(56-123)
Chrysene	111	100	90	(57-118)
Dibenzo[a,h]anthracene	111	101	91	(50-129)
Fluoranthene	111	97.9	88	(55-119)
Fluorene	111	100	90	(47-114)
Indeno[1,2,3-c,d] pyrene	111	106	95	(49-130)
Naphthalene	111	97.6	88	(38-111)
Phenanthrene	111	98.7	89	(49-113)
Pyrene	111	102	92	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111	79.9	80	(58-103)
Fluoranthene-d10 (surr)	111	77.5	78	(54-113)

Batch Information

Analytical Batch: **XMS11606**
Analytical Method: **8270D SIM (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **DSD**

Prep Batch: **XXX41916**
Prep Method: **SW3550C**
Prep Date/Time: **08/02/2019 15:51**
Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1199584005
MS Sample ID: 1523025 MS
MSD Sample ID: 1523026 MSD

Analysis Date: 08/06/2019 13:26
Analysis Date: 08/06/2019 13:46
Analysis Date: 08/06/2019 14:07
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584003, 1199584004, 1199584005, 1199584006

Results by **8270D SIM (PAH)**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Acenaphthene	13.4U	120	103	86	121	106	88	44-111	3.20	(< 20)
Acenaphthylene	13.4U	120	106	89	121	111	92	39-116	3.80	(< 20)
Anthracene	13.4U	120	102	85	121	106	88	50-114	3.90	(< 20)
Benzo(a)Anthracene	13.4U	120	93.4	78	121	94.5	78	54-122	1.20	(< 20)
Benzo[a]pyrene	13.4U	120	87.5	73	121	86.8	72	50-125	0.67	(< 20)
Benzo[b]Fluoranthene	13.4U	120	93.4	78	121	92.5	77	53-128	0.97	(< 20)
Benzo[g,h,i]perylene	13.4U	120	78.2	65	121	75.4	63	49-127	3.50	(< 20)
Benzo[k]fluoranthene	13.4U	120	90.3	76	121	89.9	75	56-123	0.50	(< 20)
Chrysene	13.4U	120	94.0	79	121	95.9	80	57-118	1.90	(< 20)
Dibenzo[a,h]anthracene	13.4U	120	81.3	68	121	79.6	66	50-129	2.10	(< 20)
Fluoranthene	13.4U	120	97.8	82	121	98.6	82	55-119	0.69	(< 20)
Fluorene	13.4U	120	102	86	121	107	89	47-114	4.60	(< 20)
Indeno[1,2,3-c,d] pyrene	13.4U	120	82.8	69	121	81.1	67	49-130	2.10	(< 20)
Naphthalene	10.8U	120	105	88	121	111	92	38-111	5.10	(< 20)
Phenanthrene	13.4U	120	100	84	121	105	87	49-113	4.60	(< 20)
Pyrene	13.4U	120	100	84	121	102	85	55-117	1.80	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		120	90.5	76	121	95.5	79	58-103	5.40	
Fluoranthene-d10 (surr)		120	87.6	73	121	89.7	74	54-113	2.40	

Batch Information

Analytical Batch: XMS11606
Analytical Method: 8270D SIM (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 8/6/2019 1:46:00PM

Prep Batch: XXX41916
Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
Prep Date/Time: 8/2/2019 3:51:29PM
Prep Initial Wt./Vol.: 22.72g
Prep Extract Vol: 5.00mL

Print Date: 08/15/2019 1:57:47PM

Method Blank

Blank ID: MB for HBN 1797358 [XXX/41921]
Blank Lab ID: 1523082

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199584008, 1199584009, 1199584010, 1199584011

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	75.3	47-106		%
Fluoranthene-d10 (surr)	82.5	24-116		%

Batch Information

Analytical Batch: XMS11599
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 8/5/2019 11:01:00AM

Prep Batch: XXX41921
Prep Method: SW3520C
Prep Date/Time: 8/3/2019 8:49:51AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [XXX41921]
Blank Spike Lab ID: 1523083
Date Analyzed: 08/05/2019 11:21

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199584008, 1199584009, 1199584010, 1199584011

