SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

November 13, 2019

Crowley Fuels LLC
201 Arctic Slope Avenue
Anchorage, Alaska 99518

Attn: Mr. Prathap Kodial

RE: OCTOBER 2019 GROUNDWATER MONITORING, 459 WEST BLUFF DRIVE, ANCHORAGE, ALASKA; *ADEC FILE NO. 2100.38.321*

This report presents the results of Shannon & Wilson's October 2019 groundwater monitoring activities conducted at the Crowley Fuels LLC (Crowley) facility located at 459 West Bluff Drive, Anchorage, Alaska. The 2019 groundwater monitoring activities were conducted by Shannon & Wilson, Inc. on October 21, 2019. Authorization to proceed with the project was provided by Crowley in the form of purchase order number CFL000046 on July 12, 2019.

SITE AND PROJECT DESCRIPTION

Site Description

The Crowley facility is a fuel distribution terminal located in the Port of Anchorage (POA), as shown on Figure 1. Elevation varies at the site by approximately 20 feet, generally sloping downward towards the northern portion of the site. The site contains 27 bulk fuel above-ground storage tanks (ASTs) used to store jet fuel, pipelines, a rail loading rack, and office/warehouse/shop buildings. A pipeline linked to the POA valve yard, located 2,000 feet to the north, transfers petroleum products between the tank farm and oceangoing tankers/barges. This pipeline is the primary method of fuel delivery to Joint Base Elmendorf-Richardson. A lined detention pond and runoff basin are located in the northeastern portion of the site. A site plan is included as Figure 2.

Background

A site investigation conducted in 1987 identified impacted soil and groundwater at the site. Twenty-one monitoring wells (MW-1 through MW-21) were installed in 1989 at the site. The monitoring wells were sampled once in 1989, and annually from 1996 through 2009. The results indicate concentrations of gasoline range organics (GRO), diesel range organics (DRO), benzene, and ethylbenzene exceed Alaska Department of Environmental Conservation (ADEC) groundwater cleanup levels.

In a letter dated October 2, 2017, the ADEC approved a groundwater monitoring program comprising biennial sample collection from Monitoring Wells MW-6B, MW13A, MW-14, and

MW-19R. The remaining wells were decommissioned during the liner installation activities in 2011. Monitoring Well MW-1 was destroyed in 2018 during construction activities for a truck loading rack.

Purpose and Objectives

The purpose of this project is to monitor trends in dissolved phase hydrocarbon concentration gradients and distribution across the site. The project objective consisted of sampling four groundwater monitoring wells: Wells MW-6B, MW-13A, Well MW-14, and MW-19R. These wells have historically contained concentrations of GRO, DRO, residual range organics (RRO), benzene and/or ethylbenzene above the ADEC Table C cleanup levels.

FIELD ACTIVITIES

The field activities were conducted in accordance with our September 30, 2019 email work plan, approved by Mr. Grant Lidren of the ADEC in an email dated September 30, 2019.

Field work was conducted by an ADEC-qualified environmental professional, as defined by 18 Alaska Administrative Code (AAC) 75.333. Analytical testing of the project samples was conducted by SGS North America Inc. (SGS) of Anchorage, Alaska. NRC Alaska, Inc. (NRC) of Anchorage, Alaska disposed of the investigative-derived waste (IDW). SGS and NRC were subcontracted to Shannon & Wilson. Copies of the field notes are included as Attachment 1.

Groundwater Sampling

Groundwater samples were collected from Wells MW-6B, MW-13A, Well MW-14, and MW-19R on October 21, 2019. The wells were purged and sampled using low-flow techniques to reduce the effects of stagnant well casing water on chemical concentrations and to obtain a groundwater sample that is representative of the surrounding water-bearing formation. The wells were purged and sampled with a submersible pump and disposable tubing. The pump inlet was set within 2 feet of the surface of the groundwater column. The pump level was adjusted as necessary to maintain pump rate of about 0.1 liter per minute (L/min) with a goal of limiting the sustained water drawdown to a maximum drawdown of 0.2 feet (approximately two inches). During the purging process, field personnel monitored water quality parameters (pH, temperature, turbidity, and conductivity), purge volume, and drawdown which were recorded at 3-minute intervals.

Stabilization criterion is three successive readings of pH within 0.1 unit, temperature within 3 percent (minimum 0.2 degree Celsius), conductivity within 3 percent, and turbidity within 10 percent or three consecutive readings of less than 10 nephelometric turbidity units (NTUs).

Water quality parameters stabilized and at least one well volume was removed prior to analytical sample collection in each well. The final water quality parameters are listed on Table 1.

For quality control purposes, one field duplicate sample, designated Sample MW-23, was collected from Well MW-13A. Analytical samples were collected by transferring water directly from the pump tubing into the laboratory supplied containers. The sample jars were filled in decreasing order of volatility.

Groundwater Flow Direction

The October 2019 depth to water measurements and client-provided well survey data were used to interpret the groundwater flow direction. Groundwater elevations ranged from 32.72 feet mean sea level (MSL) in Well MW-13A to 50.69 feet MSL in Well MW-6B. Because of the well casing repair on Well MW-14 that took place in 2012, the elevation datum for that well is not included in the groundwater flow calculations. The groundwater data indicate an overall flow direction to the west. The groundwater elevations are within historical range, and the overall flow direction is consistent with historical data. Groundwater flow direction at the site is likely affected by multiple factors, including tidal influence, precipitation, and topography. Tidal effects appear to be the governing factor within 150 to 200 feet of Cook Inlet. These apparent tidal influences in the western portions of the property are likely contributing to fluctuations in flow direction and gradient in that area.

LABORATORY ANALYSES

The groundwater samples were submitted to SGS for analytical testing, using chain-of-custody procedures. The laboratory report and completed ADEC Laboratory Data Review Checklist (LDRC) are provided in Attachment 2.

Five groundwater samples, including one field duplicate, were submitted to SGS for analytical testing. The groundwater samples were analyzed for GRO by Alaska Method (AK) 101, DRO by AK 102, RRO by AK 103, and volatile organic compounds (VOCs) by EPA 8260C. The duplicate sample set MW-13A/MW-23 was also analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D selective ion method (SIM). One trip blank accompanied the groundwater samples and was analyzed for GRO and VOCs. The analytical sample results and cleanup levels are listed in Table 2. Summary of historical groundwater data is included in Table 3. Graphs of select constituents are included as Figure 3.

DISCUSSION OF ANALYTICAL RESULTS

The analytical groundwater results were compared to ADEC cleanup levels presented in the October 2018, 18 AAC 75 regulations. The applicable groundwater cleanup levels are established in Table C of 18 AAC 75.345.

The following parameters exceed the ADEC Table C cleanup levels in one or more wells sampled in October 2019:

- GRO concentrations in Wells MW-13A (duplicate sample only) and MW-19R;
- DRO concentrations in Wells MW-6B, MW-13A (primary and duplicate samples), and MW-19R;
- RRO concentration in Well MW-13A (primary sample only);
- Benzene concentrations in Well MW-6B and MW-13A (primary and duplicate samples);
- Ethylbenzene concentrations in MW-6B, MW-13A (primary and duplicate samples), and MW-14;
- Total xylene concentration in Well MW-13A (primary and duplicate samples);
- 1,2,4-trimethylbenzene and naphthalene concentrations in each well; and,
- 1,3,5-trimethylbenzene concentrations in Well MW-6B and MW-19R.

By qualitative examination of the graphs on Figure 3, there appears to be a decreasing trend in downgradient Wells MW-13A and MW-19R of DRO and benzene. The GRO and RRO concentrations are within the historical ranges reported for each well.

QUALITY ASSURANCE SUMMARY

SGS follows on-going quality assurance/quality control (QA/QC) procedures to evaluate conformance to applicable ADEC data quality objectives (DQO). Internal laboratory controls to assess data quality for this project include surrogates, method blanks, matrix spikes/matrix spike duplicates (MS/MSD), and laboratory control sample/laboratory control sample duplicates (LCS/LCSD) to measure precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a report specific note identifying the problem in the Case Narrative section of their Laboratory Analysis Report (See Attachment 2).

External quality controls included field records, one duplicate water sample, and a water trip blank. The relative percent difference (RPD) between the project sample and associated duplicate results are a measure of precision affected by matrix heterogeneity, sampling technique, and laboratory analyses. A duplicate set, MW-13A/MW-23 was collected to assess precision of the sampling and analysis processes using the calculated RPD. The ADEC

recommends an RPD of less than 30 percent for field duplicate water analysis. The RPDs for each of the detected parameters is less than 30 percent except for 2-methylnaphthalene, naphthalene, and phenanthrene. Because the duplicate concentrations are above (naphthalene) and below (2-methylnaphthalene and phenanthrene) ADEC Table C cleanup levels, it is our opinion the RPD non-conformances do not impact data usability for the objectives of this project. RPDs for several analytes could not be calculated due to non-detect results for the primary and/or duplicate samples. The affected data are "E-flagged" in Tables 2 and 4.

One water trip blank (Sample TB) accompanied the sample jars from the laboratory to the site during sampling activities and back again to SGS. No detections were reported in the trip blank, suggesting the project samples were not cross-contaminated during sample collection or transport. No detections were reported in the method blanks indicating the project samples were not impacted by laboratory contaminants.

Shannon & Wilson conducted a limited data assessment to review the laboratory's compliance with precision, accuracy, sensitivity, and completeness to the data quality objectives. Shannon & Wilson reviewed the SGS data deliverables and completed the ADEC's LDRC, which is included in Attachment 2. No non-conformances that would adversely affect the quality or usability of the data were noted.

INVESTIGATION DERIVED WASTE

IDW from this project consisted of purge water. The purge water from the onsite wells were stored in one, labeled 55-gallon drum. Shannon & Wilson completed an *ADEC Contaminated Soil Transport, Treatment, and Disposal Approval Form for Contaminated Media* prior to transporting the drum to NRC on November 6, 2019. Mr. Lidren of the ADEC approved of the transport and treatment of the water on November 4, 2019. A copy of the ADEC transport form, waste manifest, and disposal receipt are provided in Attachment 3.

SUMMARY

The October 2019 groundwater monitoring event included analytical groundwater sampling of four wells. The October 2019 sample results and historical data continue to suggest that the plume is stable based on recent trends of most contaminants of concern in downgradient Wells MW-13A and MW-19R.

CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings we have presented within this report are based on the limited sampling and analyses that we conducted. They should not be construed as a definite conclusion regarding

the site's groundwater conditions. Therefore, the sampling and analyses performed can provide you with only our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

Shannon & Wilson has prepared the documents in Attachment 4, "Important Information About Your Geotechnical/Environmental Report", to assist you and others in understanding the use and limitations of our reports. You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study, except with your permission or as required by law.

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

Sincerely,

SHANNON & WILSON, INC.

Prepared by:

Trevor Crosby, C.P.G.
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Encl: Tables 1 through 4, Figures 1 through 3, and Attachments 1 through 4

TABLE 1
GROUNDWATER SAMPLING LOG

	Monitoring Well Number			
	MW-6B	**MW-13A**	**MW-14**	**MW-19R**
Water Level Measurement Data				
Date Water Level Measured	10/21/2019	10/21/2019	10/21/2019	10/21/2019
Time Water Level Measured	10:11	10:42	10:28	10:52
MP Elevation, Feet (MSL)*	76.40	38.01	-	40.19
Depth to Water Below MP, Feet	25.71	5.29	4.28	5.79
Groundwater Elevation, Feet	50.69	32.72	-	34.40
Purging/Sampling Data				
Date Sampled	10/21/2019	10/21/2019	10/21/2019	10/21/2019
Time Sampled	14:48	17:17	13:27	11:50
Depth to Water Below MP, Feet	25.71	5.29	4.28	5.79
Total Depth of Well Below MP, Feet	30.28	10.72	12.59	14.02
Water Column in Well, Feet	4.57	5.43	8.31	8.23
Gallons per Foot	0.65	0.65	0.65	0.16
Gallons in Well	2.97	3.53	5.40	1.32
Total Gallons Pumped	3.0	3.6	5.5	2.2
Purging/Sampling Method	Submersible Pump	Submersible Pump	Submersible Pump	Submersible Pump
Diameter of Well Casing	4-inch	4-inch	4-inch	2-inch
Water Quality Data				
Temperature, ºC	6.33	10.48	6.24	10.04
Specific Conductance, µS/cm	1,188	518	679	801
pH, Standard Units	6.49	6.72	6.98	6.56
Turbidity, NTU	8.29	11.23	5.62	9.34
Remarks	Hydrocarbon odor	Hydrocarbon odor Duplicate sample "MW-23"	Hydrocarbon odor	Hydrocarbon odor

Notes:
Water quality parameters were measured with YSI and Hach Turbidimeter water quality instruments.

*	= Previous reports provided by the client indicate that MP elevations were surveyed in 2007 by Karabelnikoff Surveying.
MSL	= Mean Sea level
MP	= Measuring point
µS/cm	= Microsiemens per centimeter
NTU	= Nephelometric Turbidity Units
mV	= Millivolt
ºC	= Degrees Celsius
-	= Not applicable or not measured

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Parameter Tested	Units	Method*	Cleanup Level**	Sample ID Number^ and Water Elevation in Feet Mean Sea Level (See Table 1, Figure 2, and Attachment 2)					
				Monitoring Wells					Trip Blank
				MW-6B 50.69	MW-13A 32.72	MW-23~ 32.72	MW-14 -	MW-19R 34.40	TB -
Gasoline Range Organics (GRO)	mg/L	AK101	2.2	**0.565 J+**	**1.93**	**2.22 J+**	**0.620 J+**	**4.09 J+**	<0.0500
Diesel Range Organics (DRO)	mg/L	AK102	1.5	**8.27**	**3.24**	**2.44**	**0.951**	**1.34**	-
Residual Range Organics (RRO)	mg/L	AK103	1.1	**0.769**	**1.11**	**0.854**	**0.243 J**	**0.371 J**	-
Volatile Organic Compounds (VOCs)									
Benzene	mg/L	EPA 8260C	0.0046	**0.0113**	**0.00468**	**0.00463**	**0.00139**	**0.00181**	<0.000200
Toluene	mg/L	EPA 8260C	1.1	**0.000640 J**	**0.00803**	**0.00793**	<0.000500	**0.00267**	<0.000500
Ethylbenzene	mg/L	EPA 8260C	0.015	**0.0852**	**0.326**	**0.333**	**0.0275**	**0.0134**	<0.000500
Xylenes	mg/L	EPA 8260C	0.19	**0.0877**	**0.367**	**0.356**	**0.0445**	**0.0369**	<0.00150
Chloroethane	mg/L	EPA 8260C	-	<0.000500	**0.000360 J**	**0.000340 J**	<0.000500	<0.000500	<0.000500
1,1,2,2-Tetrachloroethane	mg/L	EPA 8260C	0.00076	<0.000250	**0.000580**	<0.000250	<0.000250	<0.000250	<0.000250
1,2,4-Trimethylbenzene	mg/L	EPA 8260C	0.056	**0.219**	**0.0669**	**0.0674**	**0.180**	**1.2**	<0.000500
1,3,5-Trimethylbenzene	mg/L	EPA 8260C	0.06	**0.0772**	**0.0232**	**0.0234**	**0.0130**	**0.393**	<0.000500
4-Isopropyltoluene	mg/L	EPA 8260C	-	**0.0184**	**0.00103**	**0.000960 J**	**0.00790**	**0.0270**	<0.000500
Isopropylbenzene (Cumene)	mg/L	EPA 8260C	0.45	**0.0389**	**0.00889**	**0.00863**	**0.0155**	**0.0803**	<0.000500
Naphthalene	mg/L	EPA 8260C	0.0017	**0.230**	**0.104**	**0.0988**	**0.0814**	**0.0840**	<0.000500
n-Butylbenzene	mg/L	EPA 8260C	1	**0.00985**	<0.000500	<0.000500	**0.00527**	**0.0212**	<0.000500
n-Propylbenzene	mg/L	EPA 8260C	0.66	**0.0426**	**0.00993**	**0.0100**	**0.00235**	**0.243**	<0.000500
sec-Butylbenzene	mg/L	EPA 8260C	2	**0.0164**	**0.000700 J**	**0.000700 J**	**0.00612**	**0.0160**	<0.000500
tert-Butylbenzene	mg/L	EPA 8260C	0.69	**0.00112**	**0.000390 J**	**0.000400 J**	**0.000860 J**	**0.00252**	<0.000500
Other VOCs	mg/L	EPA 8260C	Varies	ND	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (PAHs)									
1-Methylnaphthalene	mg/L	EPA 8270D SIM	0.011	-	**0.00742**	**0.00628**	-	-	-
2-Methylnaphthalene	mg/L	EPA 8270D SIM	0.036	-	**0.00951 E**	**0.000782 E**	-	-	-
Acenaphthene	mg/L	EPA 8270D SIM	0.53	-	**0.000224**	**0.000189**	-	-	-
Fluorene	mg/L	EPA 8270D SIM	0.29	-	**0.000409**	**0.000361**	-	-	-
Naphthalene	mg/L	EPA 8270D SIM	0.0017	-	**0.0393 E**	**0.0283 E**	-	-	-
Phenanthrene	mg/L	EPA 8270D SIM	0.17	-	**0.000102 E**	**0.0000754 E**	-	-	-
Other PAHS	mg/L	EPA 8270D SIM	Varies	-	ND	ND	-	-	-