Results by **8270D SIM LV (PAH)**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	2	1.64	82	(48-114)
Acenaphthylene	2	1.69	85	(35-121)
Anthracene	2	1.71	86	(53-119)
Benzo(a)Anthracene	2	1.64	82	(59-120)
Benzo[a]pyrene	2	1.55	77	(53-120)
Benzo[b]Fluoranthene	2	1.68	84	(53-126)
Benzo[g,h,i]perylene	2	1.45	73	(44-128)
Benzo[k]fluoranthene	2	1.59	79	(54-125)
Chrysene	2	1.66	83	(57-120)
Dibenzo[a,h]anthracene	2	1.37	69	(44-131)
Fluoranthene	2	1.65	83	(58-120)
Fluorene	2	1.69	84	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.60	80	(48-130)
Naphthalene	2	1.71	86	(43-114)
Phenanthrene	2	1.65	82	(53-115)
Pyrene	2	1.72	86	(53-121)
Surrogates				
2-Methylnaphthalene-d10 (surr)	2	75.2	75	(47-106)
Fluoranthene-d10 (surr)	2	78.3	78	(24-116)

Batch Information

Analytical Batch: **XMS11599**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **DSD**

Prep Batch: **XXX41921**
Prep Method: **SW3520C**
Prep Date/Time: **08/03/2019 08:49**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1199588002
MS Sample ID: 1523084 MS
MSD Sample ID: 1523085 MSD

Analysis Date: 08/05/2019 12:02
Analysis Date: 08/05/2019 12:23
Analysis Date: 08/05/2019 12:43
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199584008, 1199584009, 1199584010, 1199584011

Results by **8270D SIM LV (PAH)**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Acenaphthene	0.0240U	1.89	1.54	82	1.89	1.54	82	48-114	0.03	(< 20)
Acenaphthylene	0.0240U	1.89	1.6	85	1.89	1.59	84	35-121	0.96	(< 20)
Anthracene	0.0240U	1.89	1.58	84	1.89	1.56	83	53-119	1.20	(< 20)
Benzo(a)Anthracene	0.0240U	1.89	1.51	80	1.89	1.45	77	59-120	4.00	(< 20)
Benzo[a]pyrene	0.00960U	1.89	1.46	77	1.89	1.39	74	53-120	4.90	(< 20)
Benzo[b]Fluoranthene	0.0240U	1.89	1.54	81	1.89	1.48	78	53-126	4.10	(< 20)
Benzo[g,h,i]perylene	0.0240U	1.89	1.38	73	1.89	1.31	69	44-128	5.50	(< 20)
Benzo[k]fluoranthene	0.0240U	1.89	1.48	78	1.89	1.42	75	54-125	4.30	(< 20)
Chrysene	0.0240U	1.89	1.54	82	1.89	1.47	78	57-120	4.80	(< 20)
Dibenzo[a,h]anthracene	0.00960U	1.89	1.27	67	1.89	1.23	65	44-131	3.80	(< 20)
Fluoranthene	0.0240U	1.89	1.54	82	1.89	1.50	79	58-120	3.10	(< 20)
Fluorene	0.0240U	1.89	1.58	84	1.89	1.56	83	50-118	0.96	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0240U	1.89	1.49	79	1.89	1.41	75	48-130	5.40	(< 20)
Naphthalene	0.0481U	1.89	1.6	85	1.89	1.57	83	43-114	2.10	(< 20)
Phenanthrene	0.0240U	1.89	1.53	81	1.89	1.50	80	53-115	2.00	(< 20)
Pyrene	0.0240U	1.89	1.6	85	1.89	1.54	82	53-121	3.80	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.89	1.42	75	1.89	1.41	75	47-106	0.79	
Fluoranthene-d10 (surr)		1.89	1.46	78	1.89	1.44	76	24-116	1.90	

Batch Information

Analytical Batch: XMS11599
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 8/5/2019 12:23:00PM

Prep Batch: XXX41921
Prep Method: 3520 Liq/Liq Ext for 8270 PAH SIM LV
Prep Date/Time: 8/3/2019 8:49:51AM
Prep Initial Wt./Vol.: 265.00mL
Prep Extract Vol: 1.00mL

Print Date: 08/15/2019 1:57:50PM

Method Blank

Blank ID: MB for HBN 1797383 [XXX/41930]
Blank Lab ID: 1523166

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	86.8	60-120		%

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: VDL
Analytical Date/Time: 8/6/2019 8:39:00AM

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 8/5/2019 8:59:00AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [XXX41930]
Blank Spike Lab ID: 1523167
Date Analyzed: 08/06/2019 08:48

Spike Duplicate ID: LCSD for HBN 1199584 [XXX41930]
Spike Duplicate Lab ID: 1523168
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006

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	828	99	833	838	101	(75-125)	1.20	(< 20)
Surrogates									
5a Androstane (surr)	16.7	89.2	89	16.7	92.2	92	(60-120)	3.40	

Batch Information

Analytical Batch: **XFC15214**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **VDL**

Prep Batch: **XXX41930**
Prep Method: **SW3550C**
Prep Date/Time: **08/05/2019 08:59**
Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1797383 [XXX/41930]
Blank Lab ID: 1523166

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	99	60-120		%

Batch Information

Analytical Batch: XFC15214
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: VDL
Analytical Date/Time: 8/6/2019 8:39:00AM

Prep Batch: XXX41930
Prep Method: SW3550C
Prep Date/Time: 8/5/2019 8:59:00AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [XXX41930]
Blank Spike Lab ID: 1523167
Date Analyzed: 08/06/2019 08:48

Spike Duplicate ID: LCSD for HBN 1199584 [XXX41930]
Spike Duplicate Lab ID: 1523168
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199584001, 1199584002, 1199584003, 1199584004, 1199584005, 1199584006

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	862	103	833	871	105	(60-120)	1.10	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	16.7	95.1	95	16.7	99.5	100	(60-120)	4.50	

Batch Information

Analytical Batch: **XFC15214**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **VDL**

Prep Batch: **XXX41930**
Prep Method: **SW3550C**
Prep Date/Time: **08/05/2019 08:59**
Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1797748 [XXX/41984]
Blank Lab ID: 1524768

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199584008, 1199584009, 1199584010, 1199584011

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	71.6	60-120		%

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: VDL
Analytical Date/Time: 8/14/2019 1:38:00PM

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 8/12/2019 1:31:24PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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200 West Potter Drive Anchorage, AK 95518
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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [XXX41984]
Blank Spike Lab ID: 1524769
Date Analyzed: 08/14/2019 13:48

Spike Duplicate ID: LCSD for HBN 1199584 [XXX41984]
Spike Duplicate Lab ID: 1524770
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199584008, 1199584009, 1199584010, 1199584011

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	17.5	88	20	19.9	99	(75-125)	12.60	(< 20)
Surrogates									
5a Androstane (surr)	0.4	84.5	85	0.4	94.9	95	(60-120)	11.50	

Batch Information

Analytical Batch: **XFC15239**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **VDL**

Prep Batch: **XXX41984**
Prep Method: **SW3520C**
Prep Date/Time: **08/12/2019 13:31**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1797748 [XXX/41984]
Blank Lab ID: 1524768

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1199584008, 1199584009, 1199584010, 1199584011

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	86.5	60-120		%

Batch Information

Analytical Batch: XFC15239
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: VDL
Analytical Date/Time: 8/14/2019 1:38:00PM

Prep Batch: XXX41984
Prep Method: SW3520C
Prep Date/Time: 8/12/2019 1:31:24PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1199584 [XXX41984]
Blank Spike Lab ID: 1524769
Date Analyzed: 08/14/2019 13:48

Spike Duplicate ID: LCSD for HBN 1199584 [XXX41984]
Spike Duplicate Lab ID: 1524770
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1199584008, 1199584009, 1199584010, 1199584011

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	15.9	79	20	17.8	89	(60-120)	11.60	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	90.2	90	0.4	104	104	(60-120)	14.30	

Batch Information

Analytical Batch: **XFC15239**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **VDL**

Prep Batch: **XXX41984**
Prep Method: **SW3520C**
Prep Date/Time: **08/12/2019 13:31**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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SGS