Notes:

*	= See Attachment 2 for compounds tested, methods, and laboratory reporting limits
**	= Groundwater cleanup levels are listed in Table C, 18 AAC 75.345 (October 2018) for the "under 40 inches (precipitation) zone"
^	= Sample ID number preceded by "103513-" on the chain of custody form
mg/L	= Milligrams per Liter
<0.0500	= Analyte not detected; laboratory limit of detection of 0.0500 mg/L
0.769	= Analyte detected
8.27	= Reported concentration exceeds ADEC cleanup level
-	= Not applicable or sample not tested for this analyte
~	= Field duplicate of Sample MW-13A
J	= Estimated concentration less than the limit of quantitation. See the SGS laboratory report for details.
J+	= Analyte result is potentially biased high due to surrogate failure.
E	= Result is an estimate due to a primary/duplicate sample relative percent difference (RPD) failure.
ND	= Not detected

TABLE 3
SUMMARY OF HISTORICAL GROUNDWATER DATA

Monitoring Well	Sample Date	Groundwater Elevation (feet) MSL	Parameter Tested and Cleanup Level* in mg/L			
			GRO 2.2	DRO 1.5	RRO 1.1	Benzene 0.0046
MW-1	05/11/05	32.67	**11.0**	**7.00**	-	**1.30**
	05/16/06	32.58	**16.0**	**5.40**	-	**1.50**
	09/11/07	32.95	**14.0**	**3.20**	<0.380	**2.10**
	08/21/08~	32.87	**14.5**	**4.00**	-	**1.52**
	10/07/08	33.14	-	-	-	-
	08/18/09~	32.79	1.99	1.31	<0.385	**0.656**
	09/02/10	33.24	**2.20**	1.10	0.270	**0.580**
	10/07/11	32.58	**3.67**	1.13	0.283 J	**0.707**
	10/10/2012~	34.07	**3.56**	**1.80**	0.549	**1.12**
	10/22/13	33.40	**2.31**	0.876	0.252 J	**0.663**
	10/23/2014~	32.81	0.884	0.418 J	<0.250	**0.214**
MW-6B	05/11/05	53.00	**2.20**	**15.0**	-	**0.0900**
	05/15/06	52.58	**2.30**	**23.0**	-	**0.0540**
	09/12/07	50.37	1.80	**9.00**	<0.380	**0.0600**
	08/21/08	50.94	1.60	**13.2**	-	**0.0472**
	10/08/08	50.75	-	-	**<3.54**	**0.0461**
	08/19/09	50.30	1.52	**13.0**	**1.45**	**0.0310**
	09/01/10	50.62	1.10	**23.0**	**<3.50**	**0.0310**
	10/07/11	49.87	0.933	**17.6**	**1.85**	**0.0175**
	10/10/12	52.25	1.27 J+	**7.58**	0.836	**0.0232**
	10/22/13	53.00	2.05	**7.64**	0.683	**0.0540**
	10/23/14	50.78	1.18	**6.16**	0.596	**0.0446**
	11/21/17	50.98	0.697 J+	**29.10**	2.070	**0.0192**
	10/21/19	50.69	0.565 J+	**8.27**	0.769	**0.0113**
MW-13A	05/11/05	31.53	**14.0**	**11.0**	-	**0.430**
	05/16/06	31.28	**15.0**	**22.0**	-	**0.330**
	09/12/07	32.73	**13.0**	**7.90**	<0.410	**0.400**
	08/21/08	31.61	**17.1**	**16.4**	-	**0.291**
	10/09/08	32.32	-	-	**<3.54**	**0.293**
	08/18/09	32.31	**9.73**	**10.3**	**1.35**	**0.232**
	09/01/10~	32.46	**8.70**	**18.0**	**<1.40**	**0.260**
	10/7/2011~	31.59	**8.62**	**16.7**	**2.98**	**0.248**
	10/10/12	33.76	**6.52**	**10.1**	**1.55**	**0.167**
	10/22/13	32.77	**7.15**	**11.3**	**1.48**	**0.208**
	10/23/14	32.16	**5.56**	**11.2**	**1.47**	**0.154**
	11/21/2017~	31.62	**2.15**	**5.5**	**1.22**	**0.067**
	10/21/2019~	32.72	**2.22 J+**	**3.24**	**1.11**	**0.00468**
MW-14	05/11/05	33.50	**5.00**	**11.0**	-	**0.012**
	05/15/06	33.81	**5.20**	**15.0**	-	**0.018**
	08/21/08	32.93	**4.38**	**13.4**	-	**0.00804**
	10/08/08	33.48	-	-	**1.65**	**0.00715**
	08/19/09	33.41	**2.38**	**5.25**	0.596	0.0021
	09/01/10	33.55	**2.70**	**9.00**	<0.780	0.0040
	10/07/11	32.51	**2.64**	**8.44**	**1.18**	0.00371
	10/26/12	-	1.56 J+	**2.90**	0.195 J	**0.00723**
	10/22/13	-	**3.06**	**3.98**	0.332 J	**0.00731**
	10/23/14	-	0.641 J	1.03	<0.250	**0.00498 J**
	11/21/17	Well Frozen - could not sample				
	10/21/19	-	0.620 J+	0.951	0.243 J	**0.00139**

See Notes on Page 2

TABLE 3
SUMMARY OF HISTORICAL GROUNDWATER DATA

Monitoring Well	Sample Date	Groundwater Elevation (feet) MSL	Parameter Tested and Cleanup Level* in mg/L			
			GRO 2.2	DRO 1.5	RRO 1.1	Benzene 0.0046
MW-19R	09/12/07	34.49	**3.50**	**6.90**	**6.50**	**0.020**
	08/21/08	34.24	**5.16**	**4.19**	-	0.00448
	10/08/08	34.26	-	-	1.09	0.00373
	08/18/09	35.09	**4.01**	**1.92**	<0.385	**0.00530**
	09/02/10	34.42	**4.80**	**2.80**	<0.350	0.00300
	10/07/11	33.89	**6.05**	**3.92**	1.07	0.00214
	10/10/12	35.59	**3.25 J+**	**2.57**	0.717	0.00159
	10/22/13~	35.10	**5.04**	**3.01**	0.348 J	0.00398
	10/23/14	32.49	**5.31**	**1.88**	0.416 J	**0.0186**
	11/21/17	34.00	**3.43**	**1.59**	0.338 J	**0.029**
	10/21/19	34.40	**4.09 J+**	**1.34**	0.371 J	**0.00181**

Notes: Data prior to 2011 provided by ARCADIS

*	= Groundwater cleanup levels are from Table C, 18 AAC 75.345 (October 2018)
mg/L	= Milligrams per liter
MSL	= Mean sea level
GRO	= Gasoline Range Organics
DRO	= Diesel Range Organics
RRO	= Residual Range Organics
<0.380	= Analyte not detected at or above the laboratory reporting limit of 0.380 mg/L
<3.54	= Laboratory limit of detection is greater than the ADEC Table C cleanup level
1.99	= Analyte detected
3.50	= Reported concentration exceeds ADEC cleanup level
-	= Not applicable or sample not tested for this analyte
~	= The higher concentrations between primary and duplicate samples are listed
J	= Analyte detected, but at a concentration less than the laboratory reporting limit
J+	= Project result may be biased high due to surrogate failure
J-	= Project result may be biased low due to surrogate failure

TABLE 4
QUALITY CONTROL DATA

Parameter Tested	Units	Primary Sample MW-13A	Duplicate Sample MW-23	Precision (RPD)	Precision QC Limit
Gasoline Range Organics (GRO)	mg/L	1.93	2.22 J+	14%	30%
Diesel Range Organics (DRO)	mg/L	3.24	2.44	28%	30%
Residual Range Organics (RRO)	mg/L	1.11	0.854	26%	30%
Volatile Organic Compounds (VOCs)					
Benzene	mg/L	0.00468	0.00463	1%	30%
Toluene	mg/L	0.00803	0.00793	1%	30%
Ethylbenzene	mg/L	0.326	0.333	2%	30%
Xylenes	mg/L	0.367	0.356	3%	30%
Chloroethane	mg/L	0.000360 J	0.000340 J	6%	30%
1,1,2,2-Tetrachloroethane	mg/L	0.000580	<0.000250	NA	30%
1,2,4-Trimethylbenzene	mg/L	0.0669	0.0674	1%	30%
1,3,5-Trimethylbenzene	mg/L	0.0232	0.0234	1%	30%
4-Isopropyltoluene	mg/L	0.00103	0.000960 J	7%	30%
Isopropylbenzene (Cumene)	mg/L	0.00889	0.00863	3%	30%
Naphthalene	mg/L	0.104	0.0988	5%	30%
n-Butylbenzene	mg/L	<0.000500	<0.000500	NA	30%
n-Propylbenzene	mg/L	0.00993	0.0100	1%	30%
sec-Butylbenzene	mg/L	0.000700 J	0.000700 J	0%	30%
tert-Butylbenzene	mg/L	0.000390 J	0.000400 J	3%	30%
Other VOCs	mg/L	ND	ND	NA	30%
Polynuclear Aromatic Hydrocarbons (PAHs)					
1-Methylnaphthalene	mg/L	0.00742	0.00628	**17%**	30%
2-Methylnaphthalene	mg/L	0.00951 E	0.000782 E	**170%**	30%
Acenaphthene	mg/L	0.000224	0.000189	**17%**	30%
Fluorene	mg/L	0.000409	0.000361	**12%**	30%
Naphthalene	mg/L	0.0393 E	0.0283 E	**33%**	30%
Phenanthrene	mg/L	0.000102 E	0.0000754 E	**30%**	30%
Other PAHS	mg/L	ND	ND	NA	30%

Notes:

RPD = Relative percent difference

QC = Quality control

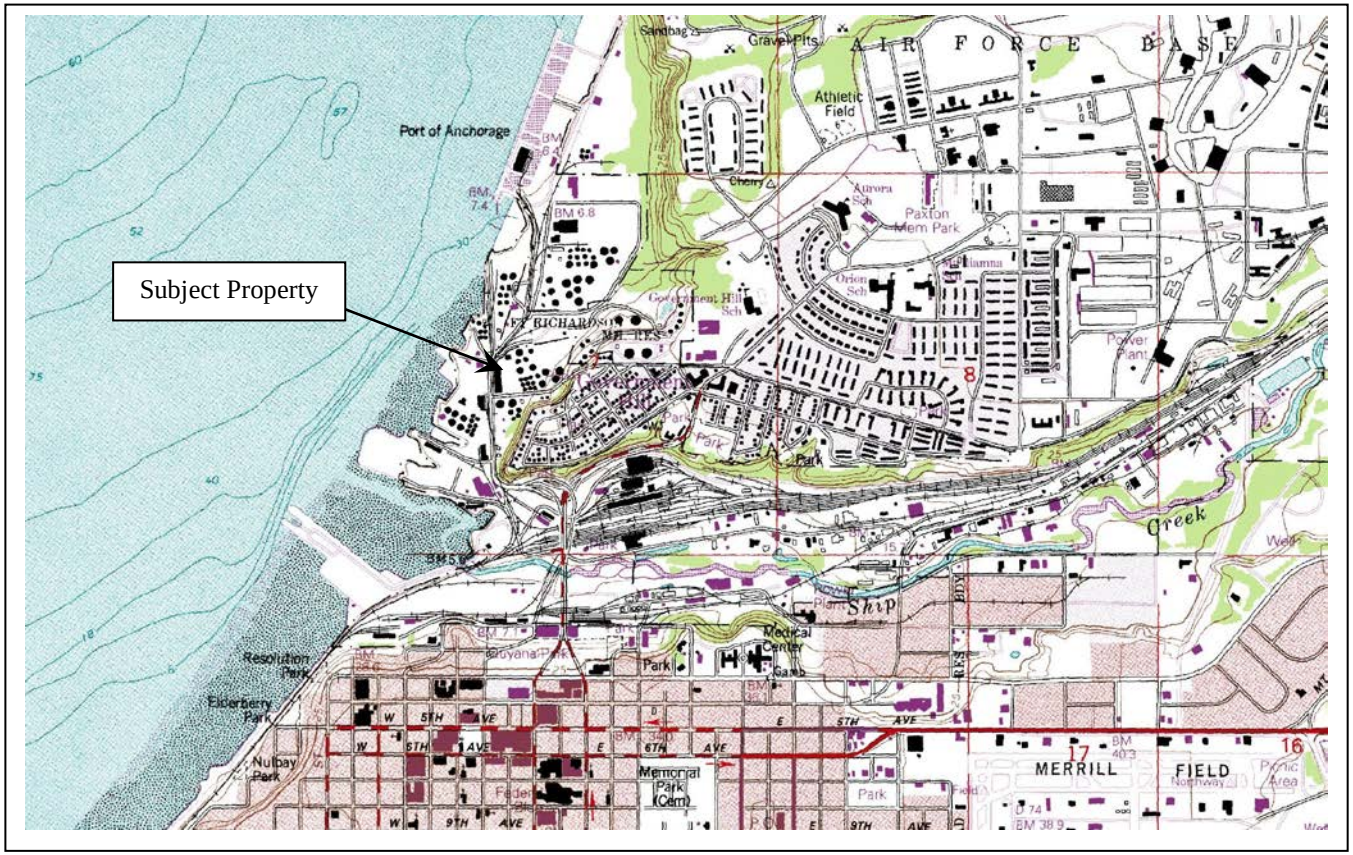
NA = RPD not calculated due to non-detectable results

mg/L = Milligrams per liter

170% = RPD is equal to or greater than the precision QC limit

\- = RPD could not be calculated due a non-detect value

E = Result is an estimate due to a primary/duplicate sample relative percent difference (RPD) failure.