SGS North Ame a li
CHAIN OF CUSTODY RE

1199584

Locations Nationwide
Alaska | Maryland
New Jersey | New York
North Carolina | Indiana
West Virgina | Kentucky
www.us.sgs.com

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

Section 1

CLIENT: SLR/Alyeska
CONTACT: Christophe Venot | PHONE #: 907-264-6960
PROJECT NAME: 105.01288.19038 RGV-35A | Project/ PWSID/ PERMIT#:
REPORTS TO: Christophe Venot | E-MAIL: cvenot@slrconsulting.com
INVOICE TO: SLR/Alyeska | QUOTE #: | P.O. #:

Section 2

Section 3 — Preservative

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Pres: Type: Comp Grab MI (Multi-incremental)	AK101 GRO MeOH+B	AK102/103 DRO/RRO FB	SW8260C PVOC None	8270D SIM PAH None	AK101 GRO HCl	AK102/103 DRO/RRO LV HCl	SW8260C PVOC HCl	8270D SIM PAH LV None			REMARKS/ LOC ID
(1) AB	MW192-3.5	7/29/19	12:08	S	2	G	X	X	X	X							
(2) AB	MW191-1		1425		2		X	X	X	X							
(3) AB	MW191-3		1500		2		X	X	X	X							
(4) AB	MW191-5		1506		2		X	X	X	X							
(5) AB	MW199-1		1445		2		X	X	X	X							
(6) AB	MW193-3.75		1616		2		X	X	X	X							
(7) A	TB-1		1200		2												

Section 5

	Date	Time	
Relinquished By: (1) Christophe Venot	7/31/19	09:53	Received By:
Relinquished By: (2)	7-31-19	1406	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	8-1-19	09:30	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements: LEVEL 2

Requested Turnaround Time and/or Special Instructions:
STANDARD Prof. No: 162313

Temp Blank °C: 0.1 or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN (ABSENT)
(See attached Sample Receipt Form)

ANC: TF, IB
2; 1.8° DSS 1; 3.4° DS7
TEMP 1.8°C DSS

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

SGS

SGS North Ame[illegible] Inc.
CHAIN OF CUSTODY RECORD

1199584

Locations Nationwide

[illegible]laska	Marylanc
[illegible]lew Jersey	New York
[illegible]lorth Carolina	Indiana
[illegible]Vest Virginia	Kentucky

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: SLR/Alyeska

CONTACT: Christophe Venot | PHONE #: 907-264-6960

PROJECT NAME: 105.01288.19038 PGU-35.4 | Project/ PWSID/ PERMIT#:

REPORTS TO: Christophe Venot | E-MAIL: cvenot@slrconsulting.com

INVOICE TO: SLR/Alyeska | QUOTE #: | P.O. #:

Section 3 — Preservative

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Pres: Type: Comp Grab MI (Multi-incremental)	MeOH+B	FB	None	MeOH+B	FB	None	HCl	HCl	HCl	None			REMARKS/ LOC ID
							AK101 GRO	AK102/103 DRO/RRO	SW8260C PVOC	8270D SIM PAH	AK101 GRO	AK102/103 DRO/RRO LV	SW8260C PVOC	8270D SIM PAH LV			
(8) A-J	MW-191	7/30/19	0850	W	10	6	X	X	X	X									
(9) A-J	MW-193	7/30/19	0930	W	10	6	X	X	X	X									
(10) A-J	MW-192	7/30/19	1025	W	10	6	X	X	X	X									
(11) A-J	MW-199	7/30/19	1100	W	10	6	X	X	X	X									* one DRO has 2X HCL
(12) A-F	TB-2	7/30/19	0800	W	6	—	X	X											

Section 5

	Date	Time	
Relinquished By: (1) Christophe Venot	7/30/19	09:53	Received By:
Relinquished By: (2)	7-31-19	1400	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	8.1.19	09:30	Received For Laboratory By: MB

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements: LEVEL 2

Requested Turnaround Time and/or Special Instructions:
* one DRO Jar has 2x HCL
STANDARD TURN-AROUND

Temp Blank °C: 0.2
or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN (ABSENT)
(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