0 0.5 1

Approximate scale
1 inch equals approximately ½ mile

Taken from
Anchorage A-8 NE Quadrangle
U.S. Geological Survey

N

459 West Bluff Drive
Anchorage, Alaska

VICINITY MAP

November 2019 103513-001

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 1

LEGEND

MW–19R (34.40) Location of Monitoring Well MW–19R, with groundwater elevation of 34.40 feet measured on October 21, 2019.

(NM) Not measured (survey data not available)

Destroyed well location

Abandoned well location

Aboveground Storage Tanks

Lined Detention Pond

MW–21

MW–7

MW–7R

Runoff Basin

MW–4

MW–20

MW–14 (NM)

27

28

Shop

Berm Location

Approximate Property Boundary

Former Defense Fuel Support Point - Anchorage

MW–2

31

26

MW–6B (50.69)

MW–3

MW–15

MW–15R

MW–18

1

24

Warehouse Yard

MW–5

9

20

Warehouse

MW–16

MW–16R

2

Culvert

12

A-15

9

14

16

11

13

25

Truck Loading Rack

MW–1

10

4

26

30

MW–11

21

22

23

Approximate range of groundwater flow direction

OCEAN DOCK ROAD

Railroad

MW–13A (32.72)

Office

MW–17

WEST BLUFF ROAD

MW–12

MW–10

MW–10R

MW–19

MW–19R (34.40)

Flint Hills Resources

MW–8

N

0 50 100 200

APPROXIMATE SCALE IN FEET

459 West Bluff Drive
Anchorage, Alaska

SITE PLAN

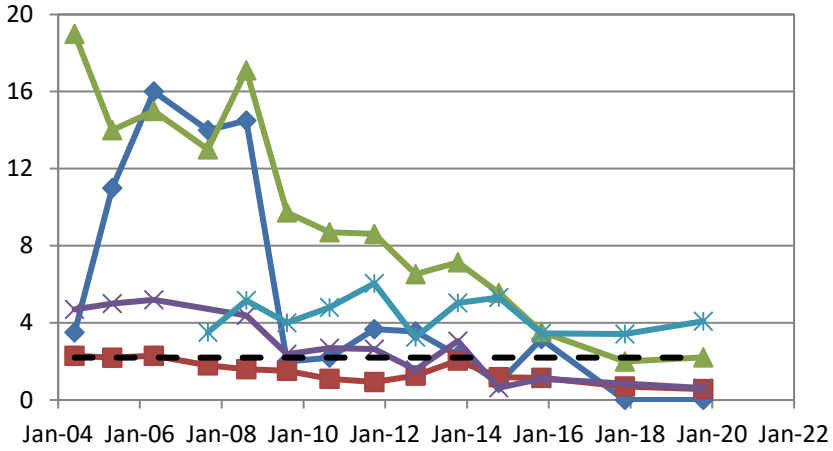
November 2019 103513-001

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

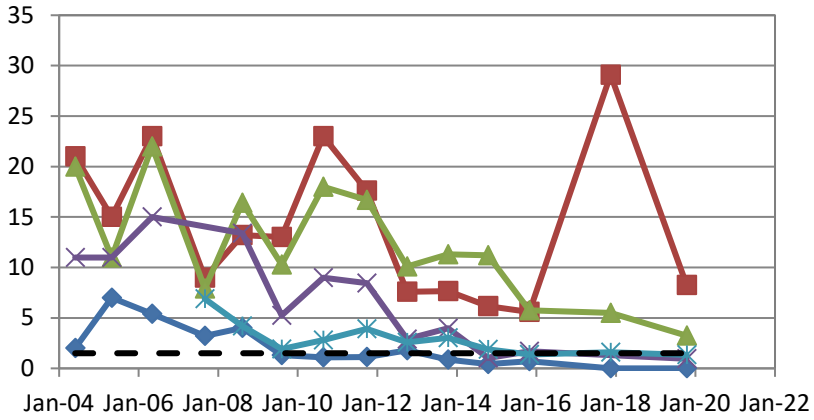
Fig. 2

FIGURE 3
GRAPHS OF SELECT CONSITUENTS IN MILLIGRAMS PER LITER

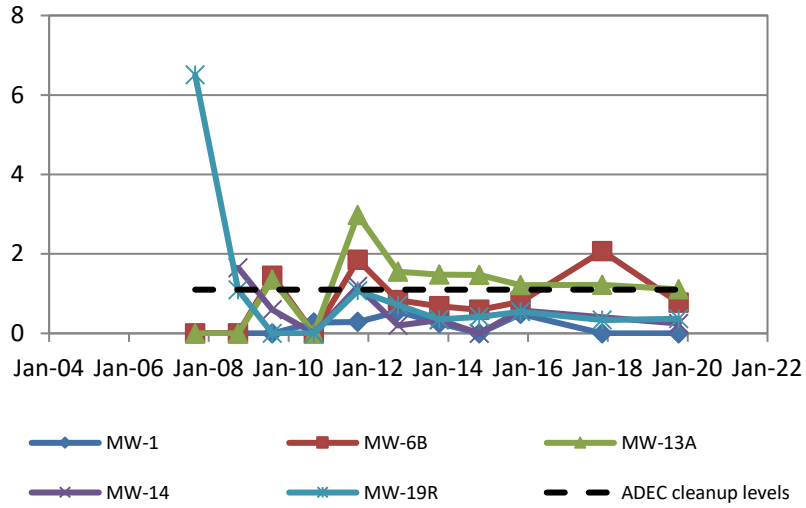
GASOLINE RANGE ORGANICS (GRO)



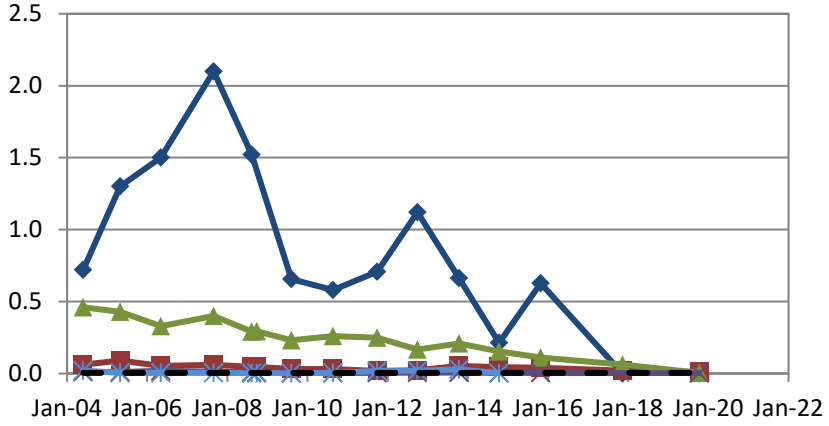
DIESEL RANGE ORGANICS (DRO)



RESIDUAL RANGE ORGANICS (RRO)



BENZENE



ATTACHMENT 1

FIELD NOTES

103513

459 W. Bluff Drive - Crowley

10/21/19

8:00 calibrate YSI 556 & turb #2

8:45 leave for Port of Anchorage

9:10 check in at gate house, get ~~secur~~ visitor pass at security center

9:20 check in with Crowley
fill out General work permit with Greg & Dan, go over site safety & tour of site

~~for~~ dtws w/ WLI #6

time	well	dtw	total depth
10:11	MW-~~B~~6B	25.71	30.28

- plug rusted, no locks on well

10:28	MW-14	~~4.28~~ 4.28	12.59

- plug rusted, cap will screws or like plug, plug sits too high to completely close top

10:42	MW-13A	5.29	10.72

pipe too high to close lid, ~~to~~ locked on one side only

10:52	MW-19R	5.79	14.02

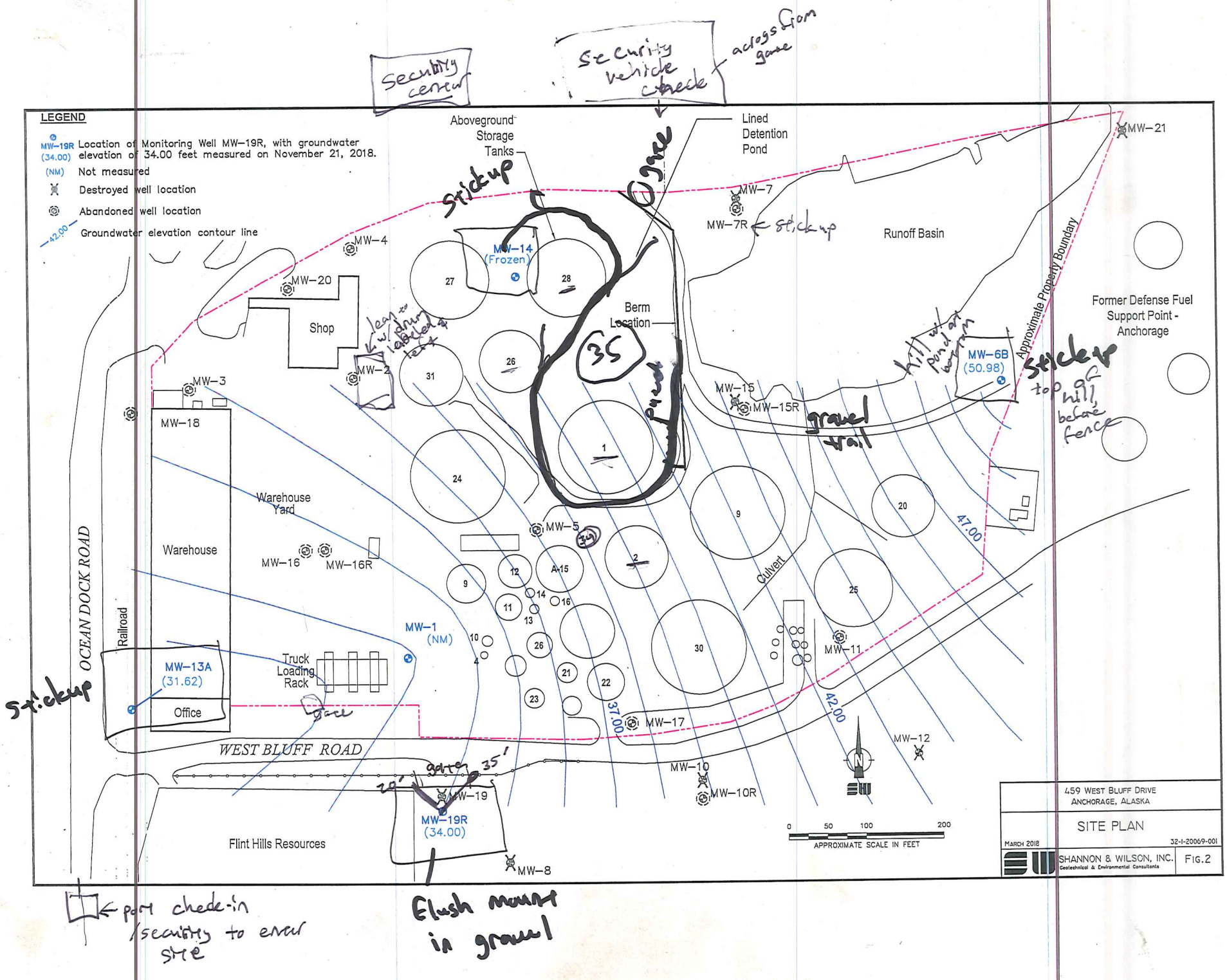
≈ 20 ft from west gate post, ≈ 35 ft from east gate post

16:30 ~~dtw~~ drawdown at well MW-13A exceeds 80%, place purge & decon water in 55 gallon drum, ~~be~~ before in ~~to~~ lean-to near shop. Wait for 80% recharge & collect samples

17:50 check out at security gate house.

18:13 arrive SWI, store samples in coolers overnight, chilled with gelled ice packs

Scale: 1 square = _____


LEGEND
MW-19R (34.00) Location of Monitoring Well MW-19R, with groundwater elevation of 34.00 feet measured on November 21, 2018.
(NM) Not measured
Destroyed well location
Abandoned well location
42.00 Groundwater elevation contour line
Aboveground Storage Tanks
Lined Detention Pond
Runoff Basin
Former Defense Fuel Support Point - Anchorage
Approximate Property Boundary
Berm Location
Shop
Warehouse
Warehouse Yard
Railroad
Truck Loading Rack
Office
Culvert
OCEAN DOCK ROAD
WEST BLUFF ROAD
Flint Hills Resources
MW-1 (NM)
MW-2
MW-3
MW-4
MW-5
MW-6B (50.98)
MW-7
MW-7R
MW-8
MW-10
MW-10R
MW-11
MW-12
MW-13A (31.62)
MW-14 (Frozen)
MW-15
MW-15R
MW-16
MW-16R
MW-17
MW-18
MW-19
MW-19R (34.00)
MW-20
MW-21
37.00
42.00
47.00
0 50 100 200
APPROXIMATE SCALE IN FEET
459 WEST BLUFF DRIVE
ANCHORAGE, ALASKA
SITE PLAN
MARCH 2018
32-1-20069-001
SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants
FIG. 2

Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Job No: 103513 Location: 459 West Bluff Drive Weather: 39°F cloudy, light rain off & on

Well No.: MW-6B

Date: 10/21/19 Time Started: 14:01 Time Completed: 15:09

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 10:11 Date of Depth Measurement: 10/21/19

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____

Diameter of Casing: 4" Well Screen Interval: —

Total Depth of Well Below MP: 30.28 Product Thickness, if noted: —

Depth-to-Water (DTW) Below MP: 25.71

Water Column in Well: 4.57 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.65

Gallons in Well: 2.97 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/21/19 Time Started: 14:11 Time Completed: 14:51

Three Well Volumes: 8.91 (Gallons in Well x 3)

Gallons Purged: 3.0 Depth of Pump (generally 2 ft from ~~bottom~~ top): ~ 27.5 ft

Max. Drawdown (generally 0.3 ft): 0.27 Pump Rate: 0.5

Well Purged Dry: Yes ☐ No ■ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C) +/- 3% (0.2°C)	Sp. Cond.: (uS/cm) +/- 3%	DO: (mg/L)	pH: (S.U.) +/- 0.1	ORP: (mV)	Turb: (NTU) +/- 10% or < 10 NTU
14:15	0.1	0.2	25.79	0.08	7.06	1162		6.41		10.53
14:18	0.2	0.3	25.82	0.11	6.48	1162		6.40		8.43
14:21	0.4	0.4	25.87	0.16	6.52	1155		6.40		11.84
14:24	0.6	0.4	25.90	0.19	6.42	1161		6.41		9.46
14:27	0.9	0.4	25.96	0.25	6.36	1167		6.43		8.64
14:30	1.3	0.5	25.96	0.25	6.32	1172		6.44		7.99

SAMPLING DATA

Odor: Hydrocarbons Color: clear

Sample Designation: 103513-MW-6B Time / Date: 10/21/19 14:48

~~QC Sample Designation:~~ _____ ~~Time / Date:~~ _____

~~QA Sample Designation:~~ _____ ~~Time / Date:~~ _____

Evacuation Method: Submersible Pump / Other: min. whale

Sampling Method: Submersible Pump / Other: "

Water Quality Instruments Used/Manufacturer/Model Number YSI 556, Turb #2

Calibration Info (Time, Ranges, etc) 8:00 10/21/19

Remarks: _____

Sampling Personnel: JKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

* min 1 well volume

Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Continued from previous page

Job No: 103513 Location: 459 West Bluff Drive Site: CPD Alaska LLC
Well No.: MW-6B
Date: 10/21/19

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
14:33	1.7	0.5	25.97	0.26	6.32	1175		6.45		7.96
14:36	2.0	0.5	25.98	0.27	6.32	1178		6.46		8.99
14:39	2.3	0.5	25.97	0.26	6.32	1181		6.47		7.81
14:42	2.6	0.5	25.97	0.26	6.32	1186		6.49		8.59
14:46	3.0	0.5	25.97	0.26	6.33	1188		6.49		8.29
		Sample	14:48							

	Interval (minutes)	Pump Rate (mL/min):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
ADEC (May 2010)	3 to 5	100 to 150	<0.0328	±3% or ±0.2	±3%	±10%	±0.1	±10	±10% or 4/0
EPA (Jan. 2010)	5	50	<0.3	±3%	±3%	±10%	±0.1	±10	±10% or <5 NTU

EPA guidance requires all parameters to stabilize for 3 consecutive readings before sampling. If not stable within 2 hours, collect sample.
ADEC guidance requires 3 parameters (4 if using temperature) to stabilize for 3 consecutive readings before sampling.

Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Job No: 103513 Location: 459 West Bluff Drive Weather: 39°F cloudy off & on lightly rain

Well No.: MW-13A

Date: 10/21/19 Time Started: 15:18 Time Completed: 17:48

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 10:42 Date of Depth Measurement: 10/21/19

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____

Diameter of Casing: 4" Well Screen Interval: —

Total Depth of Well Below MP: 10.72 Product Thickness, if noted: —

Depth-to-Water (DTW) Below MP: 5.29

Water Column in Well: 5.43 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.65

Gallons in Well: 3.53 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/21/19 Time Started: 15:21 Time Completed: 16:30

Three Well Volumes: 10.59 (Gallons in Well x 3)

Gallons Purged: 3.6 Depth of Pump (generally 2 ft from ~~bottom~~ top): ~ 7.3

Max. Drawdown (generally 0.3 ft): 1.43 Pump Rate: 0.1

Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
15:23	0.3	0.5	5.71	0.42	9.59	456		6.86		17.79
15:26	0.6	0.5	5.86	0.57	9.49	451		6.86		14.63
15:29	0.9	0.5	5.98	0.69	9.47	449		6.86		12.60
15:32	1.1	0.3	6.08	0.79	9.46	449		6.85		12.37
15:35	1.3	0.3	6.11	0.82	9.50	450		6.85		12.01
15:38	1.5	0.2	6.28	0.99	9.57	451		6.84		11.22

SAMPLING DATA

Odor: hydrocarbons Color: clear

Sample Designation: 103513-MW-13A Time / Date: 10/21/19 17:17

QC Sample Designation: 103513-MW-23 Time / Date: 10/21/19 17:47

QA ~~Sample~~ Designation: _____ ~~Time / Date:~~ _____

Evacuation Method: Submersible Pump / Other: _____

Sampling Method: Submersible Pump / Other: _____

Water Quality Instruments Used/Manufacturer/Model Number YSI 556, turb #2

Calibration Info (Time, Ranges, etc) 8:00 10/21/19

Remarks: Also Sample for PAH

80% recharge draw down = 6.38

Sampling Personnel: JKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

8 min 1 well volume

Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Continued from previous page

Job No: 103513 Location: 459 West Bluff Drive Site: CPD Alaska LLC

Well No.: MW-~~13A~~-13A

Date: 10/21/19

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
15:41	1.7	0.2	6.37	1.08	9.66	457		6.82		11.38
15:44	1.8	0.1	6.39	1.10	9.61	458		6.83		12.17
15:49	2.0	0.1	6.44	1.15	9.56	461		6.82		11.90
15:53	2.3	0.1	6.49	1.20	9.60	465		6.81		11.81
15:58	2.4	0.1	6.54	1.25	9.72	477		6.75		11.66
16:02	2.6	0.1	6.61	1.32	10.05	481		6.75		13.14
16:06	2.8	0.1	6.65	1.36	10.12	483		6.76		13.27
16:10	2.9	0.1	6.67	1.38	10.18	487		6.76		10.00
16:13	3.0	0.1	6.69	1.40	10.24	487		6.75		11.36
16:17	3.2	0.1	6.70	1.41	10.30	496		~~6.73~~ 6.73		11.71
16:21	3.4	0.1	6.71	1.42	10:32	509		6.73		11.51
16:24	3.5	0.1	6.71	1.42	10:38	513		6.73		12.13
16:27	3.6 ✓	0.1	6.72	1.43	10:48 ✓	518 ✓		6.72 ✓		11.23 ✓
	Turn of pump, 16:30			dtw = 6.60						
	17:17			dtw = 6.03, 6.35	sample at 17:38		when sampling complete			

	Interval (minutes)	Pump Rate (mL/min):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
ADEC (May 2010)	3 to 5	100 to 150	<0.0328	±3% or ±0.2	±3%	±10%	±0.1	±10	±10% or <10 NTU
EPA (Jan. 2010)	5	50	<0.3	±3%	±3%	±10%	±0.1	±10	±10% or <5 NTU

EPA guidance requires all parameters to stabilize for 3 consecutive readings before sampling. If not stable within 2 hours, collect sample.

~~ADEC guidance requires 3 parameters (4 if using temperature) to stabilize for 3 consecutive readings before sampling.~~

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 103513 Location: 459 West Bluff Drive Weather: 39°F cloudy

Well No.: MW-14

Date: 10/21/19 Time Started: 12:29 Time Completed: 13:48

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 10:28 Date of Depth Measurement: 10/21/19

Measuring Point (MP): (Top of PVC Casing) / Top of Steel Protective Casing / Other: _____

Diameter of Casing: 4" Well Screen Interval: —

Total Depth of Well Below MP: 12.59 Product Thickness, if noted: —

Depth-to-Water (DTW) Below MP: 4.28

Water Column in Well: ~~8.65~~ 8.31 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.65

Gallons in Well: 5.40 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/21/19 Time Started: 12:35 Time Completed: 13:31

Three Well Volumes: 16.2 (Gallons in Well x 3)

Gallons Purged: 5.5 Depth of Pump (generally 2 ft from ~~bottom~~ top): ~ 6.29

Max. Drawdown (generally 0.3 ft): 0.06 Pump Rate: 0.5

Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

benchmark = 4.21

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
12:36	0.2	0.4	4.23	0.02	5.44	625		6.89		15.94
12:42	0.5	0.5	4.25	0.04	5.41	628		6.90		17.51
12:45	0.9	0.5	4.25	0.04	5.58	641		6.91		13.29
12:48	1.3	0.5	4.26	0.05	5.75	654		6.93		11.52
12:51	1.7	0.5	4.27	0.06	5.88	663		6.94		9.18
12:54	2.1	0.5	4.26	0.05	5.88	665		6.96		11.96

SAMPLING DATA

Odor: hydrocarbons Color: clear

Sample Designation: 103513-MW-14 Time / Date: 13:27 10/21/19

~~QC Sample Designation:~~ _____ Time / Date: _____

~~QA Sample Designation:~~ _____ Time / Date: _____

Evacuation Method: (Submersible Pump) / Other: mini whale

Sampling Method: (Submersible Pump) / Other: mini whale

Water Quality Instruments Used/Manufacturer/Model Number YSI 556 & turb #2

Calibration Info (Time, Ranges, etc) 8:00 10/21/19

Remarks: _____

Sampling Personnel: JKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

* min 1 well volume

Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Continued from previous page

Job No: 103513 Location: 459 West Bluff Drive Site: CPD Alaska LLC

Well No.: MW-14

Date: 10/21/19

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
12:57	2.5	0.5	4.26	0.05	5.89	664		6.97		11.88
13:00	2.8	0.5	4.26	0.05	5.93	666		6.96		10.81
13:03	3.2	0.5	4.25	0.04	5.92	665		6.97		11.21
13:06	3.5	0.5	4.25	0.04	5.97	668		6.98		10.18
13:09	3.8	0.5	4.25	0.04	6.03	671		6.97		10.04
13:12	4.1	0.5	4.25	0.04	6.05	672		6.98		10.75
13:16	4.5	0.5	4.25	0.04	6.10	674		6.98		9.25
13:19	4.9	0.5	4.25	0.04	6.15	677		6.98		7.67
13:22	5.2	0.5	4.25	0.04	6.19	678		6.98		6.53
13:26	5.5 ✓	0.5	4.25	0.04	6.24 ✓	679 ✓		6.98 ✓		5.62 ✓
		sample	13:27							

	Interval (minutes)	Pump Rate (mL/min):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
ADEC (May 2010)	3 to 5	100 to 150	<0.0328	±3% or ±0.2	±3%	±10%	±0.1	±10	±10% or <10 NTU
EPA (Jan. 2010)	5	50	<0.3	±3%	±3%	±10%	±0.1	±10	±10% or <5 NTU

EPA guidance requires all parameters to stabilize for 3 consecutive readings before sampling. If not stable within 2 hours, collect sample.

~~ADEC guidance requires 3 parameters (4 if using temperature) to stabilize for 3 consecutive readings before sampling.~~

Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Job No: 103513 Location: 459 West Bluff Drive Weather: 37°F cloudy off & on light ~~sprinkle~~ rain

Well No.: MW-19R

Date: 10/21/19 Time Started: 10:50 Time Completed: 12:15

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 10:52 Date of Depth Measurement: 10/21/19

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____

Diameter of Casing: 2" Well Screen Interval: —

Total Depth of Well Below MP: 14.02 Coofs (bottom) Product Thickness, if noted: —

Depth-to-Water (DTW) Below MP: 5.79

Water Column in Well: 8.23 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.16

Gallons in Well: 1.32 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 10/21/19 Time Started: 11:21 Time Completed: 11:56

Three Well Volumes: 3.95 (Gallons in Well x 3)

Gallons Purged: 2.2 Depth of Pump (generally 2 ft from ~~bottom~~ top): ~ 7.5 ft

Max. Drawdown (generally 0.3 ft): 0.30 Pump Rate: 0.4

Well Purged Dry: Yes ☐ No ■ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
11:24	0.3	0.4	6.09	0.30	10.08	808		6.49		76.08
11:27	0.5	0.4	6.09	0.30	10.13	795		6.49		45.88
11:30	0.7	0.4	6.09	0.30	10.11	794		6.50		28.21
11:33	0.9	0.4	6.09	0.30	10.09	794		6.52		19.66
11:36	1.3	0.4	6.09	0.30	10.04	797		6.53		15.00
11:39	1.5	0.4	6.09	0.30	10.05	799		6.54		12.78

SAMPLING DATA

Odor: hydro carbon Color: cloudy to clear

Sample Designation: 103513-MW-19R Time / Date: 10/21/19 11:50

~~QC Sample Designation:~~ _____ ~~Time / Date:~~ _____

~~QA Sample Designation:~~ _____ ~~Time / Date:~~ _____

Evacuation Method: ~~Submersible Pump~~ / Other: min whale

Sampling Method: Submersible Pump / Other: min whale

Water Quality Instruments Used/Manufacturer/Model Number YSI 556 & Turb #2

Calibration Info (Time, Ranges, etc) 6:00 10/21/19

Remarks: flush mount w/ 1/2" bolt; ~ 20ft from west gate post, ~35 ft from east gate post

Sampling Personnel: JKH

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

& min 1 well volume

Shannon & Wilson, Inc.

LOW-FLOW WATER SAMPLING LOG

Continued from previous page

Job No: 103513 Location: 459 West Bluff Drive Site: CPD Alaska LLC

Well No.: MW-19R

Date: 10/21/19

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
11:42	1.8	0.4	6.09	0.30	10.04	801		6.55		9.19
11:45	2.0	0.4	6.09	0.30	10.04	801		6.56		9.91
11:48	2.2	0.4	6.09	0.30	10.04	801		6.56		9.34
			sample	11:50						

	Interval (minutes)	Pump Rate (mL/min):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
ADEC (May 2010)	3 to 5	100 to 150	<0.0328	±3% or ±0.2	±3%	±10%	±0.1	±10	±10% or <10 NTU
EPA (Jan. 2010)	5	50	<0.3	±3%	±3%	±10%	±0.1	±10	±10% or <5 NTU

EPA guidance requires all parameters to stabilize for 3 consecutive readings before sampling. If not stable within 2 hours, collect sample.

ADEC guidance requires 3 parameters (4 if using temperature) to stabilize for 3 consecutive readings before sampling.

ATTACHMENT 2

RESULTS OF ANALYTICAL TESTING BY

SGS NORTH AMERICA INC. OF ANCHORAGE, ALASKA

AND

ADEC LABORATORY DATA REVIEW CHECKLIST

Laboratory Report of Analysis

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

Report Number: **1196357**

Client Project: **103513 - 459 W. Bluff Dr.**

Dear Trevor Crosby,

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

If there are any questions about the report or services performed during this project, please call Jillian 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.

Jillian Janssen
2019.11.01
16:23:56 -08'00'

Jillian Janssen Date
Project Manager
Jillian.Janssen@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: **Shannon & Wilson, Inc.**
SGS Project: **1196357**
Project Name/Site: **103513 - 459 W. Bluff Dr.**
Project Contact: **Trevor Crosby**

Refer to sample receipt form for information on sample condition.

103513-MW-6B (1196357001) PS

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

103513-MW-14 (1196357003) PS

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

103513-MW-19R (1196357004) PS

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

103513-MW-23 (1196357005) PS

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

LCSD for HBN 1801540 [VXX/3514 (1540529) LCSD

8260C - LCS/LCSD RPD for chloroethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
SW8260C				
1196357001	103513-MW-6B	VMS19606	4-Isopropyltoluene	RP
1196357001	103513-MW-6B	VMS19606	n-Butylbenzene	RP
1196357002	103513-MW-13A	VMS19606	4-Isopropyltoluene	SP
1196357004	103513-MW-19R	VMS19606	n-Butylbenzene	SP
1196357005	103513-MW-23	VMS19606	4-Isopropyltoluene	SP

Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

Print Date: 11/01/2019 8:57:31AM

Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

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

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

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
103513-MW-6B	1196357001	10/21/2019	10/22/2019	Water (Surface, Eff., Ground)
103513-MW-13A	1196357002	10/21/2019	10/22/2019	Water (Surface, Eff., Ground)
103513-MW-14	1196357003	10/21/2019	10/22/2019	Water (Surface, Eff., Ground)
103513-MW-19R	1196357004	10/21/2019	10/22/2019	Water (Surface, Eff., Ground)
103513-MW-23	1196357005	10/21/2019	10/22/2019	Water (Surface, Eff., Ground)
103513-TB	1196357006	10/21/2019	10/22/2019	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W) FULL

Detectable Results Summary

Client Sample ID: **103513-MW-6B**
Lab Sample ID: 1196357001

Semivolatile Organic Fuels

Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	8.27	mg/L
Residual Range Organics	0.769	mg/L
Gasoline Range Organics	0.565	mg/L
1,2,4-Trimethylbenzene	219	ug/L
1,3,5-Trimethylbenzene	77.2	ug/L
4-Isopropyltoluene	18.4	ug/L
Benzene	11.3	ug/L
Ethylbenzene	85.2	ug/L
Isopropylbenzene (Cumene)	38.9	ug/L
Naphthalene	230	ug/L
n-Butylbenzene	9.85	ug/L
n-Propylbenzene	42.6	ug/L
o-Xylene	2.37	ug/L
P & M -Xylene	85.3	ug/L
sec-Butylbenzene	16.4	ug/L
tert-Butylbenzene	1.12	ug/L
Toluene	0.640J	ug/L
Xylenes (total)	87.7	ug/L

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Detectable Results Summary

Client Sample ID: **103513-MW-13A**
Lab Sample ID: 1196357002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	7.42	ug/L
	2-Methylnaphthalene	9.51	ug/L
	Acenaphthene	0.224	ug/L
	Fluorene	0.409	ug/L
	Naphthalene	39.3	ug/L
	Phenanthrene	0.102	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	3.24	mg/L
	Residual Range Organics	1.11	mg/L
Volatile Fuels	Gasoline Range Organics	1.93	mg/L
Volatile GC/MS	1,1,2,2-Tetrachloroethane	0.580	ug/L
	1,2,4-Trimethylbenzene	66.9	ug/L
	1,3,5-Trimethylbenzene	23.2	ug/L
	4-Isopropyltoluene	1.03	ug/L
	Benzene	46.8	ug/L
	Chloroethane	0.360J	ug/L
	Ethylbenzene	326	ug/L
	Isopropylbenzene (Cumene)	8.89	ug/L
	Naphthalene	104	ug/L
	n-Propylbenzene	9.93	ug/L
	o-Xylene	3.90	ug/L
	P & M -Xylene	363	ug/L
	sec-Butylbenzene	0.700J	ug/L
	tert-Butylbenzene	0.390J	ug/L
	Toluene	8.03	ug/L
	Xylenes (total)	367	ug/L

Client Sample ID: **103513-MW-14**
Lab Sample ID: 1196357003

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	0.951	mg/L
	Residual Range Organics	0.243J	mg/L
Volatile Fuels	Gasoline Range Organics	0.620	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	180	ug/L
	1,3,5-Trimethylbenzene	13.0	ug/L
	4-Isopropyltoluene	7.90	ug/L
	Benzene	1.39	ug/L
	Ethylbenzene	27.5	ug/L
	Isopropylbenzene (Cumene)	15.5	ug/L
	Naphthalene	81.4	ug/L
	n-Butylbenzene	5.27	ug/L
	n-Propylbenzene	23.5	ug/L
	P & M -Xylene	44.5	ug/L
	sec-Butylbenzene	6.12	ug/L
	tert-Butylbenzene	0.860J	ug/L
	Xylenes (total)	44.5	ug/L

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Detectable Results Summary

Client Sample ID: **103513-MW-19R**
Lab Sample ID: 1196357004

Semivolatile Organic Fuels

Volatile Fuels
Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	1.34	mg/L
Residual Range Organics	0.371J	mg/L
Gasoline Range Organics	4.09	mg/L
1,2,4-Trimethylbenzene	1200	ug/L
1,3,5-Trimethylbenzene	393	ug/L
4-Isopropyltoluene	27.0	ug/L
Benzene	1.81	ug/L
Ethylbenzene	13.4	ug/L
Isopropylbenzene (Cumene)	80.3	ug/L
Naphthalene	84.0	ug/L
n-Butylbenzene	21.2	ug/L
n-Propylbenzene	243	ug/L
o-Xylene	2.38	ug/L
P & M -Xylene	34.6	ug/L
sec-Butylbenzene	16.0	ug/L
tert-Butylbenzene	2.52	ug/L
Toluene	2.67	ug/L
Xylenes (total)	36.9	ug/L

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Detectable Results Summary

Client Sample ID: **103513-MW-23**
Lab Sample ID: 1196357005

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	6.28	ug/L
	2-Methylnaphthalene	7.82	ug/L
	Acenaphthene	0.189	ug/L
	Fluorene	0.361	ug/L
	Naphthalene	28.3	ug/L
	Phenanthrene	0.0754	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	2.44	mg/L
	Residual Range Organics	0.854	mg/L
Volatile Fuels	Gasoline Range Organics	2.22	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	67.4	ug/L
	1,3,5-Trimethylbenzene	23.4	ug/L
	4-Isopropyltoluene	0.960J	ug/L
	Benzene	46.3	ug/L
	Chloroethane	0.340J	ug/L
	Chloromethane	0.310J	ug/L
	Ethylbenzene	333	ug/L
	Isopropylbenzene (Cumene)	8.63	ug/L
	Naphthalene	98.8	ug/L
	n-Propylbenzene	10.0	ug/L
	o-Xylene	3.93	ug/L
	P & M -Xylene	352	ug/L
	sec-Butylbenzene	0.700J	ug/L
	tert-Butylbenzene	0.400J	ug/L
	Toluene	7.93	ug/L
	Xylenes (total)	356	ug/L

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Results of **103513-MW-6B**

Client Sample ID: **103513-MW-6B**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357001
Lab Project ID: 1196357

Collection Date: 10/21/19 14:48
Received Date: 10/22/19 08:43
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	8.27		0.577	0.173	mg/L	1		10/31/19 00:49
Surrogates								
5a Androstane (surr)	73.9		50-150		%	1		10/31/19 00:49

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/19 00:49
Container ID: 1196357001-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
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	0.769		0.481	0.144	mg/L	1		10/31/19 00:49
Surrogates								
n-Triacontane-d62 (surr)	78.2		50-150		%	1		10/31/19 00:49

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/31/19 00:49
Container ID: 1196357001-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **103513-MW-6B**

Client Sample ID: **103513-MW-6B**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357001
Lab Project ID: 1196357

Collection Date: 10/21/19 14:48
Received Date: 10/22/19 08:43
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	0.565		0.100	0.0310	mg/L	1		10/25/19 14:23
Surrogates								
4-Bromofluorobenzene (surr)	306	*	50-150		%	1		10/25/19 14:23

Batch Information

Analytical Batch: VFC15013
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/25/19 14:23
Container ID: 1196357001-E

Prep Batch: VXX35154
Prep Method: SW5030B
Prep Date/Time: 10/25/19 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **103513-MW-6B**

Client Sample ID: **103513-MW-6B**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357001
Lab Project ID: 1196357

Collection Date: 10/21/19 14:48
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 14:54
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 14:54
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/24/19 14:54
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,2,4-Trimethylbenzene	219		10.0	3.10	ug/L	10		10/28/19 19:16
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/24/19 14:54
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/24/19 14:54
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 14:54
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,3,5-Trimethylbenzene	77.2		1.00	0.310	ug/L	1		10/24/19 14:54
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/24/19 14:54
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 14:54
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 14:54
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/24/19 14:54
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
4-Isopropyltoluene	18.4		1.00	0.310	ug/L	1		10/24/19 14:54
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 14:54
Benzene	11.3		0.400	0.120	ug/L	1		10/24/19 14:54
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 14:54
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/24/19 14:54
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/24/19 14:54
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 14:54
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 14:54

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Results of **103513-MW-6B**

Client Sample ID: **103513-MW-6B**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357001
Lab Project ID: 1196357

Collection Date: 10/21/19 14:48
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Chloromethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		10/24/19 14:54
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		10/24/19 14:54
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Ethylbenzene	85.2		1.00	0.310	ug/L	1		10/24/19 14:54
Freon-113	5.00 U		10.0	3.10	ug/L	1		10/24/19 14:54
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Isopropylbenzene (Cumene)	38.9		1.00	0.310	ug/L	1		10/24/19 14:54
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		10/24/19 14:54
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		10/24/19 14:54
Naphthalene	230		10.0	3.10	ug/L	10		10/28/19 19:16
n-Butylbenzene	9.85		1.00	0.310	ug/L	1		10/24/19 14:54
n-Propylbenzene	42.6		1.00	0.310	ug/L	1		10/24/19 14:54
o-Xylene	2.37		1.00	0.310	ug/L	1		10/24/19 14:54
P & M -Xylene	85.3		2.00	0.620	ug/L	1		10/24/19 14:54
sec-Butylbenzene	16.4		1.00	0.310	ug/L	1		10/24/19 14:54
Styrene	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
tert-Butylbenzene	1.12		1.00	0.310	ug/L	1		10/24/19 14:54
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Toluene	0.640 J		1.00	0.310	ug/L	1		10/24/19 14:54
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 14:54
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		10/24/19 14:54
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		10/24/19 14:54
Xylenes (total)	87.7		3.00	1.00	ug/L	1		10/24/19 14:54
Surrogates								
1,2-Dichloroethane-D4 (surr)	106		81-118		%	1		10/24/19 14:54
4-Bromofluorobenzene (surr)	88.8		85-114		%	10		10/28/19 19:16
Toluene-d8 (surr)	105		89-112		%	1		10/24/19 14:54

Results of **103513-MW-6B**

Client Sample ID: **103513-MW-6B**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357001
Lab Project ID: 1196357

Collection Date: 10/21/19 14:48
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19606
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/24/19 14:54
Container ID: 1196357001-C

Prep Batch: VXX35148
Prep Method: SW5030B
Prep Date/Time: 10/24/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19612
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 19:16
Container ID: 1196357001-D

Prep Batch: VXX35161
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **103513-MW-13A**

Client Sample ID: **103513-MW-13A**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357002
Lab Project ID: 1196357

Collection Date: 10/21/19 17:17
Received Date: 10/22/19 08:43
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
1-Methylnaphthalene	7.42		0.0490	0.0147	ug/L	1		10/27/19 16:10
2-Methylnaphthalene	9.51		0.0490	0.0147	ug/L	1		10/27/19 16:10
Acenaphthene	0.224		0.0490	0.0147	ug/L	1		10/27/19 16:10
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		10/27/19 16:10
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		10/27/19 16:10
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Fluorene	0.409		0.0490	0.0147	ug/L	1		10/27/19 16:10
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Naphthalene	39.3		0.980	0.304	ug/L	10		10/29/19 00:25
Phenanthrene	0.102		0.0490	0.0147	ug/L	1		10/27/19 16:10
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:10
Surrogates								
2-Methylnaphthalene-d10 (surr)	62.1		47-106		%	1		10/27/19 16:10
Fluoranthene-d10 (surr)	44.7		24-116		%	1		10/27/19 16:10

Batch Information

Analytical Batch: XMS11839
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/29/19 00:25
Container ID: 1196357002-C

Prep Batch: XXX42513
Prep Method: SW3520C
Prep Date/Time: 10/23/19 08:26
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11834
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/27/19 16:10
Container ID: 1196357002-C

Prep Batch: XXX42513
Prep Method: SW3520C
Prep Date/Time: 10/23/19 08:26
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **103513-MW-13A**

Client Sample ID: **103513-MW-13A**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357002
Lab Project ID: 1196357

Collection Date: 10/21/19 17:17
Received Date: 10/22/19 08:43
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	3.24		0.600	0.180	mg/L	1		10/31/19 00:59
Surrogates								
5a Androstane (surr)	75.3		50-150		%	1		10/31/19 00:59

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/19 00:59
Container ID: 1196357002-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
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	1.11		0.500	0.150	mg/L	1		10/31/19 00:59
Surrogates								
n-Triacontane-d62 (surr)	77.3		50-150		%	1		10/31/19 00:59

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/31/19 00:59
Container ID: 1196357002-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of **103513-MW-13A**

Client Sample ID: **103513-MW-13A**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357002
Lab Project ID: 1196357

Collection Date: 10/21/19 17:17
Received Date: 10/22/19 08:43
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	1.93		0.100	0.0310	mg/L	1		10/25/19 14:40
Surrogates								
4-Bromofluorobenzene (surr)	145		50-150		%	1		10/25/19 14:40

Batch Information

Analytical Batch: VFC15013
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/25/19 14:40
Container ID: 1196357002-G

Prep Batch: VXX35154
Prep Method: SW5030B
Prep Date/Time: 10/25/19 08:00
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

Results of **103513-MW-13A**

Client Sample ID: **103513-MW-13A**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357002
Lab Project ID: 1196357

Collection Date: 10/21/19 17:17
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,1,2,2-Tetrachloroethane	0.580		0.500	0.150	ug/L	1		10/24/19 15:10
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/24/19 15:10
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,2,4-Trimethylbenzene	66.9		1.00	0.310	ug/L	1		10/24/19 15:10
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/24/19 15:10
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,3,5-Trimethylbenzene	23.2		1.00	0.310	ug/L	1		10/24/19 15:10
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
4-Isopropyltoluene	1.03		1.00	0.310	ug/L	1		10/24/19 15:10
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
Benzene	46.8		0.400	0.120	ug/L	1		10/24/19 15:10
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/24/19 15:10
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
Chloroethane	0.360	J	1.00	0.310	ug/L	1		10/24/19 15:10

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Results of **103513-MW-13A**

Client Sample ID: **103513-MW-13A**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357002
Lab Project ID: 1196357

Collection Date: 10/21/19 17:17
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Chloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:10
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Ethylbenzene	326		10.0	3.10	ug/L	10		10/28/19 19:31
Freon-113	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Isopropylbenzene (Cumene)	8.89		1.00	0.310	ug/L	1		10/24/19 15:10
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		10/24/19 15:10
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
Naphthalene	104		1.00	0.310	ug/L	1		10/24/19 15:10
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
n-Propylbenzene	9.93		1.00	0.310	ug/L	1		10/24/19 15:10
o-Xylene	3.90		1.00	0.310	ug/L	1		10/24/19 15:10
P & M -Xylene	363		2.00	0.620	ug/L	1		10/24/19 15:10
sec-Butylbenzene	0.700	J	1.00	0.310	ug/L	1		10/24/19 15:10
Styrene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
tert-Butylbenzene	0.390	J	1.00	0.310	ug/L	1		10/24/19 15:10
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Toluene	8.03		1.00	0.310	ug/L	1		10/24/19 15:10
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:10
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:10
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		10/24/19 15:10
Xylenes (total)	367		3.00	1.00	ug/L	1		10/24/19 15:10
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		10/24/19 15:10
4-Bromofluorobenzene (surr)	88.3		85-114		%	1		10/24/19 15:10
Toluene-d8 (surr)	102		89-112		%	1		10/24/19 15:10

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J flagging is activated

Results of **103513-MW-13A**

Client Sample ID: **103513-MW-13A**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357002
Lab Project ID: 1196357

Collection Date: 10/21/19 17:17
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19606
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/24/19 15:10
Container ID: 1196357002-E

Prep Batch: VXX35148
Prep Method: SW5030B
Prep Date/Time: 10/24/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19612
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 19:31
Container ID: 1196357002-F

Prep Batch: VXX35161
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **103513-MW-14**

Client Sample ID: **103513-MW-14**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357003
Lab Project ID: 1196357

Collection Date: 10/21/19 13:27
Received Date: 10/22/19 08:43
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	0.951		0.577	0.173	mg/L	1		10/31/19 01:09
Surrogates								
5a Androstane (surr)	80.5		50-150		%	1		10/31/19 01:09