ANC: 1F, 1B 2:17.3° DSS 1:3.4° DS7

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

Temp: 1.8°C DSS

e-Sample Receipt Form

SGS Workorder #: 1199584

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1 front 1 back
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 @ 1.8 °C Therm. ID: D55
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.	Yes	Cooler ID: 2 @ 3.4 °C Therm. ID: D57
		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)?	Yes	
**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		
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	Samples 10D and 11D are preserved with HCl.
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)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	Yes	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

e-Sample Receipt Form FBK

SGS Workorder #:	1199584	1199584

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	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 @ 0.1 °C Therm. ID: D23
	Yes	Cooler ID: 2 @ 0.2 °C Therm. ID: D23
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:
*If >6°C, were samples collected <8 hours ago?		
If <0°C, were sample containers ice free?		
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.
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	N/C	
**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		
Were samples in good condition (no leaks/cracks/breakage)?	Yes	
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
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/C	
Were all soil VOAs field extracted with MeOH+BFB?	N/C	
For Rush/Short Hold Time, was RUSH/Short HT email sent?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

SGS Profile #	162313	162313

Sample Containers and Preservatives

Container Id	Preservative	Container Condition
1199584001-A	No Preservative Required	OK
1199584001-B	Methanol field pres. 4 C	OK
1199584002-A	No Preservative Required	OK
1199584002-B	Methanol field pres. 4 C	OK
1199584003-A	No Preservative Required	OK
1199584003-B	Methanol field pres. 4 C	OK
1199584004-A	No Preservative Required	OK
1199584004-B	Methanol field pres. 4 C	OK
1199584005-A	No Preservative Required	OK
1199584005-B	Methanol field pres. 4 C	OK
1199584006-A	No Preservative Required	OK
1199584006-B	Methanol field pres. 4 C	OK
1199584007-A	Methanol field pres. 4 C	OK
1199584008-A	HCL to pH < 2	OK
1199584008-B	HCL to pH < 2	OK
1199584008-C	No Preservative Required	OK
1199584008-D	No Preservative Required	OK
1199584008-E	HCL to pH < 2	OK
1199584008-F	HCL to pH < 2	OK
1199584008-G	HCL to pH < 2	OK
1199584008-H	HCL to pH < 2	OK
1199584008-I	HCL to pH < 2	OK
1199584008-J	HCL to pH < 2	OK
1199584009-A	HCL to pH < 2	OK
1199584009-B	HCL to pH < 2	OK
1199584009-C	No Preservative Required	OK
1199584009-D	No Preservative Required	OK
1199584009-E	HCL to pH < 2	OK
1199584009-F	HCL to pH < 2	OK
1199584009-G	HCL to pH < 2	OK
1199584009-H	HCL to pH < 2	OK
1199584009-I	HCL to pH < 2	OK
1199584009-J	HCL to pH < 2	OK
1199584010-A	HCL to pH < 2	OK
1199584010-B	HCL to pH < 2	OK
1199584010-C	No Preservative Required	OK
1199584010-D	HCL to pH < 2	OK
1199584010-E	HCL to pH < 2	OK
1199584010-F	HCL to pH < 2	OK
1199584010-G	HCL to pH < 2	OK
1199584010-H	HCL to pH < 2	OK
1199584010-I	HCL to pH < 2	OK
1199584010-J	HCL to pH < 2	OK
1199584011-A	HCL to pH < 2	OK
1199584011-B	HCL to pH < 2	OK
1199584011-C	No Preservative Required	OK
1199584011-D	HCL to pH < 2	OK
1199584011-E	HCL to pH < 2	OK
1199584011-F	HCL to pH < 2	OK
1199584011-G	HCL to pH < 2	OK
1199584011-H	HCL to pH < 2	OK
1199584011-I	HCL to pH < 2	OK
1199584011-J	HCL to pH < 2	OK
1199584012-A	HCL to pH < 2	OK
1199584012-B	HCL to pH < 2	OK
1199584012-C	HCL to pH < 2	OK
1199584012-D	HCL to pH < 2	OK
1199584012-E	HCL to pH < 2	OK
1199584012-F	HCL to pH < 2	OK

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

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.