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/19 01:09
Container ID: 1196357003-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
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	0.243	J	0.481	0.144	mg/L	1		10/31/19 01:09
Surrogates								
n-Triacontane-d62 (surr)	84.9		50-150		%	1		10/31/19 01:09

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/31/19 01:09
Container ID: 1196357003-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **103513-MW-14**

Client Sample ID: **103513-MW-14**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357003
Lab Project ID: 1196357

Collection Date: 10/21/19 13:27
Received Date: 10/22/19 08:43
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	0.620		0.100	0.0310	mg/L	1		10/25/19 14:58
Surrogates								
4-Bromofluorobenzene (surr)	193	*	50-150		%	1		10/25/19 14:58

Batch Information

Analytical Batch: VFC15013
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/25/19 14:58
Container ID: 1196357003-E

Prep Batch: VXX35154
Prep Method: SW5030B
Prep Date/Time: 10/25/19 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **103513-MW-14**

Client Sample ID: **103513-MW-14**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357003
Lab Project ID: 1196357

Collection Date: 10/21/19 13:27
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:25
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:25
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/24/19 15:25
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,2,4-Trimethylbenzene	180		1.00	0.310	ug/L	1		10/24/19 15:25
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:25
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/24/19 15:25
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:25
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,3,5-Trimethylbenzene	13.0		1.00	0.310	ug/L	1		10/24/19 15:25
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:25
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:25
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:25
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:25
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
4-Isopropyltoluene	7.90		1.00	0.310	ug/L	1		10/24/19 15:25
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:25
Benzene	1.39		0.400	0.120	ug/L	1		10/24/19 15:25
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:25
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/24/19 15:25
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:25
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:25
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:25

Print Date: 11/01/2019 8:57:36AM

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Results of **103513-MW-14**

Client Sample ID: **103513-MW-14**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357003
Lab Project ID: 1196357

Collection Date: 10/21/19 13:27
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Chloromethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		10/24/19 15:25
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		10/24/19 15:25
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Ethylbenzene	27.5		1.00	0.310	ug/L	1		10/24/19 15:25
Freon-113	5.00 U		10.0	3.10	ug/L	1		10/24/19 15:25
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Isopropylbenzene (Cumene)	15.5		1.00	0.310	ug/L	1		10/24/19 15:25
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		10/24/19 15:25
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		10/24/19 15:25
Naphthalene	81.4		1.00	0.310	ug/L	1		10/24/19 15:25
n-Butylbenzene	5.27		1.00	0.310	ug/L	1		10/24/19 15:25
n-Propylbenzene	23.5		1.00	0.310	ug/L	1		10/24/19 15:25
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
P & M -Xylene	44.5		2.00	0.620	ug/L	1		10/24/19 15:25
sec-Butylbenzene	6.12		1.00	0.310	ug/L	1		10/24/19 15:25
Styrene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
tert-Butylbenzene	0.860 J		1.00	0.310	ug/L	1		10/24/19 15:25
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Toluene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		10/24/19 15:25
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		10/24/19 15:25
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		10/24/19 15:25
Xylenes (total)	44.5		3.00	1.00	ug/L	1		10/24/19 15:25
Surrogates								
1,2-Dichloroethane-D4 (surr)	106		81-118		%	1		10/24/19 15:25
4-Bromofluorobenzene (surr)	87.9		85-114		%	1		10/24/19 15:25
Toluene-d8 (surr)	104		89-112		%	1		10/24/19 15:25

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Results of **103513-MW-14**

Client Sample ID: **103513-MW-14**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357003
Lab Project ID: 1196357

Collection Date: 10/21/19 13:27
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19606
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/24/19 15:25
Container ID: 1196357003-C

Prep Batch: VXX35148
Prep Method: SW5030B
Prep Date/Time: 10/24/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **103513-MW-19R**

Client Sample ID: **103513-MW-19R**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357004
Lab Project ID: 1196357

Collection Date: 10/21/19 11:50
Received Date: 10/22/19 08:43
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	1.34		0.588	0.176	mg/L	1		10/31/19 01:19
Surrogates								
5a Androstane (surr)	66.3		50-150		%	1		10/31/19 01:19

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/19 01:19
Container ID: 1196357004-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
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	0.371	J	0.490	0.147	mg/L	1		10/31/19 01:19
Surrogates								
n-Triacontane-d62 (surr)	69.9		50-150		%	1		10/31/19 01:19

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/31/19 01:19
Container ID: 1196357004-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

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Results of **103513-MW-19R**

Client Sample ID: **103513-MW-19R**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357004
Lab Project ID: 1196357

Collection Date: 10/21/19 11:50
Received Date: 10/22/19 08:43
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	4.09		0.500	0.155	mg/L	5		10/29/19 04:20
Surrogates								
4-Bromofluorobenzene (surr)	151	*	50-150		%	5		10/29/19 04:20

Batch Information

Analytical Batch: VFC15015
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/29/19 04:20
Container ID: 1196357004-D

Prep Batch: VXX35160
Prep Method: SW5030B
Prep Date/Time: 10/28/19 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **103513-MW-19R**

Client Sample ID: **103513-MW-19R**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357004
Lab Project ID: 1196357

Collection Date: 10/21/19 11:50
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/24/19 15:40
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,2,4-Trimethylbenzene	1200		10.0	3.10	ug/L	10		10/28/19 19:46
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/24/19 15:40
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,3,5-Trimethylbenzene	393		10.0	3.10	ug/L	10		10/28/19 19:46
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
4-Isopropyltoluene	27.0		1.00	0.310	ug/L	1		10/24/19 15:40
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
Benzene	1.81		0.400	0.120	ug/L	1		10/24/19 15:40
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/24/19 15:40
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40

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Results of **103513-MW-19R**

Client Sample ID: **103513-MW-19R**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357004
Lab Project ID: 1196357

Collection Date: 10/21/19 11:50
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Chloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:40
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Ethylbenzene	13.4		1.00	0.310	ug/L	1		10/24/19 15:40
Freon-113	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Isopropylbenzene (Cumene)	80.3		1.00	0.310	ug/L	1		10/24/19 15:40
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		10/24/19 15:40
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
Naphthalene	84.0		1.00	0.310	ug/L	1		10/24/19 15:40
n-Butylbenzene	21.2		1.00	0.310	ug/L	1		10/24/19 15:40
n-Propylbenzene	243		10.0	3.10	ug/L	10		10/28/19 19:46
o-Xylene	2.38		1.00	0.310	ug/L	1		10/24/19 15:40
P & M -Xylene	34.6		2.00	0.620	ug/L	1		10/24/19 15:40
sec-Butylbenzene	16.0		1.00	0.310	ug/L	1		10/24/19 15:40
Styrene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
tert-Butylbenzene	2.52		1.00	0.310	ug/L	1		10/24/19 15:40
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Toluene	2.67		1.00	0.310	ug/L	1		10/24/19 15:40
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:40
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:40
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		10/24/19 15:40
Xylenes (total)	36.9		3.00	1.00	ug/L	1		10/24/19 15:40
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		10/24/19 15:40
4-Bromofluorobenzene (surr)	89.2		85-114		%	10		10/28/19 19:46
Toluene-d8 (surr)	99.2		89-112		%	1		10/24/19 15:40

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Results of **103513-MW-19R**

Client Sample ID: **103513-MW-19R**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357004
Lab Project ID: 1196357

Collection Date: 10/21/19 11:50
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19606
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/24/19 15:40
Container ID: 1196357004-C

Prep Batch: VXX35148
Prep Method: SW5030B
Prep Date/Time: 10/24/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19612
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 19:46
Container ID: 1196357004-D

Prep Batch: VXX35161
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **103513-MW-23**

Client Sample ID: **103513-MW-23**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357005
Lab Project ID: 1196357

Collection Date: 10/21/19 17:47
Received Date: 10/22/19 08:43
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
1-Methylnaphthalene	6.28		0.0490	0.0147	ug/L	1		10/27/19 16:31
2-Methylnaphthalene	7.82		0.0490	0.0147	ug/L	1		10/27/19 16:31
Acenaphthene	0.189		0.0490	0.0147	ug/L	1		10/27/19 16:31
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		10/27/19 16:31
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		10/27/19 16:31
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Fluorene	0.361		0.0490	0.0147	ug/L	1		10/27/19 16:31
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Naphthalene	28.3		0.980	0.304	ug/L	10		10/29/19 00:46
Phenanthrene	0.0754		0.0490	0.0147	ug/L	1		10/27/19 16:31
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		10/27/19 16:31
Surrogates								
2-Methylnaphthalene-d10 (surr)	61.7		47-106		%	1		10/27/19 16:31
Fluoranthene-d10 (surr)	46.3		24-116		%	1		10/27/19 16:31

Batch Information

Analytical Batch: XMS11839
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/29/19 00:46
Container ID: 1196357005-C

Prep Batch: XXX42513
Prep Method: SW3520C
Prep Date/Time: 10/23/19 08:26
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11834
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/27/19 16:31
Container ID: 1196357005-C

Prep Batch: XXX42513
Prep Method: SW3520C
Prep Date/Time: 10/23/19 08:26
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **103513-MW-23**

Client Sample ID: **103513-MW-23**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357005
Lab Project ID: 1196357

Collection Date: 10/21/19 17:47
Received Date: 10/22/19 08:43
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	2.44		0.588	0.176	mg/L	1		10/31/19 01:29
Surrogates								
5a Androstane (surr)	78.7		50-150		%	1		10/31/19 01:29

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/31/19 01:29
Container ID: 1196357005-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
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	0.854		0.490	0.147	mg/L	1		10/31/19 01:29
Surrogates								
n-Triacontane-d62 (surr)	81.6		50-150		%	1		10/31/19 01:29

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 10/31/19 01:29
Container ID: 1196357005-A

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/19 08:23
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

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Results of **103513-MW-23**

Client Sample ID: **103513-MW-23**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357005
Lab Project ID: 1196357

Collection Date: 10/21/19 17:47
Received Date: 10/22/19 08:43
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	2.22		0.100	0.0310	mg/L	1		10/25/19 15:33
Surrogates								
4-Bromofluorobenzene (surr)	157	*	50-150		%	1		10/25/19 15:33

Batch Information

Analytical Batch: VFC15013
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/25/19 15:33
Container ID: 1196357005-G

Prep Batch: VXX35154
Prep Method: SW5030B
Prep Date/Time: 10/25/19 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **103513-MW-23**

Client Sample ID: **103513-MW-23**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357005
Lab Project ID: 1196357

Collection Date: 10/21/19 17:47
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/24/19 15:55
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,2,4-Trimethylbenzene	67.4		1.00	0.310	ug/L	1		10/24/19 15:55
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/24/19 15:55
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,3,5-Trimethylbenzene	23.4		1.00	0.310	ug/L	1		10/24/19 15:55
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
4-Isopropyltoluene	0.960	J	1.00	0.310	ug/L	1		10/24/19 15:55
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
Benzene	46.3		0.400	0.120	ug/L	1		10/24/19 15:55
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/24/19 15:55
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
Chloroethane	0.340	J	1.00	0.310	ug/L	1		10/24/19 15:55

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Results of **103513-MW-23**

Client Sample ID: **103513-MW-23**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357005
Lab Project ID: 1196357

Collection Date: 10/21/19 17:47
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Chloromethane	0.310	J	1.00	0.310	ug/L	1		10/24/19 15:55
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 15:55
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Ethylbenzene	333		10.0	3.10	ug/L	10		10/28/19 20:02
Freon-113	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Isopropylbenzene (Cumene)	8.63		1.00	0.310	ug/L	1		10/24/19 15:55
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		10/24/19 15:55
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
Naphthalene	98.8		1.00	0.310	ug/L	1		10/24/19 15:55
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
n-Propylbenzene	10.0		1.00	0.310	ug/L	1		10/24/19 15:55
o-Xylene	3.93		1.00	0.310	ug/L	1		10/24/19 15:55
P & M -Xylene	352		2.00	0.620	ug/L	1		10/24/19 15:55
sec-Butylbenzene	0.700	J	1.00	0.310	ug/L	1		10/24/19 15:55
Styrene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
tert-Butylbenzene	0.400	J	1.00	0.310	ug/L	1		10/24/19 15:55
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Toluene	7.93		1.00	0.310	ug/L	1		10/24/19 15:55
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 15:55
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		10/24/19 15:55
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		10/24/19 15:55
Xylenes (total)	356		3.00	1.00	ug/L	1		10/24/19 15:55
Surrogates								
1,2-Dichloroethane-D4 (surr)	106		81-118		%	1		10/24/19 15:55
4-Bromofluorobenzene (surr)	87.1		85-114		%	1		10/24/19 15:55
Toluene-d8 (surr)	103		89-112		%	1		10/24/19 15:55

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Results of **103513-MW-23**

Client Sample ID: **103513-MW-23**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357005
Lab Project ID: 1196357

Collection Date: 10/21/19 17:47
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19606
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/24/19 15:55
Container ID: 1196357005-E

Prep Batch: VXX35148
Prep Method: SW5030B
Prep Date/Time: 10/24/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19612
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/28/19 20:02
Container ID: 1196357005-F

Prep Batch: VXX35161
Prep Method: SW5030B
Prep Date/Time: 10/28/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **103513-TB**

Client Sample ID: **103513-TB**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357006
Lab Project ID: 1196357

Collection Date: 10/21/19 10:00
Received Date: 10/22/19 08:43
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		10/25/19 13:30
Surrogates								
4-Bromofluorobenzene (surr)	73.8		50-150		%	1		10/25/19 13:30

Batch Information

Analytical Batch: VFC15013
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 10/25/19 13:30
Container ID: 1196357006-C

Prep Batch: VXX35154
Prep Method: SW5030B
Prep Date/Time: 10/25/19 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **103513-TB**

Client Sample ID: **103513-TB**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357006
Lab Project ID: 1196357

Collection Date: 10/21/19 10:00
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/24/19 12:37
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/24/19 12:37
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
Benzene	0.200	U	0.400	0.120	ug/L	1		10/24/19 12:37
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/24/19 12:37
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37

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Results of **103513-TB**

Client Sample ID: **103513-TB**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357006
Lab Project ID: 1196357

Collection Date: 10/21/19 10:00
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Chloromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		10/24/19 12:37
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Freon-113	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		10/24/19 12:37
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
Naphthalene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
o-Xylene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		10/24/19 12:37
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Styrene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Toluene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		10/24/19 12:37
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		10/24/19 12:37
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		10/24/19 12:37
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		10/24/19 12:37
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		10/24/19 12:37
4-Bromofluorobenzene (surr)	95		85-114		%	1		10/24/19 12:37
Toluene-d8 (surr)	104		89-112		%	1		10/24/19 12:37

Print Date: 11/01/2019 8:57:36AM

J flagging is activated

Results of **103513-TB**

Client Sample ID: **103513-TB**
Client Project ID: **103513 - 459 W. Bluff Dr.**
Lab Sample ID: 1196357006
Lab Project ID: 1196357

Collection Date: 10/21/19 10:00
Received Date: 10/22/19 08:43
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19606
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/24/19 12:37
Container ID: 1196357006-A

Prep Batch: VXX35148
Prep Method: SW5030B
Prep Date/Time: 10/24/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1801540 [VXX/35148]
Blank Lab ID: 1540527

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357001, 1196357002, 1196357003, 1196357004, 1196357005, 1196357006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Method Blank

Blank ID: MB for HBN 1801540 [VXX/35148]
Blank Lab ID: 1540527

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357001, 1196357002, 1196357003, 1196357004, 1196357005, 1196357006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	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
n-Propylbenzene	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
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	97	85-114		%
Toluene-d8 (surr)	103	89-112		%

Method Blank

Blank ID: MB for HBN 1801540 [VXX/35148]
Blank Lab ID: 1540527

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357001, 1196357002, 1196357003, 1196357004, 1196357005, 1196357006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS19606
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: CMC
Analytical Date/Time: 10/24/2019 11:05:00AM

Prep Batch: VXX35148
Prep Method: SW5030B
Prep Date/Time: 10/24/2019 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 1196357 [VXX35148]
Blank Spike Lab ID: 1540528
Date Analyzed: 10/24/2019 11:20

Spike Duplicate ID: LCSD for HBN 1196357 [VXX35148]
Spike Duplicate Lab ID: 1540529
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357001, 1196357002, 1196357003, 1196357004, 1196357005, 1196357006

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	33.4	111	30	33.4	111	(78-124)	0.05	(< 20)
1,1,1-Trichloroethane	30	31.6	105	30	31.5	105	(74-131)	0.11	(< 20)
1,1,2,2-Tetrachloroethane	30	28.1	94	30	28.5	95	(71-121)	1.50	(< 20)
1,1,2-Trichloroethane	30	31.3	104	30	31.3	104	(80-119)	0.26	(< 20)
1,1-Dichloroethane	30	30.0	100	30	29.6	99	(77-125)	1.20	(< 20)
1,1-Dichloroethene	30	29.9	100	30	30.1	100	(71-131)	0.61	(< 20)
1,1-Dichloropropene	30	30.5	102	30	30.3	101	(79-125)	0.81	(< 20)
1,2,3-Trichlorobenzene	30	30.5	102	30	31.4	105	(69-129)	3.10	(< 20)
1,2,3-Trichloropropane	30	29.3	98	30	29.2	98	(73-122)	0.28	(< 20)
1,2,4-Trichlorobenzene	30	29.8	99	30	30.2	101	(69-130)	1.40	(< 20)
1,2,4-Trimethylbenzene	30	27.4	91	30	27.4	91	(79-124)	0.04	(< 20)
1,2-Dibromo-3-chloropropane	30	29.0	97	30	29.2	98	(62-128)	0.97	(< 20)
1,2-Dibromoethane	30	30.6	102	30	30.7	102	(77-121)	0.51	(< 20)
1,2-Dichlorobenzene	30	30.2	101	30	30.5	102	(80-119)	0.87	(< 20)
1,2-Dichloroethane	30	30.3	101	30	30.2	101	(73-128)	0.54	(< 20)
1,2-Dichloropropane	30	29.8	99	30	29.6	99	(78-122)	0.81	(< 20)
1,3,5-Trimethylbenzene	30	27.4	91	30	27.1	90	(75-124)	1.00	(< 20)
1,3-Dichlorobenzene	30	30.9	103	30	30.8	103	(80-119)	0.46	(< 20)
1,3-Dichloropropane	30	31.4	105	30	31.4	105	(80-119)	0.12	(< 20)
1,4-Dichlorobenzene	30	30.7	102	30	30.9	103	(79-118)	0.78	(< 20)
2,2-Dichloropropane	30	29.1	97	30	29.1	97	(60-139)	0.02	(< 20)
2-Butanone (MEK)	90	107	119	90	107	119	(56-143)	0.35	(< 20)
2-Chlorotoluene	30	26.9	90	30	26.4	88	(79-122)	1.80	(< 20)
2-Hexanone	90	105	116	90	105	117	(57-139)	0.59	(< 20)
4-Chlorotoluene	30	27.2	91	30	27.2	91	(78-122)	0.17	(< 20)
4-Isopropyltoluene	30	29.4	98	30	29.8	99	(77-127)	1.50	(< 20)
4-Methyl-2-pentanone (MIBK)	90	91.2	101	90	90.9	101	(67-130)	0.34	(< 20)
Benzene	30	28.9	96	30	29.7	99	(79-120)	3.00	(< 20)
Bromobenzene	30	29.4	98	30	29.3	98	(80-120)	0.24	(< 20)
Bromochloromethane	30	29.7	99	30	29.5	98	(78-123)	0.83	(< 20)
Bromodichloromethane	30	32.5	108	30	32.1	107	(79-125)	1.40	(< 20)
Bromoform	30	37.3	124	30	37.2	124	(66-130)	0.25	(< 20)
Bromomethane	30	28.4	95	30	29.3	98	(53-141)	3.10	(< 20)
Carbon disulfide	45	43.6	97	45	44.2	98	(64-133)	1.40	(< 20)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196357 [VXX35148]
Blank Spike Lab ID: 1540528
Date Analyzed: 10/24/2019 11:20

Spike Duplicate ID: LCSD for HBN 1196357 [VXX35148]
Spike Duplicate Lab ID: 1540529
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357001, 1196357002, 1196357003, 1196357004, 1196357005, 1196357006

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	33.8	113	30	33.6	112	(72-136)	0.36	(< 20)
Chlorobenzene	30	28.8	96	30	28.7	96	(82-118)	0.56	(< 20)
Chloroethane	30	32.4	108	30	40.0	133	(60-138)	21.00	* (< 20)
Chloroform	30	31.0	103	30	30.7	102	(79-124)	0.71	(< 20)
Chloromethane	30	29.6	99	30	29.6	99	(50-139)	0.20	(< 20)
cis-1,2-Dichloroethene	30	29.1	97	30	28.9	96	(78-123)	0.56	(< 20)
cis-1,3-Dichloropropene	30	29.7	99	30	29.2	98	(75-124)	1.60	(< 20)
Dibromochloromethane	30	33.0	110	30	33.3	111	(74-126)	0.79	(< 20)
Dibromomethane	30	30.0	100	30	29.9	100	(79-123)	0.33	(< 20)
Dichlorodifluoromethane	30	30.4	101	30	30.5	102	(32-152)	0.58	(< 20)
Ethylbenzene	30	29.8	100	30	29.7	99	(79-121)	0.63	(< 20)
Freon-113	45	45.8	102	45	45.6	101	(70-136)	0.32	(< 20)
Hexachlorobutadiene	30	27.8	93	30	29.3	98	(66-134)	5.30	(< 20)
Isopropylbenzene (Cumene)	30	31.1	104	30	30.9	103	(72-131)	0.39	(< 20)
Methylene chloride	30	29.0	97	30	29.1	97	(74-124)	0.39	(< 20)
Methyl-t-butyl ether	45	46.3	103	45	46.1	102	(71-124)	0.59	(< 20)
Naphthalene	30	29.1	97	30	30.1	100	(61-128)	3.60	(< 20)
n-Butylbenzene	30	26.8	89	30	27.1	91	(75-128)	1.40	(< 20)
n-Propylbenzene	30	27.6	92	30	27.4	92	(76-126)	0.66	(< 20)
o-Xylene	30	29.7	99	30	29.3	98	(78-122)	1.30	(< 20)
P & M -Xylene	60	58.9	98	60	59.1	99	(80-121)	0.29	(< 20)
sec-Butylbenzene	30	27.4	91	30	27.5	92	(77-126)	0.32	(< 20)
Styrene	30	30.9	103	30	30.2	101	(78-123)	2.40	(< 20)
tert-Butylbenzene	30	29.6	99	30	29.2	97	(78-124)	1.30	(< 20)
Tetrachloroethene	30	30.6	102	30	30.7	102	(74-129)	0.36	(< 20)
Toluene	30	28.0	94	30	27.7	92	(80-121)	1.30	(< 20)
trans-1,2-Dichloroethene	30	29.4	98	30	29.7	99	(75-124)	0.83	(< 20)
trans-1,3-Dichloropropene	30	31.6	105	30	31.7	106	(73-127)	0.27	(< 20)
Trichloroethene	30	29.5	99	30	29.4	98	(79-123)	0.54	(< 20)
Trichlorofluoromethane	30	33.7	112	30	36.4	121	(65-141)	7.70	(< 20)
Vinyl acetate	30	34.8	116	30	34.7	116	(54-146)	0.21	(< 20)
Vinyl chloride	30	28.9	96	30	28.4	95	(58-137)	1.80	(< 20)
Xylenes (total)	90	88.6	98	90	88.4	98	(79-121)	0.23	(< 20)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196357 [VXX35148]
Blank Spike Lab ID: 1540528
Date Analyzed: 10/24/2019 11:20

Spike Duplicate ID: LCSD for HBN 1196357 [VXX35148]
Spike Duplicate Lab ID: 1540529
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357001, 1196357002, 1196357003, 1196357004, 1196357005, 1196357006

Results by **SW8260C**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	106	106	30	106	106	(81-118)	0.52	
4-Bromofluorobenzene (surr)	30	89	89	30	89.4	89	(85-114)	0.37	
Toluene-d8 (surr)	30	102	102	30	103	103	(89-112)	1.00	

Batch Information

Analytical Batch: **VMS19606**
Analytical Method: **SW8260C**
Instrument: **Agilent 7890-75MS**
Analyst: **CMC**

Prep Batch: **VXX35148**
Prep Method: **SW5030B**
Prep Date/Time: **10/24/2019 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1801601 [VXX/35154]
Blank Lab ID: 1540815

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357001, 1196357002, 1196357003, 1196357005, 1196357006

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	76.1	50-150		%

Batch Information

Analytical Batch: VFC15013
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 10/25/2019 11:19:00AM

Prep Batch: VXX35154
Prep Method: SW5030B
Prep Date/Time: 10/25/2019 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1196357 [VXX35154]
Blank Spike Lab ID: 1540816
Date Analyzed: 10/25/2019 11:55

Spike Duplicate ID: LCSD for HBN 1196357 [VXX35154]
Spike Duplicate Lab ID: 1540817
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357001, 1196357002, 1196357003, 1196357005, 1196357006

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	0.937	94	1.00	0.957	96	(60-120)	2.10	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	83.7	84	0.0500	84.7	85	(50-150)	1.20	

Batch Information

Analytical Batch: **VFC15013**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ST**

Prep Batch: **VXX35154**
Prep Method: **SW5030B**
Prep Date/Time: **10/25/2019 08:00**
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 1801632 [VXX/35160]
Blank Lab ID: 1540981

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357004

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	81.2	50-150		%

Batch Information

Analytical Batch: VFC15015
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 10/29/2019 3:09:00AM

Prep Batch: VXX35160
Prep Method: SW5030B
Prep Date/Time: 10/28/2019 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196357 [VXX35160]
Blank Spike Lab ID: 1540982
Date Analyzed: 10/29/2019 00:12

Spike Duplicate ID: LCSD for HBN 1196357 [VXX35160]
Spike Duplicate Lab ID: 1540983
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357004

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	1.01	101	1.00	0.996	100	(60-120)	1.40	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	97.3	97	0.0500	96.3	96	(50-150)	1.10	

Batch Information

Analytical Batch: **VFC15015**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX35160**
Prep Method: **SW5030B**
Prep Date/Time: **10/28/2019 08:00**
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 1801645 [VXX/35161]
Blank Lab ID: 1541023

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357001, 1196357002, 1196357004, 1196357005

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	93.1	85-114		%
Toluene-d8 (surr)	102	89-112		%

Batch Information

Analytical Batch: VMS19612
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: CMC
Analytical Date/Time: 10/28/2019 4:30:00PM

Prep Batch: VXX35161
Prep Method: SW5030B
Prep Date/Time: 10/28/2019 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 1196357 [VXX35161]
Blank Spike Lab ID: 1541024
Date Analyzed: 10/28/2019 16:46

Spike Duplicate ID: LCSD for HBN 1196357 [VXX35161]
Spike Duplicate Lab ID: 1541025
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357001, 1196357002, 1196357004, 1196357005

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	25.8	86	30	25.2	84	(79-124)	2.30	(< 20)
1,3,5-Trimethylbenzene	30	26.0	87	30	25.1	84	(75-124)	3.20	(< 20)
Ethylbenzene	30	28.1	94	30	27.2	91	(79-121)	3.20	(< 20)
Naphthalene	30	26.7	89	30	27.4	91	(61-128)	2.50	(< 20)
n-Propylbenzene	30	25.8	86	30	24.7	82	(76-126)	4.20	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	107	107	30	106	106	(81-118)	0.84	
4-Bromofluorobenzene (surr)	30	89	89	30	88.4	88	(85-114)	0.76	
Toluene-d8 (surr)	30	101	101	30	101	101	(89-112)	0.58	

Batch Information

Analytical Batch: **VMS19612**
Analytical Method: **SW8260C**
Instrument: **Agilent 7890-75MS**
Analyst: **CMC**

Prep Batch: **VXX35161**
Prep Method: **SW5030B**
Prep Date/Time: **10/28/2019 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1801411 [XXX/42513]
Blank Lab ID: 1539909

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357002, 1196357005

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

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
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)	46.5*	47-106		%
Fluoranthene-d10 (surr)	47.9	24-116		%

Batch Information

Analytical Batch: XMS11834
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 10/27/2019 2:48:00PM

Prep Batch: XXX42513
Prep Method: SW3520C
Prep Date/Time: 10/23/2019 8:26:01AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1196357 [XXX42513]
Blank Spike Lab ID: 1539910
Date Analyzed: 10/27/2019 15:09

Spike Duplicate ID: LCSD for HBN 1196357 [XXX42513]
Spike Duplicate Lab ID: 1539911
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357002, 1196357005

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

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.29	64	2	1.39	70	(41-115)	7.90	(< 20)
2-Methylnaphthalene	2	1.28	64	2	1.39	70	(39-114)	8.10	(< 20)
Acenaphthene	2	1.26	63	2	1.39	69	(48-114)	9.30	(< 20)
Acenaphthylene	2	1.34	67	2	1.45	72	(35-121)	7.60	(< 20)
Anthracene	2	1.34	67	2	1.47	73	(53-119)	8.70	(< 20)
Benzo(a)Anthracene	2	1.31	66	2	1.35	67	(59-120)	2.50	(< 20)
Benzo[a]pyrene	2	1.29	65	2	1.33	67	(53-120)	3.30	(< 20)
Benzo[b]Fluoranthene	2	1.44	72	2	1.50	75	(53-126)	3.80	(< 20)
Benzo[g,h,i]perylene	2	1.31	66	2	1.38	69	(44-128)	5.50	(< 20)
Benzo[k]fluoranthene	2	1.44	72	2	1.46	73	(54-125)	0.93	(< 20)
Chrysene	2	1.39	69	2	1.41	71	(57-120)	1.90	(< 20)
Dibenzo[a,h]anthracene	2	1.25	63	2	1.33	67	(44-131)	6.00	(< 20)
Fluoranthene	2	1.34	67	2	1.41	71	(58-120)	5.40	(< 20)
Fluorene	2	1.33	67	2	1.45	72	(50-118)	8.30	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.45	73	2	1.50	75	(48-130)	3.10	(< 20)
Naphthalene	2	1.30	65	2	1.43	71	(43-114)	9.00	(< 20)
Phenanthrene	2	1.26	63	2	1.34	67	(53-115)	5.70	(< 20)
Pyrene	2	1.39	70	2	1.46	73	(53-121)	5.20	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	73.7	74	2	74.7	75	(47-106)	1.30	
Fluoranthene-d10 (surr)	2	72.3	72	2	74.9	75	(24-116)	3.60	

Batch Information

Analytical Batch: **XMS11834**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **DSD**

Prep Batch: **XXX42513**
Prep Method: **SW3520C**
Prep Date/Time: **10/23/2019 08:26**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1801619 [XXX/42531]
Blank Lab ID: 1540930

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357001, 1196357002, 1196357003, 1196357004, 1196357005

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	82.9	60-120		%

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 10/30/2019 6:06:00PM

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/2019 8:23:06AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1196357 [XXX42531]
Blank Spike Lab ID: 1540931
Date Analyzed: 10/30/2019 18:36

Spike Duplicate ID: LCSD for HBN 1196357 [XXX42531]
Spike Duplicate Lab ID: 1540932
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357001, 1196357002, 1196357003, 1196357004, 1196357005

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	19.0	95	20	17.2	86	(75-125)	9.70	(< 20)
Surrogates									
5a Androstane (surr)	0.4	98.4	98	0.4	91.8	92	(60-120)	6.90	

Batch Information

Analytical Batch: **XFC15456**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **CMS**

Prep Batch: **XXX42531**
Prep Method: **SW3520C**
Prep Date/Time: **10/29/2019 08:23**
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 1801619 [XXX/42531]
Blank Lab ID: 1540930

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196357001, 1196357002, 1196357003, 1196357004, 1196357005

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)	86.6	60-120		%

Batch Information

Analytical Batch: XFC15456
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 10/30/2019 6:06:00PM

Prep Batch: XXX42531
Prep Method: SW3520C
Prep Date/Time: 10/29/2019 8:23:06AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1196357 [XXX42531]
Blank Spike Lab ID: 1540931
Date Analyzed: 10/30/2019 18:36

Spike Duplicate ID: LCSD for HBN 1196357 [XXX42531]
Spike Duplicate Lab ID: 1540932
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196357001, 1196357002, 1196357003, 1196357004, 1196357005

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	20.7	103	20	18.9	95	(60-120)	9.10	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	93.4	93	0.4	87.9	88	(60-120)	6.00	

Batch Information

Analytical Batch: **XFC15456**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **CMS**

Prep Batch: **XXX42531**
Prep Method: **SW3520C**
Prep Date/Time: **10/29/2019 08:23**
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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1196357

Profile: 334867 JKJ

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Laboratory SGS
Attn: Jillian

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St. Louis, MO 63146-3564
(314) 699-9660

2705 Saint Andrews Loop, Suite A
Pasco, WA 99301-3378
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

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

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

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PRO/RRO AK102/AK103	PAHs EPA 8270D-SIM	VOCs EPA 8260C	GRO AK101			Total Number of Containers	Remarks/Matrix
103513 - MW-6B	(1) A-E	14:48	10/21/19		X	X	~~X~~ (SIM)	X	X			5	Groundwater
-- MW-13A	(2) A-G	17:17	↓		↓	↓	X	↓	↓			7	↓
- MW-14	(3) A-E	13:27										5	
- MW-19R	(4) A-E	11:50										5	
- MW-23	(5) A-G	17:47	↓		↓	↓	X	↓	↓			7	↓
- TB	(6) A-C	10:00	↓					↓	↓			1	trip blank (water)

Project Information		Sample Receipt	
Project Number:	103513	Total Number of Containers	
Project Name:	459 W. Bluff Dr.	COC Seals/Intact? Y/N/NA	
Contact:	JKH, TWC	Received Good Cond./Cold	
Ongoing Project?	Yes ☒ No ☐	Delivery Method:	
Sampler:	JKH	(attach shipping bill, if any)	

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	Limited sample volume VOC/GRO

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: [signature] Time: 8:43	Signature: Time:	Signature: Time:
Printed Name: Judy Hepner Date: 10/22/19	Printed Name: Date:	Printed Name: Date:
Company: SWI	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: [signature] Time: 0843
Printed Name: Date:	Printed Name: Date:	Printed Name: Nicole Warner Date: 10/22/19
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

CS: HD TB: 1.7 D60

59[illegible]

No. 30959

e-Sample Receipt Form

SGS Workorder #: **1196357**

1 1 9 6 3 5 7

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
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 @ 1.7 °C Therm. ID: D60
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	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	Only 3 VOA were provided for two analyses. Proceeding with limited volume.
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?	N/A	

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

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1196357001-A	HCL to pH < 2	OK			
1196357001-B	HCL to pH < 2	OK			
1196357001-C	HCL to pH < 2	OK			
1196357001-D	HCL to pH < 2	OK			
1196357001-E	HCL to pH < 2	OK			
1196357002-A	HCL to pH < 2	OK			
1196357002-B	HCL to pH < 2	OK			
1196357002-C	No Preservative Required	OK			
1196357002-D	No Preservative Required	OK			
1196357002-E	HCL to pH < 2	OK			
1196357002-F	HCL to pH < 2	OK			
1196357002-G	HCL to pH < 2	OK			
1196357003-A	HCL to pH < 2	OK			
1196357003-B	HCL to pH < 2	OK			
1196357003-C	HCL to pH < 2	OK			
1196357003-D	HCL to pH < 2	OK			
1196357003-E	HCL to pH < 2	OK			
1196357004-A	HCL to pH < 2	OK			
1196357004-B	HCL to pH < 2	OK			
1196357004-C	HCL to pH < 2	OK			
1196357004-D	HCL to pH < 2	OK			
1196357004-E	HCL to pH < 2	OK			
1196357005-A	HCL to pH < 2	OK			
1196357005-B	HCL to pH < 2	OK			
1196357005-C	No Preservative Required	OK			
1196357005-D	No Preservative Required	OK			
1196357005-E	HCL to pH < 2	OK			
1196357005-F	HCL to pH < 2	OK			
1196357005-G	HCL to pH < 2	OK			
1196357006-A	HCL to pH < 2	OK			
1196357006-B	HCL to pH < 2	OK			
1196357006-C	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.
QN - Insufficient sample quantity provided.

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: 459 West Bluff Drive
Anchorage, Alaska

Date: November 2019

Laboratory Report Date: November 1, 2019

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Trevor Crosby, CPG
Title: Senior Geologist
Laboratory Name: SGS North America, Inc.
Work Order Number: 1196357
ADEC File Number: *605*

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

1. Laboratory

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

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-approved?
Yes / No / NA
Comments: *The samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.*

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?
Yes / No / NA (Please explain.)
Comments**:**

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

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6°C)?
Yes / No / NA (Please explain.)
Comments: *The temperature blank had a temperature of 1.7°* C.

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

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

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? **Yes / No / NA (Please explain.)**
Comments: *Only three VOA vials were provided for GRO/VOCs. The laboratory noted it proceeded with limited volume.*

e. Data quality or usability affected? **Yes / No (Please Explain.)**
Comments*: See above.*

4. Case Narrative

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

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

- *GRO surrogate 4-bromofluorobenzene recovery for Project Samples MW-6B, MW-14, MW-19R, and MW-23 do not meet the QC criteria due to matrix interference.*
- *For Method EPA 8260C, LCS/LCSD recovery for chloroethane does not meet QC criteria. This analyte was not detected above the LOQ in the associated samples.*

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

d. What is the effect on data quality/usability, according to the case narrative?
Comments: *The case narrative does not discuss quality/usability.*

5. Sample Results

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

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

c. All soils reported on a dry-weight basis? **Yes / No / NA (Please explain.)**
Comments: *Soil samples were not submitted as part of this work order.*

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes / No / NA (Please explain.)**
Comments*: The LOQ for 1,2,3-trichloropropane is greater than its respective ADEC Table C cleanup level.*

e. Data quality or usability affected? **(Please explain.)**
Comments: *The data cannot be used to determine whether or not concentration of 1,2,3-trichloropropane is present at a concentration greater than its respective ADEC cleanup level, but less than the LOQ.*

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No / NA (Please explain.)
Comments:

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

iii. If above LOQ, what samples are affected?
Comments:

iv. Do the affected sample(s) have data flags? **Yes / No / NA**
Comments:

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

v. Data quality or usability affected? **(Please explain.)**
Comments: *See above.*

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) **Yes / No / *NA***
(Please explain.)
Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes / No / NA (Please explain.)**
Comments: *Only organic analyses were requested with this work order.*

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

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / NA (Please explain.)**
Comments: *LCS/LCSD recovery for chloroethane does not meet QC criteria.*

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: *All project samples are potentially affected.*

vi. Do the affected samples(s) have data flags? **Yes / No / NA**
Comments: *Chloroethane was not detected in the parent sample. Therefore, flagging is not required.*

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

vii. Data quality or usability affected? Explain. ***NA***
Comments*: See above.*

c. Surrogates - Organics Only

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

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

- *GRO surrogate 4-bromofluorobenzene recovery for Project Samples MW-6B, MW-14, MW-19R, and MW-23 do not meet the QC criteria due to matrix interference.*

iii. Do the sample results with failed surrogate recoveries have data flags? **Yes / No / NA (Please explain.)**
Comments: *Project samples affected by surrogate recovery failures due to matrix interference are flagged "J+" on Tables 2, 3, and 4 of the report.*

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

iv. Data quality or usability affected? Explain.
Comments: *The flagged data are considered estimates biased high.*

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

i. One trip blank reported per matrix, analysis and cooler? **Yes / No / NA (Please explain.)**
Comments: *One water trip blank (TB) was submitted to the lab with the samples.*

ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes / No / NA (Please explain if NA or no.)**
Comments: *Only one cooler was used to transport the samples.*

iii. All results less than LOQ? **Yes / No / NA (Please explain.)**
Comments:

iv. If above LOQ, what samples are affected?
Comments:

v. Data quality or usability affected? Explain.
Comments: *See above.*

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples? **Yes / No / NA (Please explain.)**
Comments: *Sample MW-23 is the field duplicate of Sample MW-13A.*

ii. Were the field duplicates submitted blind to the lab? **Yes / No / NA (Please explain.)**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) **Yes / No / NA (Please explain.)**
Comments:

- *The 2-methylnaphthalene, naphthalene and phenanthrene RPDs for the duplicate pair MW-13A/MW-23 were calculated outside the specified DQO at 170%, 33%, and 30%, respectively.*
- *The affected result for the duplicate pair is flagged "E" to indicate estimated results.*

iv. Data quality or usability affected? Explain. ***NA***
Comments: *Affected data are considered estimated results, but still usable for the purposes of this report.*

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below) **Yes / No / NA (Please explain.)**
Comments: *A decontamination and/or equipment blank was not included in the scope for this project.*

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

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

iii. Data quality or usability affected? Explain. ***NA***
Comments:

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

a. Are they defined and appropriate? **Yes / No / NA**
Comments: *Laboratory-specific flags are defined on page 3 of the SGS report.*

ATTACHMENT 3

INVESTIGATION DERIVED WASTE DISPOSAL DOCUMENTATION

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention and Emergency Response Programs

Transport, Treatment, & Disposal Approval Form for Contaminated Media

DEC HAZARD/SPILL ID #	NAME OF SPILL OR CONTAMINATED SITE	
605	Crowley, Port of Anchorage	
SITE OR SPILL LOCATION		
459 West Bluff Dr., Anchorage, Alaska		
CURRENT LOCATION AND TYPE OF CONTAMINATED MEDIA	**SOURCE OF THE CONTAMINATION**	
459 West Bluff Dr. / Purge Water	Dissolved Phase Hydrocarbons	
COMPOUNDS OF CONCERN	**ESTIMATED VOLUME**	**DATE(S) GENERATED**
GRO, DRO, RRO, VOCs, and PAHs	1, 55-gal drum	October 21, 2019
POST TREATMENT ANALYSIS REQUIRED *(such as GRO, DRO, RRO, BTEX, and/or Chlorinated Solvents)*		
NA		
COMMENTS		
Impacted purge water generated from on-site monitoring wells during October 2019 groundwater sampling activities.		

Facility Accepting the Contaminated Media

NAME OF THE FACILITY	PHYSICAL ADDRESS/PHONE NUMBER
NRC Alaska, Inc.	2020 Viking Drive, Anchorage, Alaska 99501 (907) 258-1558

Responsible Party and Contractor Information

BUSINESS/NAME	ADDRESS/PHONE NUMBER
Prathap "PK" Kodial	Crowley Fuels LLC
Project Manager, Facilities Engineering	907-777-5505

Trevor Crosby	Senior Geologist/Shannon&Wilson	
Name of the Person Requesting Approval (printed)	Title/Association	
Signature	11/4/2019 Date	433-3246 Phone Number

----------DEC USE ONLY----------

Based on the information provided, ADEC approves transport of the above-described media for treatment in accordance with the approved facility operations plan. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight/volume receipts of the loads transported to the facility and a post treatment analytical report. If the media is contaminated soil, it shall be transported as a covered load in compliance with 18 AAC 60.015.

Grant Lidren	EPS IV	
DEC Project Manager Name (printed)	Project Manager Title	
Signature	11/4/2019 Date	269-8685 Phone Number

*** IN CASE OF EMERGENCY CALL 800-899-4672 ***

145169-PARK

NON-HAZARDOUS WASTE MANIFEST

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

NON-HAZARDOUS WASTE

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: AKD000831750

Manifest Document No.: 145169A

2. Page 1 of 1

3. Generator's Name and Mailing Address
CROWLEY PETROLEUM
201 ARCTIC SLOPE AVENUE
ANCHORAGE, AK 99518

CROWLEY PETROLEUM
459 WEST BLUFF ROAD
ANCHORAGE, AK 99501

32

4. Generator's Phone ( )

5. Transporter 1 Company Name: NRC ALASKA LLC

6. US EPA ID Number: AKR000004184

A. State Transporter's ID

B. Transporter 1 Phone: 907-258-1558

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

10. US EPA ID Number: AKR000004184

E. State Facility's ID

F. Facility's Phone: 907-258-1558

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
HM a. MATERIAL NOT REGULATED BY D.O.T.	1	DM	100	P
b.				
c.				
d.				

GENERATOR

G. Additional Descriptions for Materials Listed Above

1) EA0302 IDW DECON WATER / GROUNDWATER

H. Handling Codes for Wastes Listed Above

D26992

15. Special Handling Instructions and Additional Information

Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date (Month / Day / Year)
X Judy Hepner	X	11 / 6 / 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month / Day / Year)
Roy C Trisdale JR	Roy C Trisdale JR	11 / 6 / 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month / Day / Year)

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date (Month / Day / Year)
Patricia L. Beasley	Patricia L Beasley	11 / 8 / 19

CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: CROWLEY PETROLEUM
459 WEST BLUFF ROAD
ANCHORAGE, AK 99501

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

EPA ID NUMBER: AKD000831750
MANIFEST/DOCUMENT #: 145169A
DATE OF DISPOSAL/RECYCLE: NOV-08-2019

LINE	WASTE DESCRIPTION	CONTAINERS	TYPE	QUANTITY	UOM
1	IDW DECON WATER / GROUNDWATER	1	DM	100	P

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

PREPARED BY: PLB

SIGNATURE: Patricia L Bradley **DATE:** NOV 08 2019

425 Outer Springer Loop Road - Palmer, AK 99645 - (907) 258-1558 - Fax (907) 746-3651 - Toll Free (877) 375-5040

ATTACHMENT 4

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 103513-001

Date: November 2019

To: Crowley Fuels LLC
459 West Bluff Drive

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland