

May 23, 2017

Holiday Companies
4567 American Boulevard West
Bloomington, MN 55437

Attn: Ms. Camie Pederson, P.E.

RE: SEPTEMBER 2016 GROUNDWATER MONITORING, FORMER WILLIAMS EXPRESS SITE NO. 5021, 6010 OLD SEWARD HIGHWAY, ANCHORAGE, ALASKA

ADEC File No. 2100.26.030; FacID No. 0727

This letter report presents the results of our September 2016 groundwater monitoring event conducted at the former Williams Express Site (WES) No. 5021 located at 6010 Old Seward Highway, Anchorage, Alaska. A site plan illustrating pertinent site features with the results from the September 2016 sampling event is included as Figure 1.

BACKGROUND

At least 19 underground storage tanks (USTs) have been in use at or near WES No. 5021 since the late 1950s. The earliest formal records of on-site tank installations are four USTs that were installed in 1975. A vapor extraction system (VES) and groundwater pump-and-treat (P&T) system were installed at the site in December 1990 and October 1991, respectively. The P&T system function was limited due to low water table conditions, and was shut down in January 2004. The VES system was last operated in 2007 and decommissioned in 2013.

As part of ongoing site characterization activities, 40 groundwater monitoring wells have been installed at the site and neighboring properties. Many of these wells were decommissioned prior to 2016. In addition, during road construction activities conducted by the Municipality of Anchorage in 2016, Monitoring Wells MW-9, MW-35, MW-36, MW-41, MW-43, and MW-44 were paved over and assumed destroyed. Currently eight groundwater monitoring wells, including Wells MW-1R, MW-30, MW-31, MW-32, MW-39, MW-40, MW-42, and B5MW, remain at the site. The approximate locations of former and existing wells are shown on Figure 1.

GROUNDWATER MONITORING

Groundwater samples were collected from five monitoring wells (MW-1R, MW-31, MW-32, MW-39, and MW-42) on September 20, 2016. In addition, Wells MW-30, and B5MW were screened for the presence of measurable product and groundwater depth measurements were collected.

The groundwater samples were collected following purging, which consisted of removing approximately three well volumes from each well with disposable bailers. Field parameters including temperature, specific conductivity, pH, dissolved oxygen, and turbidity were measured following removal of the three well volumes. Monitoring well sampling data for the September 2016 sampling event are presented in Table 1.

The purgewater from Well MW-32, which has historically contained contaminant concentrations less than the applicable cleanup levels, was discharged to unpaved portions of the site, as approved by Mr. O'Connell of the ADEC in an August 19, 2013 email. The purgewater from wells which historically contained contaminant concentrations in excess of the applicable ADEC cleanup levels (Well MW-1R, MW-31, and MW-42) was containerized in a 55-gallon drum and transported to Holiday Station Store (HSS) 602 for temporary storage. The purge water will be disposed by NRC Alaska, LLC following the 2017 annual groundwater sampling event.

GROUNDWATER FLOW DATA

The groundwater depths ranged from 20.62 feet (Well MW-39) to 27.17 (Well MW-42) feet below the tops of the well casings. Based on historical data, the local groundwater flow direction the vicinity of WES No. 5021 is generally oriented to the southwest.

LABORATORY ANALYSES

The groundwater samples were submitted to SGS North America Inc. (SGS) of Anchorage, Alaska using chain-of custody procedures. Analytical results for the September 2016 sampling event are shown on Table 2 and Figure 1. The groundwater samples were analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101; diesel range organics (DRO) by AK 102; and benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021B. The sample collected from Well MW-32 was also analyzed for residual range organics (RRO) by AK 103. A trip blank was submitted with the samples and analyzed for GRO by AK 101 and BTEX by EPA Method 8021B.

DISCUSSION OF RESULTS

The following discussion of analytical results includes an assessment of the present extent of contamination. Groundwater analytical results, including historical analytical results from the past ten years, are present in Table 3.

Groundwater

Based on concentration magnitudes and/or the historical presence of non-aqueous phase liquid (NAPL), existing Wells MW-30, MW-1R, and B5MW and former Wells MW-1, B4P, MW-12, MW-27, and MW-28 appear to be representative of source-area conditions. Historically, free-phase NAPL has been observed at least once in existing Wells B5MW and MW-30 and former Wells, B4P, MW-12, and MW-27. Wells MW-30 and B5MW are checked for free-phase NAPL annually but are not sampled. Measurable NAPL was not observed in these wells during the September 2016 sampling event.

The September 2016 samples collected from Wells MW-1R, MW-31, and MW-42 contained GRO, benzene, ethylbenzene, and xylenes concentrations exceeding the ADEC's Table C cleanup levels. DRO (11.7 mg/L) was also detected in Sample MW-1R at a concentration exceeding the ADEC cleanup level of 1.5 mg/L. Target analytes in the remaining September 2016 groundwater samples were not detected, or were reported at concentrations less than the ADEC cleanup level.

During the September 2016 groundwater sampling event, the potentiometric groundwater surface was above the top of the well screen in Well MW-32. Therefore, the water sample collected from this well may not be representative of the smear zone, where the highest concentrations of petroleum hydrocarbons would be expected if the potentiometric surface is equal to the water table (i.e. not a confined or semi-confined aquifer with positive pore pressure).

Quality Control

The project laboratory follows on-going quality assurance/quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQOs). Internal laboratory controls to assess data quality for this project include surrogates, method blanks, matrix spike/matrix spike duplicates (MS/MSD), and laboratory control sample/laboratory control sample duplicates (LCS/LCSD) to assess precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a brief narrative concerning the problem in the case narrative of their laboratory report (see Attachment 3).

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A laboratory-prepared trip blank sample accompanied the project sample bottles from the laboratory to the site during sampling activities and back again to SGS. The trip blank did not contain GRO or BTEX, indicating that the project samples were not cross contaminated or exposed to contamination from the sample handling, storage process, or testing.

Method blanks associated with the samples contained detectable estimated concentrations of GRO and DRO. The project samples with estimated (J-flagged) detections of GRO or DRO are reported as non-detect at the LOQ and flagged "B" in Table 2. Samples MW-31 and MW-42 contained DRO within 10 times the method blank detections. Therefore, the DRO results are flagged "B" in Table 2.

Shannon & Wilson conducted a limited data assessment to review the laboratory's compliance with precision, accuracy, sensitivity, and completeness to the DQOs. Shannon & Wilson reviewed the SGS data deliverables and completed the ADEC's Laboratory Data Review Checklist, which is included in Attachment 3. No non-conformances that would adversely affect the quality or usability of the data were noted.

SUMMARY

The groundwater contaminant plume originating from former WES 5021 extends off property to the north/northwest beneath Dowling Road, east beneath the Old Seward Highway, and southwest into a residential neighborhood. During the 2016 annual groundwater sampling event, groundwater samples from Wells MW-1R, MW-31, and MW-42 contained target analytes in excess of the applicable cleanup levels.

Based on the current and previous sampling results, the lateral extent of the groundwater contaminant plume is delineated by trace or non-detect results to the north in Well MW-32, to the east in former Well MW-33; to the east/northeast in former Well MW-34; to the northwest in former Wells MW-37 and MW-38; and to the south/southwest Well MW-39 and former Wells MW-35, MW-40, and MW-41.

During the most recent sampling of Well MW-40 in August 2015, benzene in excess of the applicable cleanup levels was documented in Well MW-40. Although benzene concentrations have previously been detected in well, this was the first sampling event that benzene has exceeded the applicable cleanup level. Therefore, the southern boundary of the plume is not fully delineated in this area, although it is our opinion that the leading edge of the plume is likely in the vicinity of Monitoring Well MW-40.

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We appreciate this opportunity to be of service and your continued confidence in our firm. If you have questions or comments concerning this submittal, please contact Dan P. McMahon or the undersigned at (907) 561-2120.

Sincerely,

SHANNON & WILSON, INC.

Prepared by:

J.M.M. for:

Alena Voigt
Environmental Scientist

Approved by:



Vice President
Matthew S. Henry, P.E.

Enc: Tables 1 through 3, Figure 1, and Attachment 1

cc: Mr. Lee Andrews, Williams
Mr. Bill O'Connell, ADEC

TABLE 1 - MONITORING WELL SAMPLING LOG

WATER LEVEL MEASUREMENT DATA

Well Number	MW-1R	MW-30	MW-31	MW-32	MW-39	MW-42	B5MW
Date Water Level Measured	9/19/2016	9/19/2016	9/19/2016	9/19/2016	9/19/2016	9/19/2016	9/19/2016
Time Water Level Measured	13:49	11:44	11:10	10:59	14:21	14:03	11:29
Surveyed MP Elevation (ft)	-	-	122.93	123.62	113.72	-	-
Measured Depth to Water (ft below MP)	23.37	20.90	22.24	22.95	20.62	27.17	25.60
Water Level Elevation (ft)	-	-	100.69	100.67	93.10	-	-

Note: Well surveys conducted in 2009, 2011, 2012, July 2014, and August 2015 (Del Norte Surveying, Inc.)

SAMPLING DATA

Well Number	MW-1R	MW-30	MW-31	MW-32	MW-39	MW-42	B5MW
Date Sampled	9/20/2016	NS	9/20/2016	9/20/2016	9/20/2016	9/20/2016	NS
Time Sampled	10:11	NS	13:24	13:49	11:15	11:55	NS
Measured Depth to Water (ft below MP)	23.37	20.90	22.24	22.95	20.62	27.17	25.60
Total Depth of Well (ft below MP)	32.35	27.65	30.11	36.99	29.83	34.90	32.00
Water Column in Well (ft)	8.98	6.75	7.87	14.04	9.21	7.73	6.40
Screened interval (ft below ground surface)*	-	-	20.2-30.2	27.5-37.5	19.8-29.8	-	-
Gallons per Foot	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Water Column Volume (gallons)	1.44	1.08	1.26	2.25	1.47	1.24	1.02
Total Volume Pumped/Bailed (gallons)	4.5	-	3.8	6.8	4.5	3.8	-
Sampling Method	Bailer	-	Bailer	Bailer	Bailer	Bailer	-
Diameter of Well Casing	2-inch	2-inch	2-inch	2-inch	2-inch	2-inch	2-inch
Remarks	Installed by Tesoro in April 2015- Replacement of Well MW-1	Product Screening Only					Product Screening Only

WATER QUALITY DATA

Well Number	MW-1R	MW-30	MW- 31	MW-32	MW-39	MW-42	B5MW
Temperature (°C)	8.72	-	8.15	8.08	7.41	9.21	-
Specific Conductivity (µS/cm)	1,246	-	648	768	607	423	-
pH (Standard Units)	4.90	-	6.01	6.87	6.61	6.25	-
Turbidity (NTU)	832	-	>1,100	>1,100	>1,100	>1,100	-
Dissolved Oxygen (mg/L)	5.78	-	7.96	6.27	5.67	5.82	-

Note: Water quality parameters were measured with Hanna, Hach, and YSI instruments.

KEY DESCRIPTION

°C	Degrees Celsius
ft	Feet
µS/cm	Microsiemens per Centimeter
mg/L	Milligrams per liter
MP	Measuring Point
NTU	Nephelometric turbidity units
-	Not applicable or measurement not collected
NS	Not sampled
DTW	Depth to water
*	At time of well installation

TABLE 2 - SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level (mg/L)**	Sample Number^ and Groundwater Depth in Feet (See Table 1)					Trip Blank TB
			MW-1R 23.37	MW-31 22.24	MW-32 22.95	MW-39 20.62	MW-42 27.17	
Gasoline Range Organics (GRO) - mg/L	AK 101	2.2	31.2	4.66	<0.100 B	0.0437 J	18.8	<0.0500
Diesel Range Organics (DRO) - mg/L	AK 102	1.5	11.7	0.995 B	< 0.625 B	<0.625 B	1.31 B	-
Residual Range Organics (RRO) - mg/L	AK 103	1.1	-	-	-	-	<0.267	-
Aromatic Volatile Organics (BTEX)								
Benzene - mg/L	EPA 8021B	0.0046	0.606	0.112	<0.000250	<0.000250	1.16	<0.000250
Toluene - mg/L	EPA 8021B	1.1	0.0465 J	0.00649	<0.000500	<0.000500	0.0105	<0.000500
Ethylbenzene - mg/L	EPA 8021B	0.015	1.23	0.361	0.000450 J	<0.000500	1.92	<0.000500
Xylenes - mg/L	EPA 8021B	0.19	9.40	1.17	0.00202	0.00236 J	8.26	<0.00150

KEY DESCRIPTION

* See Attachment 1 for compounds tested, methods, and laboratory reporting limits.

** Groundwater cleanup levels are listed in Table C, 18 AAC 75.345 (November 2016).

^ Sample ID No. preceded by "7716-211" on the chain of custody form.

<0.0500 Analyte not detected; laboratory reporting limit of 0.0500 mg/L.

0.00202 Analyte detected

- Sample not tested for this analyte.

mg/L Milligrams per liter

31.2 Reported concentration exceeds the regulated cleanup level.

J Analyte detected below laboratory method detection limit.

B Analyte concentration potentially affected by method blank contamination. See the ADEC Laboratory Data Review Checklist for details.

TABLE 3 - HISTORICAL GROUNDWATER DATA

Well No.	Sample Date	Groundwater Depth^ (ft)	Target Analyte Concentrations* (mg/L)				
			Benzene	Total BTEX	GRO	DRO	RRO
MW-1	4/4/2006	29.01	4.69	52.9	75.6	6.40	-
	9/26/2006	27.32	7.27	74.0	-	5.87	-
	4/30/2007	27.15	2.16	42.5	75.0	6.33	-
	12/14/2007	27.05	2.37	58.3	97.7	4.97	-
	4/28/2008	27.06	0.941	38.5	86.2	4.34	-
	9/16/2008	26.61	0.486	33.7	68.5	4.59	-
	5/11/2009	27.76	0.125	17.8	44.6	5.79	-
	9/28/2009	28.02	0.649	42.0	83.1	5.10	-
	4/27/2010	27.02	0.531	15.3	38.2	5.20	-
	9/2/2010	25.81	1.16	48.6	89.3	4.51	-
	5/5/2011	26.07	0.324	16.6	40.0	6.78	-
	9/14/2011	25.97	0.424	27.9	54.1	6.95	-
	4/18/2012	25.60	0.340	19.3	51.2	5.87	-
	9/25/2012	24.65	0.843	33.3	62.1	4.31	-
	9/18/2013	25.60	0.498	20.0	53.2	4.62	-
Decommissioned by Tesoro in 2013							
MW-1R		Installed by Tesoro in April 2015 to replace source well MW-1					
	8/20/2015	24.15	0.236	11.7	31.5	7.26	
	9/20/2016	23.37	0.606	11.3 J	31.2	11.7	
MW-8A	4/4/2006	14.93	ND	0.00272	-	-	-
	9/26/2006	6.40	ND	ND	-	-	-
	4/27/2007	11.35	0.000517	0.00283	-	-	-
	12/18/2007	6.80	ND	ND	-	-	-
	6/2/2008	6.10	ND	ND	-	-	-
	9/16/2008	6.14	ND	ND	-	-	-
	5/11/2009	4.92	ND	0.00448 J	-	-	-
	9/28/2009	8.12	ND	ND	-	-	-
	4/27/2010	8.61	ND	0.0107	ND	-	-
	9/8/2010	7.30	ND	ND	-	-	-
	5/6/2011	6.01	ND	ND	-	-	-
	9/15/2011	7.64	ND	0.00466	-	-	-
	9/24/2012	3.33	NS	NS	NS	NS	NS
Removed from the sampling program in 2013 Well Decommissioned on June 26, 2015							
MW-9	4/4/2006	26.93	1.69	3.83	7.80	-	1.48
	9/26/2006	25.55	0.0264	0.07	ND	-	ND
	4/30/2007	25.98	1.94	5.30	8.98	-	1.80
	10/4/2007	25.55	2.01	5.42	9.46	-	ND
	4/29/2008	26.03	1.05	3.25	5.65	-	2.32
	9/16/2008	25.70	0.170	0.606	1.11	-	5.01
	5/11/2009	26.23	1.74	4.73	8.06	-	23.5
	9/28/2009	26.39	1.34	5.38	10.2	-	0.549
	4/27/2010	26.32	0.449	1.37	ND	-	1.67
	9/2/2010	25.69	2.13	8.19	15.4	-	1.32
	5/6/2011	25.97	1.26	4.83	9.22	-	1.74
	9/14/2011	25.89	1.63	7.63	14.2	-	1.86
	4/18/2012	25.92	1.42	5.40 J	10.1	-	2.35
	9/25/2012	24.40	1.99	8.82	17.2	-	0.903
	9/18/2013	24.98	0.567	2.48	5.63	-	4.60
	8/26/2014	25.81	0.288	0.334 J	0.721	-	3.57
	8/20/2015	26.45	0.463	1.31	2.75	-	4.89
	9/20/2016	Assumed destroyed by road improvement project conducted in 2016.					

Key provided on Page 7.

TABLE 3 - HISTORICAL GROUNDWATER DATA

Well No.	Sample Date	Groundwater Depth^ (ft)	Target Analyte Concentrations* (mg/L)				
			Benzene	Total BTEX	GRO	DRO	RRO
MW-10	4/4/2006	20.97	ND	ND	-	-	ND
	9/26/2006	26.25	ND	ND	-	-	ND
	4/30/2007	16.92	ND	ND	-	-	ND
	10/4/2007	17.74	0.00121	0.03179	-	-	ND
	4/28/2008	16.97	ND	0.00260	-	-	0.838
	9/16/2008	17.44	0.000549	0.00882	-	-	2.87
	5/11/2009	17.97	0.000843	0.00492 J	-	-	3.47 J
	9/28/2009	18.37	ND	ND	-	-	ND
	4/27/2010	17.84	ND	0.00880	-	-	0.787
	9/2/2010	17.12	ND	ND	-	-	0.742
	5/6/2011	17.18	ND	ND	-	-	0.569
	9/14/2011	17.42	ND	0.00208	-	-	0.959
	4/18/2012	16.53	ND	ND	-	-	0.350 J
	9/25/2012	16.34	ND	ND	-	-	ND
	9/17/2013	17.10	ND	ND	-	-	0.365 J
	8/26/2014	37.87***	ND	ND	-	-	ND
	Well Decommissioned on June 26, 2015						
MW-16	9/2/2003	18.68	ND	ND	-	0.180	0.630
	5/5/2004	21.75	ND	ND	-	0.321	ND
	9/20/2004	18.93	ND	ND	-	ND	ND
	3/31/2005	18.42	ND	0.00385	-	ND	ND
Well decommissioned on October 27, 2005							
MW-19	5/5/2004	23.69	ND	ND	-	-	-
	9/20/2004	22.50	ND	ND	-	-	-
	3/31/2005	22.31	ND	0.00295	-	-	-
	9/15/2005	21.42	ND	ND	-	-	-
	4/4/2006	22.70	ND	ND	-	-	-
	9/26/2006	Assumed destroyed by road improvement project.					
MW-20	9/2/2003	19.97	ND	ND	-	-	-
	4/15/2004	18.01	ND	ND	-	-	-
	9/20/2004	19.42	ND	ND	-	-	-
	3/31/2005	19.66	ND	0.00229	-	-	-
	4/17/2012	17.43	ND	ND	-	-	-
Sampling suspended due to consistently low or ND results							
Well decommissioned on May 3, 2012							
MW-21	9/2/2003	20.03	ND	ND	-	-	-
	5/15/2004	18.11	0.001	0.005	-	-	-
	9/20/2004	19.23	ND	ND	-	-	-
	3/31/2005	19.65	ND	ND	-	-	-
Well decommissioned on October 27, 2005							
MW-22	3/10/2003	12.93	ND	ND	ND	ND	0.21
	9/2/2003	14.09	ND	ND	-	-	-
Well decommissioned on October 27, 2005							
MW-24	3/10/2003	14.24	ND	ND	ND	0.72	1.80
	9/2/2003	14.54	ND	ND	-	-	-
Well decommissioned on October 27, 2005							

Key provided on Page 7.

TABLE 3 - HISTORICAL GROUNDWATER DATA

Well No.	Sample Date	Groundwater Depth^ (ft)	Target Analyte Concentrations* (mg/L)					
			Benzene	Total BTEX	GRO	DRO	RRO	
MW-25	4/4/2006	20.22	ND	ND	-	-	-	
	9/26/2006	17.90	ND	ND	-	-	-	
	4/27/2007	18.65	ND	ND	-	-	-	
	1/2/2008	18.42	ND	ND	-	-	-	
	4/29/2008	18.08	ND	ND	-	-	-	
	9/16/2008	17.63	ND	ND	-	-	-	
	5/11/2009	18.38	0.000157 J	0.00393 J	-	-	-	
	9/28/2009	18.27	ND	ND	-	-	-	
	4/27/2010	18.60	ND	0.00806	ND	-	-	
	9/2/2010	17.80	ND	ND	-	-	-	
	5/6/2011	18.13	ND	ND	-	-	-	
	9/15/2011	18.27	0.000322 J	0.00806	-	-	-	
	4/18/2012	18.07	ND	ND	ND	-	-	
	9/25/2012	16.25	ND	ND	-	-	-	
	9/17/2013	16.74	ND	ND	-	-	-	
8/26/2014	17.75	ND	ND	-	-	-		
Well Decommissioned on June 26, 2015								
MW-26	10/20/2009	26.56	0.00378	0.00378	ND	ND	-	
	5/7/2010	26.52	ND	ND	ND	ND	-	
	9/2/2010	25.78	ND	ND	ND	ND	-	
	5/5/2011	26.02	ND	0.000680 J	ND	ND	-	
	9/14/2011	25.99	0.000710	0.0102	0.211 J	0.0451 J	-	
	4/17/2012	25.90	Not sampled. Depth to water measurement only.					-
	9/24/2012	24.75	Not sampled. Depth to water measurement only.					-
	9/17/2013	25.81	Not sampled. Depth to water measurement only.					-
Assumed destroyed during Tesoro construction in 2013/2014.								
MW-27	10/20/2009~	24.50	2.50	48.1 E	77.0	1.37	-	
	4/27/2010 #	24.87	4.52	92.3	178	57.1	-	
	9/2/2010	23.62	1.19	38.1	78.1	8.23	-	
	5/6/2011	23.81	0.342	20.9	46.6	16.4	-	
	9/15/2011#	23.81	0.03 foot of product observed, not sampled					-
	4/17/2012#	23.80	0.05 foot of product observed, not sampled					-
Well decommissioned on May 3, 2012								
MW-28	10/20/2009	23.50	5.30	71.7 E	132	2.19	-	
	4/27/2010	23.76	8.11	59.7	115	3.78	-	
	9/2/2010	22.65	8.23	55.6	97.3	3.58	-	
	5/5/2011	22.90	5.38	49.8	90.5	2.72	-	
	9/15/2011	22.70	5.45	65.0	103	3.32	-	
	4/17/2012	22.73	Not sampled. No product observed.					-
Well decommissioned on May 3, 2012								
MW-29	10/20/2009	15.14	ND	ND	ND	ND	-	
	4/27/2010	14.79	0.000720	0.0217	ND	ND	-	
	9/2/2110	14.30	ND	ND	ND	ND	-	
	5/5/2011	15.05	ND	0.000640 J	ND	ND	-	
	9/15/2011	15.70	0.000186 J	0.00434	ND	0.269 J	-	
	4/17/2012	12.96	NS	NS	NS	NS	NS	
Well decommissioned on May 3, 2012								

Key provided on Page 7.

TABLE 3 - HISTORICAL GROUNDWATER DATA

Well No.	Sample Date	Groundwater Depth^ (ft)	Target Analyte Concentrations* (mg/L)				RRO	
			Benzene	Total BTEX	GRO	DRO		
MW-30	9/15/2011#	20.68	0.02 foot of product observed, not sampled				-	
	4/17/2012	20.70	Not sampled. No product observed.					
	9/24/2012	19.32	Not sampled. No product observed.					
	1/3/2013~	19.24	0.266	17.7	33.9	1.51		ND
	9/17/2013	20.03	Not sampled. No product observed.					
	8/25/2014	19.93	Not sampled. No product observed.					
	8/18/2015	22.16	Not sampled. No product observed.					
	9/20/2016	20.90	Not sampled. No product observed.					
MW-31	7/22/2011~	23.07	0.0567	2.13	7.35	0.643	ND	
	9/14/2011	21.86	0.0259	0.0712	1.27	0.431 J	-	
	4/17/2012	21.73	ND	ND	0.0478 J	ND	-	
	9/26/2012	20.38	ND	ND	ND	ND	ND	
	1/3/2013	20.60	0.00640	1.01	-	-	-	
	9/18/2013	21.33	0.0367	1.80	5.88	0.601	-	
	8/26/2014	21.50	0.0326	1.78 J	4.81	0.324 J	-	
	8/20/2015	23.57	0.0650	1.06	3.28	0.758	-	
	9/20/2016	22.24	0.112	1.65	4.66	0.995 B	-	
	MW-32	7/22/2011	23.89	ND	ND	ND	ND	ND
9/14/2011		22.63	0.000447 J	0.0149	0.0498 J	ND	-	
4/17/2013		22.48	ND	ND	ND	ND	ND	
6/26/2012		21.13	ND	ND	ND	ND	ND	
1/3/2013		21.36	ND	0.00383 J	-	-	-	
9/18/2013		22.02	ND	ND	0.0327 J	ND	-	
8/26/2014		22.26	ND	ND	ND	ND	-	
8/18/2015		24.23	ND	ND	ND	ND	-	
9/20/2016		22.95	ND	0.00247 J	ND	ND	-	
MW-33	7/21/2011	23.60	ND	ND	ND	ND	ND	
	9/15/2011	22.64	0.000265 J	0.0158	0.0498 J	0.200 J	-	
	4/18/2012	22.67	0.000200 J	0.000810 J	ND	0.247 J	ND	
	9/26/2012	21.51	ND	0.000880 J	ND	ND	ND	
	9/18/2013	22.56	ND	ND	ND	ND	-	
	8/26/2014	22.14	ND	ND	ND	ND	-	
	Well Decommissioned on June 26, 2015							
MW-34	7/21/2011	23.57	ND	ND	ND	ND	ND	
	9/15/2011	22.54	0.000183 J	0.0206	0.0548 J	0.276 J	-	
	4/18/2012	22.37	0.000150 J	0.000150 J	ND	ND	0.155 J	
	9/26/2012	20.98	ND	ND	ND	ND	ND	
	9/18/2013	12.69***	ND	ND	ND	ND	-	
	8/26/2014	21.84	ND	ND	ND	ND	-	
	Well Decommissioned on June 26, 2015							
MW-35	9/2/2011	20.26	ND	ND	ND	ND	ND	
	4/18/2012	20.13	0.000130 J	0.000560 J	ND	ND	ND	
	9/25/2012	18.79	ND	ND	ND	ND	ND	
	9/17/2013	19.32	ND	ND	ND	ND	-	
	8/25/2014	20.33	ND	ND	ND	ND	-	
	8/18/2015	20.98	ND	ND	0.0379 J	ND	-	
	9/20/2016	Assumed destroyed by road improvement project conducted in 2016.						-

Key provided on Page 7.

TABLE 3 - HISTORICAL GROUNDWATER DATA

Well No.	Sample Date	Groundwater Depth^ (ft)	Target Analyte Concentrations* (mg/L)					
			Benzene	Total BTEX	GRO	DRO	RRO	
MW-36	4/18/2012	22.93	ND	ND	ND	0.310 J	0.340 J	
	9/25/2012	21.50	ND	ND	ND	ND	ND	
	9/17/2013	22.04	ND	ND	0.0401 J	ND	-	
	8/25/2014	23.04	ND	ND	ND	ND	-	
	8/18/2015	23.67	ND	0.00102 J	0.0386 J	ND	-	
	9/20/2016	Assumed destroyed by road improvement project conducted in 2016.						
MW-37	9/26/2012	17.28	ND	ND	ND	ND	ND	
	9/18/2013	14.45	ND	ND	ND	ND	-	
	8/26/2014	13.75	ND	ND	ND	ND	-	
		Well Decommissioned on June 26, 2015						
MW-38	9/26/2012	15.35	ND	ND	ND	ND	ND	
	9/18/2013	15.99	ND	ND	ND	0.250 J	-	
	8/26/2014	16.86	ND	ND	ND	ND	-	
		Well Decommissioned on June 26, 2015						
MW-39	7/1/2014	20.14	ND	ND	ND	ND	0.186 J	
	8/26/2014	21.84	ND	ND	ND	ND	-	
	8/18/2015	22.03	ND	ND	0.0477 J	ND	-	
	9/20/2016	20.62	ND	0.00236 J	0.0437 J	ND	-	
MW-40	6/26/2014~	24.91	0.00283	0.00283	ND	ND	0.163 J	
	8/26/2014	25.35	0.00401	0.00401	ND	ND	-	
	8/20/2015	26.01	0.0230	0.0233	0.0903 J	ND	-	
	9/20/2016	Could not access well.						
MW-41	6/26/2014	26.34	ND	ND	ND	ND	ND	
	8/26/2014	26.73	ND	ND	ND	ND	-	
	8/20/2015	27.29	ND	0.00154	0.0498 J	ND	-	
	9/20/2016	Assumed destroyed by road improvement project conducted in 2016.						
MW-42	8/20/2015	28.25	1.65	16.5	28.9	1.26	ND	
	9/20/2016	27.17	1.16	11.4	18.8	1.31 B		
MW-43	8/20/2015	27.39	0.000190 J	0.00394	0.0507 J	ND	ND	
	9/20/2016	Assumed destroyed by road improvement project conducted in 2016.						
MW-44	8/20/2015	25.52	ND	0.00119	0.0518 J	ND	ND	
	9/20/2016	Assumed destroyed by road improvement project conducted in 2016.						
B5MW	4/4/2006	26.49	17.7	119.3	230	3.46	-	
	9/26/2006	24.48	-	-	29.2	2.77	-	
	4/27/2007	25.09	0.937	14.9	30.7	4.58	-	
	10/4/2007	25.61	1.49	30.6	63.7	5.33	-	
	4/29/2008	24.45	1.13	13.3	34.3	3.09	-	
	9/16/2008	24.44	1.68	19.8	41.7	1.68	-	
	5/11/2009	25.62	1.64	18.5	36.7	3.43	-	
	9/28/2009	25.89	5.47	37.8	75.8	2.05	-	
	4/27/2010	25.80	Sample not analyzed					
	9/2/2010	24.76	2.34	17.8	40.3	2.65	-	
	9/14/2011	24.97	4.90	29.4	57.5	3.14	-	
	4/18/2012	24.87	23.1	98.9	-	-	-	
	9/24/2012	23.61	Not sampled. No product observed.					
	9/17/2013	24.66	Not sampled. No product observed.					
	8/18/2015	26.51	Not sampled. No product observed.					
	9/20/2016	25.60	Not sampled. No product observed.					

Key provided on Page 7.

TABLE 3 - HISTORICAL GROUNDWATER DATA

Well No.	Sample Date	Groundwater Depth^ (ft)	Target Analyte Concentrations* (mg/L)					
			Benzene	Total BTEX	GRO	DRO	RRO	
B6MW	4/11/2006	27.22	ND	ND	-	-	-	
	4/12/2006	28.22	ND	ND	-	-	-	
Sampling suspended due to consistently low or ND results Assumed destroyed by road improvement project conducted in 2013.								
B8MW	4/30/2007	19.83	ND	ND	ND	ND	-	
	4/28/2008	19.43	ND	0.00762	ND	ND	-	
	9/16/2008	19.28	ND	ND	ND	ND	-	
	5/11/2009	20.34	ND	0.000818 J	ND	ND	-	
	9/28/2008	Well not sampled due to site access limitation						-
	2010	Well not sampled due to site access limitation						-
	7/22/2011	20.71	1.51	16.79	32.9	0.420 J	ND	
	9/14/2011	19.53	ND	0.000903	ND	ND	-	
	4/17/2012	19.38	ND	0.000510 J	0.0546 J	ND	-	
Well decommissioned on May 3, 2012								
B13MW	6/2/2008	24.30	ND	ND	-	-	10.2	
	9/16/2008	24.00	ND	ND	-	-	8.64	
	5/11/2009	25.12	ND	0.00138 J	-	-	7.79	
	9/28/2009	25.38	ND	ND	-	-	1.97	
	4/27/2010	25.00	0.00104	0.0379	-	-	2.90	
	9/2/2010	24.21	ND	ND	-	-	2.47	
	5/5/2011	24.48	ND	ND	-	-	0.623	
	9/14/2011	24.44	ND	0.00543	-	-	6.25	
	4/18/2012	24.33	ND	ND	-	-	2.76	
	9/26/2012	23.27	-	-	-	-	0.987	
	9/18/2013	24.30	-	-	-	-	4.31	
	Assumed destroyed during Tesoro construction in 2013/2014.							
B4P†	12/18/2007	20.18	8.98	114.3	174	6.43	-	
	4/29/2008	20.46	4.49	69.9	120	1.72	-	
	9/16/2008	20.25	2.12	28.2	47.1	0.961	-	
	5/11/2009	21.29	9.93	96.0	170	3.15	-	
	9/28/2009	Well not sampled due to site access limitation						-
	2010	Well not sampled due to site access limitation						-
	7/22/2011	21.72	8.18	99.41	193	2.20	ND	
	9/14/2011	20.55	8.17	126	180	6.32	-	
	4/17/2012	20.43	Not sampled. No product observed.					-
Well decommissioned on May 3, 2012								

Key provided on Page 7.

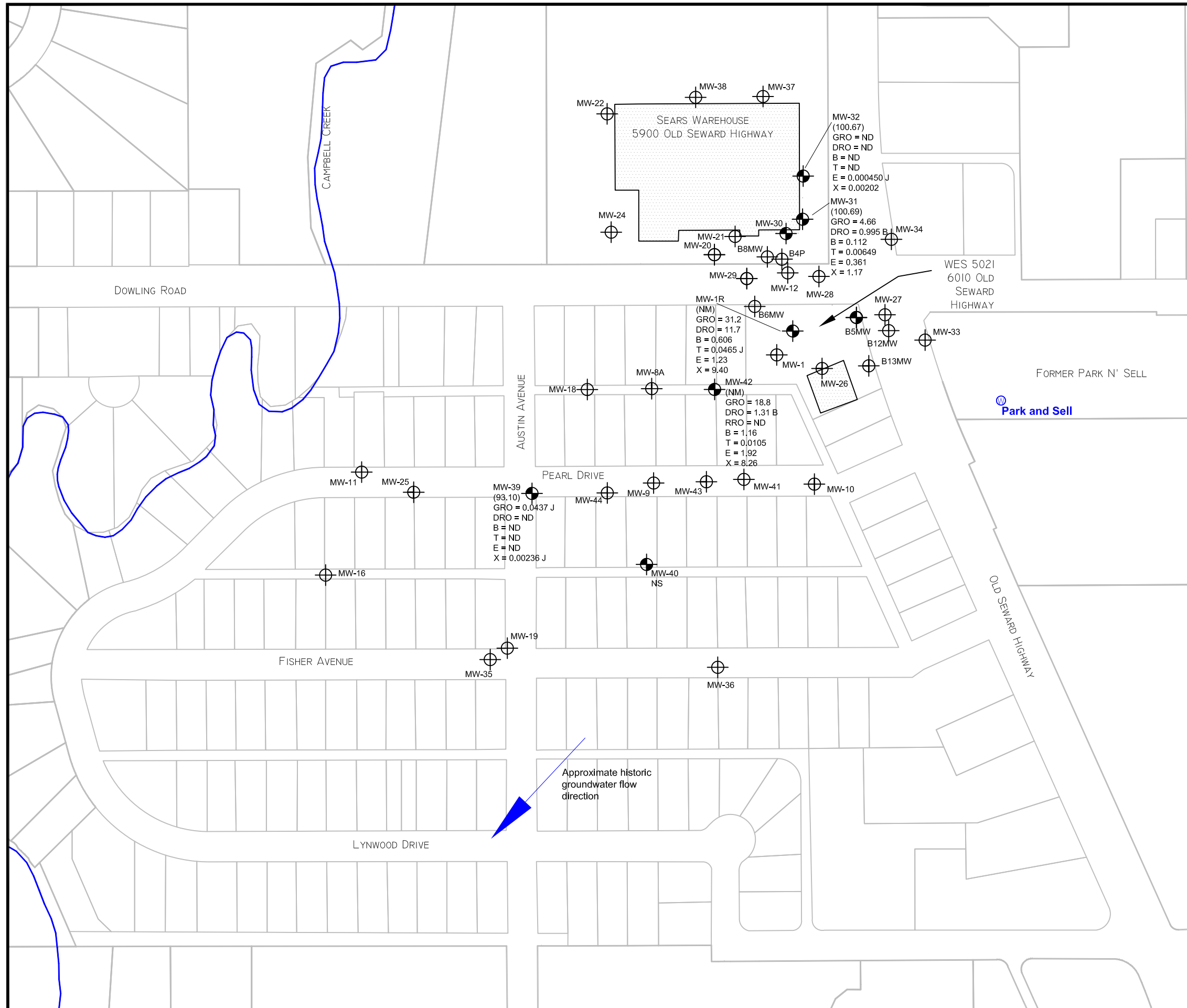
TABLE 3 - HISTORICAL GROUNDWATER DATA

		Groundwater Depth^ (ft)	Target Analyte Concentrations* (mg/L)					
			Benzene	Total BTEX	GRO	DRO	RRO	
Former Park n' Sell Water Well	12/12/2008	-	ND	ND	ND	ND	ND	
	12/22/2009	-	ND	ND	ND	ND	ND	
	9/23/2011	-	ND	ND	ND	ND	1.38	
	12/15/2011	-	ND**	ND**	ND**	ND**	ND**	
	9/28/2012	-	ND	ND	ND	ND	ND	
	9/19/2013	-	ND	ND	ND	ND	ND	
	8/22/2014	-	ND	ND	ND	ND	ND	
	8/20/2015	Well not sampled; the parcel is currently unoccupied.						
	9/20/2016	Well assumed destroyed by construction activities.						

KEY

DESCRIPTION

- * See Attachment 1 for compounds tested, methods, and laboratory reporting limits
- ** Identical results reported for sample run before and after silica-gel filtering
- Measurement not recorded or not applicable
- ^ Depth of static groundwater level below the measuring point or top of casing
- *** Potential error during recording measurement in the field
- ND Not detected
- NS Not sampled
- 8.98** Analyte concentration exceeds current cleanup criterion (0.0046 ppm benzene, 2.2 ppm GRO, 1.5 ppm DRO, and 1.1 ppm RRO) by 18 AAC 75.345 (November 2016)
- J Estimated concentration detected below the reporting limit
- ~ Listed value based on highest concentrations in duplicate set
- # Free product observed
- E Value is based on an estimated concentration of toluene above the calibration range
- mg/L milligrams per liter
- ft feet
- † Well B8MW and Piezometer B4P were both sampled in the 2008 and 2009 groundwater monitoring events. Based on historical data for Well B8MW, it was speculated that samples were inadvertently collected from Piezometer B4P in 2004 and 2007 but incorrectly attributed to Well B8MW. These results are now listed under Piezometer B4P.
- B Analyte concentration potentially affected by method blank contamination. See the ADEC Laboratory Data Review Checklist for details.



LEGEND

- Approximate location of Monitoring Well MW-32
- Approximate location of former Monitoring Well MW-12 (well was decommissioned, destroyed, or could not be located during the most recent sampling event)
- Approximate Location of Drinking Water Well
- (93.10) Approximate groundwater elevation based on September 19, 2016 depth to water measurements. Well surveys conducted in 2009, 2011, 2012, 2014, and 2015.
- ND Not Detected
- NM Not Measured
- GRO Gasoline Range Organics (mg/L)
- DRO Diesel Range Organics (mg/L)
- RRO Residual Range Organics (mg/L)
- B Benzene (mg/L)
- T Toluene (mg/L)
- E Ethylbenzene (mg/L)
- X Total Xylenes (mg/L)

Notes:

Existing and select former wells are presented on this figure.
 Samples were collected on September 20, 2016. Flagged analytical results, including J and B are defined on Table 3.



6010 OLD SEWARD HIGHWAY ANCHORAGE, ALASKA	
SITE PLAN SEPTEMBER 2016 RESULTS	
MAY 2017	32-I-17717-215
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	FIG. 1

SHANNON & WILSON, INC.

ATTACHMENT 1
RESULTS OF ANALYTICAL TESTING BY
SGS NORTH AMERICA, INC.
OF ANCHORAGE, ALASKA
AND
ADEC LABORATORY DATA REVIEW CHECKLIST



Laboratory Report of Analysis

To: Holiday Alaska, Inc.
5430 Fairbanks St Ste 3
Anchorage, AK 99518
(907)561-2120

Report Number: **1165588**

Amended to include RRO data for sample 7716-211-MW-42
No other data has changed.

Client Project: **32-1-17716-211 WES5021**

Dear Jessa Tibbetts,

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

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

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

Sincerely,
SGS North America Inc.

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Print Date: 03/15/2017 10:43:42AM

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

SGS Client: **Holiday Alaska, Inc.**
SGS Project: **1165588**
Project Name/Site: **32-1-17716-211 WES5021**
Project Contact: **Jessa Tibbetts**

Refer to sample receipt form for information on sample condition.

7716-211-MW-42 (1165588005) PS

AK103 - RRO results added to sample per client request 3/15/17.

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

Print Date: 03/15/2017 10:43:43AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification 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) for which SGS North America Inc. is Provisionally Certified as of 2/8/2017 & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

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

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
7716-211-MW-1R	1165588001	09/20/2016	09/20/2016	Water (Surface, Eff., Ground)
7716-211-MW-31	1165588002	09/20/2016	09/20/2016	Water (Surface, Eff., Ground)
7716-211-MW-32	1165588003	09/20/2016	09/20/2016	Water (Surface, Eff., Ground)
7716-211-MW-39	1165588004	09/20/2016	09/20/2016	Water (Surface, Eff., Ground)
7716-211-MW-42	1165588005	09/20/2016	09/20/2016	Water (Surface, Eff., Ground)
7716-211-TB	1165588006	09/20/2016	09/20/2016	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	DRO Low Volume (W)
AK103	RRO Low Volume (W)

Print Date: 03/15/2017 10:43:45AM



Detectable Results Summary

Client Sample ID: **7716-211-MW-1R**

Lab Sample ID: 1165588001

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	11.7	mg/L
Benzene	606	ug/L
Ethylbenzene	1230	ug/L
Gasoline Range Organics	31.2	mg/L
o-Xylene	4320	ug/L
P & M -Xylene	5080	ug/L
Toluene	46.5J	ug/L

Client Sample ID: **7716-211-MW-31**

Lab Sample ID: 1165588002

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.995	mg/L
Benzene	112	ug/L
Ethylbenzene	361	ug/L
Gasoline Range Organics	4.66	mg/L
o-Xylene	230	ug/L
P & M -Xylene	936	ug/L
Toluene	6.49	ug/L

Client Sample ID: **7716-211-MW-32**

Lab Sample ID: 1165588003

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.387J	mg/L
Ethylbenzene	0.450J	ug/L
Gasoline Range Organics	0.0350J	mg/L
o-Xylene	0.450J	ug/L
P & M -Xylene	1.57J	ug/L

Client Sample ID: **7716-211-MW-39**

Lab Sample ID: 1165588004

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.370J	mg/L
Gasoline Range Organics	0.0437J	mg/L
o-Xylene	1.18	ug/L
P & M -Xylene	1.18J	ug/L

Client Sample ID: **7716-211-MW-42**

Lab Sample ID: 1165588005

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	1.31	mg/L
Benzene	1160	ug/L
Ethylbenzene	1920	ug/L
Gasoline Range Organics	18.8	mg/L
o-Xylene	1550	ug/L
P & M -Xylene	6710	ug/L
Toluene	10.5	ug/L

Print Date: 03/15/2017 10:43:46AM

SGS North America Inc.

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

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Results of 7716-211-MW-1R

Client Sample ID: 7716-211-MW-1R
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588001
Lab Project ID: 1165588

Collection Date: 09/20/16 10:11
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane (surr)).

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK102
Analyst: NRO
Analytical Date/Time: 09/30/16 01:46
Container ID: 1165588001-D

Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 09/29/16 08:49
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



Results of 7716-211-MW-1R

Client Sample ID: 7716-211-MW-1R
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588001
Lab Project ID: 1165588

Collection Date: 09/20/16 10:11
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 31.2, 5.00, 1.55, mg/L, 50, 09/27/16 02:25

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 124, 50-150, %, 50, 09/27/16 02:25

Batch Information

Analytical Batch: VFC13327
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/27/16 02:25
Container ID: 1165588001-A
Prep Batch: VXX29640
Prep Method: SW5030B
Prep Date/Time: 09/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 93.9, 77-115, %, 50, 09/27/16 02:25

Batch Information

Analytical Batch: VFC13327
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/27/16 02:25
Container ID: 1165588001-A
Prep Batch: VXX29640
Prep Method: SW5030B
Prep Date/Time: 09/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 7716-211-MW-31

Client Sample ID: 7716-211-MW-31
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588002
Lab Project ID: 1165588

Collection Date: 09/20/16 13:24
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.995	0.577	0.173	mg/L	1		09/30/16 01:55
Surrogates							
5a Androstane (surr)	109	50-150		%	1		09/30/16 01:55

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK102
Analyst: NRO
Analytical Date/Time: 09/30/16 01:55
Container ID: 1165588002-D

Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 09/29/16 08:49
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of 7716-211-MW-31

Client Sample ID: 7716-211-MW-31
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588002
Lab Project ID: 1165588

Collection Date: 09/20/16 13:24
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 4.66, 1.00, 0.310, mg/L, 10, 09/27/16 14:42

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 99.2, 50-150, %, 10, 09/27/16 14:42

Batch Information

Analytical Batch: VFC13331
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/27/16 14:42
Container ID: 1165588002-A

Prep Batch: VXX29647
Prep Method: SW5030B
Prep Date/Time: 09/27/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 94.6, 77-115, %, 10, 09/27/16 14:42

Batch Information

Analytical Batch: VFC13324
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/25/16 01:11
Container ID: 1165588002-A

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 09/24/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VFC13331
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/27/16 14:42
Container ID: 1165588002-A

Prep Batch: VXX29647
Prep Method: SW5030B
Prep Date/Time: 09/27/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 7716-211-MW-32

Client Sample ID: 7716-211-MW-32
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588003
Lab Project ID: 1165588

Collection Date: 09/20/16 13:49
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.387 J	0.625	0.188	mg/L	1		09/30/16 02:05
Surrogates							
5a Androstane (surr)	101	50-150		%	1		09/30/16 02:05

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK102
Analyst: NRO
Analytical Date/Time: 09/30/16 02:05
Container ID: 1165588003-D

Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 09/29/16 08:49
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL



Results of 7716-211-MW-32

Client Sample ID: 7716-211-MW-32
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588003
Lab Project ID: 1165588

Collection Date: 09/20/16 13:49
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0350 J, 0.100, 0.0310, mg/L, 1, 09/27/16 05:12

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 85.1, 50-150, %, 1, 09/27/16 05:12

Batch Information

Analytical Batch: VFC13327
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/27/16 05:12
Container ID: 1165588003-A

Prep Batch: VXX29640
Prep Method: SW5030B
Prep Date/Time: 09/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 95.9, 77-115, %, 1, 09/27/16 05:12

Batch Information

Analytical Batch: VFC13327
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/27/16 05:12
Container ID: 1165588003-A

Prep Batch: VXX29640
Prep Method: SW5030B
Prep Date/Time: 09/26/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 7716-211-MW-39

Client Sample ID: 7716-211-MW-39
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588004
Lab Project ID: 1165588

Collection Date: 09/20/16 11:15
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.370 J	0.625	0.188	mg/L	1		09/30/16 02:15
Surrogates							
5a Androstane (surr)	105	50-150		%	1		09/30/16 02:15

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK102
Analyst: NRO
Analytical Date/Time: 09/30/16 02:15
Container ID: 1165588004-D

Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 09/29/16 08:49
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL



Results of 7716-211-MW-39

Client Sample ID: 7716-211-MW-39
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588004
Lab Project ID: 1165588

Collection Date: 09/20/16 11:15
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0437 J, 0.100, 0.0310, mg/L, 1, 09/25/16 00:15

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 87.3, 50-150, %, 1, 09/25/16 00:15

Batch Information

Analytical Batch: VFC13324
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/25/16 00:15
Container ID: 1165588004-A

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 09/24/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 93.3, 77-115, %, 1, 09/25/16 00:15

Batch Information

Analytical Batch: VFC13324
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/25/16 00:15
Container ID: 1165588004-A

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 09/24/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 7716-211-MW-42

Client Sample ID: 7716-211-MW-42
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588005
Lab Project ID: 1165588

Collection Date: 09/20/16 11:55
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK102
Analyst: NRO
Analytical Date/Time: 09/30/16 02:24
Container ID: 1165588005-D
Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 09/29/16 08:49
Prep Initial Wt./Vol.: 234 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK103
Analyst: NRO
Analytical Date/Time: 09/30/16 02:24
Container ID: 1165588005-D
Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 09/29/16 08:49
Prep Initial Wt./Vol.: 234 mL
Prep Extract Vol: 1 mL



Results of 7716-211-MW-42

Client Sample ID: 7716-211-MW-42
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588005
Lab Project ID: 1165588

Collection Date: 09/20/16 11:55
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 18.8, 5.00, 1.55, mg/L, 50, 09/28/16 12:45

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 100, 50-150, %, 50, 09/28/16 12:45

Batch Information

Analytical Batch: VFC13333
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/28/16 12:45
Container ID: 1165588005-A

Prep Batch: VXX29655
Prep Method: SW5030B
Prep Date/Time: 09/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 93, 77-115, %, 50, 09/28/16 12:45

Batch Information

Analytical Batch: VFC13324
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/25/16 00:34
Container ID: 1165588005-A

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 09/24/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VFC13333
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/28/16 12:45
Container ID: 1165588005-A

Prep Batch: VXX29655
Prep Method: SW5030B
Prep Date/Time: 09/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 7716-211-TB

Client Sample ID: 7716-211-TB
Client Project ID: 32-1-17716-211 WES5021
Lab Sample ID: 1165588006
Lab Project ID: 1165588

Collection Date: 09/20/16 10:11
Received Date: 09/20/16 15:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Gasoline Range Organics, 0.0500 U, 0.100, 0.0310, mg/L, 1, 09/24/16 21:46

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 4-Bromofluorobenzene (surr), 88.3, 50-150, %, 1, 09/24/16 21:46

Batch Information

Analytical Batch: VFC13324
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 09/24/16 21:46
Container ID: 1165588006-A

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 09/24/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows: Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 1,4-Difluorobenzene (surr), 92.5, 77-115, %, 1, 09/24/16 21:46

Batch Information

Analytical Batch: VFC13324
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 09/24/16 21:46
Container ID: 1165588006-A

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 09/24/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1743943 [VXX/29629]
Blank Lab ID: 1354276

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1165588002, 1165588004, 1165588005, 1165588006

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	88.9	50-150		%

Batch Information

Analytical Batch: VFC13324
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/24/2016 8:51:00PM

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 9/24/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:43:49AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29629]
 Blank Spike Lab ID: 1354279
 Date Analyzed: 09/24/2016 20:14

Spike Duplicate ID: LCSD for HBN 1165588 [VXX29629]
 Spike Duplicate Lab ID: 1354280
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588002, 1165588004, 1165588005, 1165588006

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.913	91	1.00	0.806	81	(60-120)	12.50	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	95.8	96	0.0500	90.5	91	(50-150)	5.60	
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Batch Information

Analytical Batch: **VFC13324**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX29629**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/24/2016 06:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 03/15/2017 10:43:51AM



Method Blank

Blank ID: MB for HBN 1743943 [VXX/29629]
Blank Lab ID: 1354276

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1165588002, 1165588004, 1165588005, 1165588006

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	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
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene (surr)	90.8	77-115		%

Batch Information

Analytical Batch: VFC13324
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/24/2016 8:51:00PM

Prep Batch: VXX29629
Prep Method: SW5030B
Prep Date/Time: 9/24/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:43:53AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29629]
 Blank Spike Lab ID: 1354277
 Date Analyzed: 09/24/2016 19:55

Spike Duplicate ID: LCSD for HBN 1165588 [VXX29629]
 Spike Duplicate Lab ID: 1354278
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588002, 1165588004, 1165588005, 1165588006

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	105	105	100	110	110	(80-120)	4.80	(< 20)
Ethylbenzene	100	94.6	95	100	99.4	99	(75-125)	5.00	(< 20)
o-Xylene	100	92.5	93	100	93.1	93	(80-120)	0.55	(< 20)
P & M -Xylene	200	190	95	200	196	98	(75-130)	3.00	(< 20)
Toluene	100	96.1	96	100	101	101	(75-120)	4.90	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	93.7	94	50	92.4	92	(77-115)	1.40	

Batch Information

Analytical Batch: VFC13324
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX29629
 Prep Method: SW5030B
 Prep Date/Time: 09/24/2016 06:00
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1744121 [VXX/29640]

Blank Lab ID: 1354758

QC for Samples:

1165588001, 1165588003

Matrix: Water (Surface, Eff., Ground)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0377J	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	85.5	50-150		%

Batch Information

Analytical Batch: VFC13327
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/27/2016 1:48:00AM

Prep Batch: VXX29640
Prep Method: SW5030B
Prep Date/Time: 9/26/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:43:57AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29640]
Blank Spike Lab ID: 1354761
Date Analyzed: 09/27/2016 01:29

Spike Duplicate ID: LCSD for HBN 1165588 [VXX29640]
Spike Duplicate Lab ID: 1354762
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588001, 1165588003

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.873	87	1.00	0.815	82	(60-120)	6.90	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	90.6	91	0.0500	91	91	(50-150)	0.35	
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Batch Information

Analytical Batch: VFC13327
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29640
Prep Method: SW5030B
Prep Date/Time: 09/26/2016 06:00
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 03/15/2017 10:43:58AM



Method Blank

Blank ID: MB for HBN 1744121 [VXX/29640]

Blank Lab ID: 1354758

QC for Samples:

1165588001, 1165588003

Matrix: Water (Surface, Eff., Ground)

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	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
Toluene	0.500U	1.00	0.310	ug/L

Surrogates

1,4-Difluorobenzene (surr)	91.5	77-115	%
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Batch Information

Analytical Batch: VFC13327
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/27/2016 1:48:00AM

Prep Batch: VXX29640
Prep Method: SW5030B
Prep Date/Time: 9/26/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:01AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29640]
 Blank Spike Lab ID: 1354759
 Date Analyzed: 09/27/2016 01:11

Spike Duplicate ID: LCSD for HBN 1165588 [VXX29640]
 Spike Duplicate Lab ID: 1354760
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588001, 1165588003

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	103	103	100	109	109	(80-120)	5.40	(< 20)
Ethylbenzene	100	92.2	92	100	98.9	99	(75-125)	7.00	(< 20)
o-Xylene	100	84.6	85	100	95.4	95	(80-120)	12.00	(< 20)
P & M -Xylene	200	175	87	200	197	99	(75-130)	12.00	(< 20)
Toluene	100	95.6	96	100	98.5	99	(75-120)	3.00	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	95.9	96	50	98	98	(77-115)	2.10	

Batch Information

Analytical Batch: VFC13327
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX29640
 Prep Method: SW5030B
 Prep Date/Time: 09/26/2016 06:00
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:02AM



Method Blank

Blank ID: MB for HBN 1744165 [VXX/29647]
Blank Lab ID: 1354982

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1165588002

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	85.6	50-150		%

Batch Information

Analytical Batch: VFC13331
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/27/2016 11:37:00AM

Prep Batch: VXX29647
Prep Method: SW5030B
Prep Date/Time: 9/27/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:04AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29647]
 Blank Spike Lab ID: 1354985
 Date Analyzed: 09/27/2016 12:32

Spike Duplicate ID: LCSD for HBN 1165588 [VXX29647]
 Spike Duplicate Lab ID: 1354986
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588002

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.868	87	1.00	0.770	77	(60-120)	12.00	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	88.2	88	0.0500	90.6	91	(50-150)	2.80	
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Batch Information

Analytical Batch: VFC13331
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX29647
 Prep Method: SW5030B
 Prep Date/Time: 09/27/2016 06:00
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:05AM



Method Blank

Blank ID: MB for HBN 1744165 [VXX/29647]
Blank Lab ID: 1354982

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1165588002

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Ethylbenzene	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
Surrogates				
1,4-Difluorobenzene (surr)	95.1	77-115		%

Batch Information

Analytical Batch: VFC13331
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/27/2016 11:37:00AM

Prep Batch: VXX29647
Prep Method: SW5030B
Prep Date/Time: 9/27/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:07AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29647]
 Blank Spike Lab ID: 1354983
 Date Analyzed: 09/27/2016 12:14

Spike Duplicate ID: LCSD for HBN 1165588 [VXX29647]
 Spike Duplicate Lab ID: 1354984
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588002

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Ethylbenzene	100	99.6	100	100	99.2	99	(75-125)	0.45	(< 20)
o-Xylene	100	96.0	96	100	95.6	96	(80-120)	0.42	(< 20)
P & M -Xylene	200	199	100	200	198	99	(75-130)	0.83	(< 20)

Surrogates

1,4-Difluorobenzene (surr)	50	98.8	99	50	98.6	99	(77-115)	0.20	
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Batch Information

Analytical Batch: VFC13331
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX29647
 Prep Method: SW5030B
 Prep Date/Time: 09/27/2016 06:00
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1744221 [VXX/29655]

Blank Lab ID: 1355213

QC for Samples:

1165588005

Matrix: Water (Surface, Eff., Ground)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	87.2	50-150		%

Batch Information

Analytical Batch: VFC13333
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/28/2016 9:21:00AM

Prep Batch: VXX29655
Prep Method: SW5030B
Prep Date/Time: 9/28/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:11AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29655]
Blank Spike Lab ID: 1355216
Date Analyzed: 09/28/2016 10:16

Spike Duplicate ID: LCSD for HBN 1165588 [VXX29655]
Spike Duplicate Lab ID: 1355217
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588005

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.860	86	1.00	0.868	87	(60-120)	0.95	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	94.4	94	0.0500	105	105	(50-150)	11.00	
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Batch Information

Analytical Batch: VFC13333
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ST

Prep Batch: VXX29655
Prep Method: SW5030B
Prep Date/Time: 09/28/2016 06:00
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:13AM



Method Blank

Blank ID: MB for HBN 1744221 [VXX/29655]

Blank Lab ID: 1355213

QC for Samples:

1165588005

Matrix: Water (Surface, Eff., Ground)

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	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
Surrogates				
1,4-Difluorobenzene (surr)	96.4	77-115		%

Batch Information

Analytical Batch: VFC13333
Analytical Method: SW8021B
Instrument: Agilent 7890A PID/FID
Analyst: ST
Analytical Date/Time: 9/28/2016 9:21:00AM

Prep Batch: VXX29655
Prep Method: SW5030B
Prep Date/Time: 9/28/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 03/15/2017 10:44:15AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [VXX29655]
 Blank Spike Lab ID: 1355214
 Date Analyzed: 09/28/2016 09:58

Spike Duplicate ID: LCSD for HBN 1165588
 [VXX29655]
 Spike Duplicate Lab ID: 1355215
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588005

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	104	104	100	113	113	(80-120)	7.90	(< 20)
Ethylbenzene	100	93.6	94	100	104	104	(75-125)	10.50	(< 20)
o-Xylene	100	87.6	88	100	104	104	(80-120)	17.40	(< 20)
P & M -Xylene	200	181	91	200	210	105	(75-130)	14.90	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	50	99.8	100	50	97.7	98	(77-115)	2.10	

Batch Information

Analytical Batch: VFC13333
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST

Prep Batch: VXX29655
 Prep Method: SW5030B
 Prep Date/Time: 09/28/2016 06:00
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1744223 [XXX/36414]
Blank Lab ID: 1355226

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1165588001, 1165588002, 1165588003, 1165588004, 1165588005

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.333J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	109	60-120		%

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: NRO
Analytical Date/Time: 9/30/2016 1:16:00AM

Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 9/29/2016 8:49:42AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 03/15/2017 10:44:19AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [XXX36414]
 Blank Spike Lab ID: 1355227
 Date Analyzed: 09/30/2016 01:26

Spike Duplicate ID: LCSD for HBN 1165588
 [XXX36414]
 Spike Duplicate Lab ID: 1355228
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588001, 1165588002, 1165588003, 1165588004, 1165588005

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	20.9	105	20	20.2	101	(75-125)	3.60	(< 20)
Surrogates									
5a Androstane (surr)	0.4	115	115	0.4	117	117	(60-120)	1.40	

Batch Information

Analytical Batch: **XFC12890**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **NRO**

Prep Batch: **XXX36414**
 Prep Method: **SW3520C**
 Prep Date/Time: **09/29/2016 08:49**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 03/15/2017 10:44:21AM



Method Blank

Blank ID: MB for HBN 1744223 [XXX/36414]
Blank Lab ID: 1355226

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1165588001, 1165588002, 1165588003, 1165588004, 1165588005

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	106	60-120		%

Batch Information

Analytical Batch: XFC12890
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: NRO
Analytical Date/Time: 9/30/2016 1:16:00AM

Prep Batch: XXX36414
Prep Method: SW3520C
Prep Date/Time: 9/29/2016 8:49:42AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 03/15/2017 10:44:24AM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1165588 [XXX36414]
 Blank Spike Lab ID: 1355227
 Date Analyzed: 09/30/2016 01:26

Spike Duplicate ID: LCSD for HBN 1165588
 [XXX36414]
 Spike Duplicate Lab ID: 1355228
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165588001, 1165588002, 1165588003, 1165588004, 1165588005

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	20.4	102	20	19.6	98	(60-120)	3.90	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	107	107	0.4	100	100	(60-120)	6.50	

Batch Information

Analytical Batch: **XFC12890**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B R**
 Analyst: **NRO**

Prep Batch: **XXX36414**
 Prep Method: **SW3520C**
 Prep Date/Time: **09/29/2016 08:49**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 03/15/2017 10:44:26AM

1165588



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CHAIN-OF-CUSTODY RECORD

Laboratory SGS Page 1 of 1
Attn: Tori Pennick

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRD/BTEX AR10/RO21B DRO AK102	Total Number of Containers	Remarks/Matrix	
7716-211-MW-1B	① AE	10:11	9/20/16	✓	✓	✓	5	Groundwater	
" " MW-31	② AE	13:24	9/20/16	✓	✓	✓		↓	↓
" " MW-32	③ A-E	13:49	9/20/16	✓	✓	✓			
" " MW-39	④ A-E	11:15	9/20/16	✓	✓	✓			
" " MW-42	⑤ A-E	11:55	9/20/16	✓	✓	✓			
" " TB	⑥ A-C	—	9/20/16		✓				

Project Information		Sample Receipt		Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Project Number: <u>32-1-17716-211</u>	Total Number of Containers	COC Seals/Intact? Y/N/NA		Signature: <u>[Signature]</u>	Time: <u>1501</u>	Signature:	Time:	Signature:	Time:
Project Name: <u>WES5021</u>	Received Good Cond./Cold	Delivery Method:	<u>50</u>	Printed Name: <u>Alena Voigt</u>	Date: <u>9/20/16</u>	Printed Name:	Date:	Printed Name:	Date:
Contact: <u>Jessa Tibbett</u>	Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	(attach shipping bill, if any)		Company: <u>Shannon & Wilson</u>		Company:		Company:	
Sampler: <u>ADV</u>				Received By: 1.		Received By: 2.		Received By: 3.	
Instructions				Signature:	Time:	Signature:	Time:	Signature: <u>[Signature]</u>	Time: <u>1501</u>
Requested Turnaround Time: <u>Standard</u>				Printed Name:	Date:	Printed Name:	Date:	Printed Name: <u>[Signature]</u>	Date: <u>9/20/16</u>
Special Instructions: <u>Bill Holiday</u>				Company:		Company:		Company: <u>SGS</u>	

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



e-SAMPLE RECEIPT FORM

1165588



Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input type="checkbox"/>	<input checked="" type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/>	Absent
<input type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input type="checkbox"/>	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> N	Cooler ID: 1 @ 6.3 °C Therm ID: 242
	<input type="checkbox"/> Y	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/> Y	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/> Y	Cooler ID: @ °C Therm ID:
	<input type="checkbox"/> Y	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input checked="" type="checkbox"/> Y	
If <0°C, were sample containers ice free?	<input checked="" type="checkbox"/> Y	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/> Y	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> Y	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/> Y	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> ***Exemption permitted for metals (e.g., 200.8/6020A).
IF APPLICABLE		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> Y	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/> Y	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/> Y	
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

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165588001-A	HCL to pH < 2	OK			
1165588001-B	HCL to pH < 2	OK			
1165588001-C	HCL to pH < 2	OK			
1165588001-D	HCL to pH < 2	OK			
1165588001-E	HCL to pH < 2	OK			
1165588002-A	HCL to pH < 2	OK			
1165588002-B	HCL to pH < 2	OK			
1165588002-C	HCL to pH < 2	OK			
1165588002-D	HCL to pH < 2	OK			
1165588002-E	HCL to pH < 2	OK			
1165588003-A	HCL to pH < 2	OK			
1165588003-B	HCL to pH < 2	OK			
1165588003-C	HCL to pH < 2	OK			
1165588003-D	HCL to pH < 2	OK			
1165588003-E	HCL to pH < 2	OK			
1165588004-A	HCL to pH < 2	OK			
1165588004-B	HCL to pH < 2	OK			
1165588004-C	HCL to pH < 2	OK			
1165588004-D	HCL to pH < 2	OK			
1165588004-E	HCL to pH < 2	OK			
1165588005-A	HCL to pH < 2	OK			
1165588005-B	HCL to pH < 2	OK			
1165588005-C	HCL to pH < 2	OK			
1165588005-D	HCL to pH < 2	OK			
1165588005-E	HCL to pH < 2	OK			
1165588006-A	HCL to pH < 2	OK			
1165588006-B	HCL to pH < 2	OK			
1165588006-C	HCL to pH < 2	OK			

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: 6010 Old Seward Highway, Anchorage, Alaska

Date: March 2017

Laboratory Report Date: March 15, 2017

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Alena Voigt

Title: Environmental Scientist

Laboratory Name: SGS North America Inc.

Work Order Number: 1165588

ADEC File Number: 2100.26.030

(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: *The chain of custody did not include RRO for Sample MW-42. SGS was contacted and they were able to provide the RRO result for Sample MW-42.*

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

Yes / **No** / NA (Please explain.)

Comments: *The temperature of the coolers submitted to the laboratory was outside range. The cooler temperatures was 6.3°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: *No problems noted.*

- 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: *The temperature of the cooler was outside range.*

- e. Data quality or usability affected? **NA** (Please Explain.)

Comments:

- *Although the temperature blank was outside of QC range, it is our opinion that data quality/usability is not affected by this slight temperature exceedance.*

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: *No discrepancies, errors or QC failures were noted by the lab.*

- 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: *No discrepancies, errors or QC failures were noted by the lab.*

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 analyzed as part of this report.*

- 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:

- e. Data quality or usability affected? (Please explain.) **NA**

Comments:

6. QC Samples

a. Method Blank

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

Yes / No / NA (Please explain.)

Comments: *Although less than the LOQ, estimated (J-flagged) concentrations of GRO (0.0377 mg/L) and DRO (0.333 J mg/L) were documented in method blanks.*

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

Comments: GRO: Samples MW-1R and MW-32.

DRO: All samples.

- iii. If above LOQ, what samples are affected? **NA**

Comments: Although less than the LOQ, samples MW-31, MW-32, MW-39, and MW-42 are potentially affected.

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

Comments: The affected samples are "B" flagged on Table 2.

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

Comments: *If both the sample and method blank concentrations are reported at levels less than the LOQ, the sample concentration is reported as non-detect at the LOQ and "B" flagged. If the reported sample concentration is greater than the LOQ and less than 10x the method blank concentrations, the sample concentration is "B" flagged at the detected sample concentration.*

- v. Data quality or usability affected? (Please explain.) **NA**

Comments: *Each of the affected results are less than the applicable cleanup levels therefore, the results are considered useable for the purpose of this report.*

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: *The project samples were not analyzed for metals/inorganics.*

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

Comments:

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:

- iv. If %R or RPD is outside of acceptable limits, what samples are affected? **NA**

Comments:

- v. Do the affected samples(s) have data flags? **Yes / No / NA**

Comments:

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

Comments:

- vi. Data quality or usability affected? Explain. **NA**

Comments:

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:

- iii. Do the sample results with failed surrogate recoveries have data flags? **Yes / No / NA (Please explain.)**

Comments:

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

Comments:

iv. Data quality or usability affected? Explain. **NA**

Comments:

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

i. One trip blank reported per matrix, analysis and cooler? **Yes** / No / NA (Please explain.)

Comments: *A trip blank was included in the cooler with the groundwater samples submitted for volatile analyses.*

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:

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

Comments:

iv. If above LOQ, what samples are affected? **NA**

Comments:

v. Data quality or usability affected? Explain. **NA**

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples? **Yes / No** / NA (Please explain.)

Comments: *Duplicate samples are not included as part of this ongoing project.*

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:

iv. Data quality or usability affected? Explain. **NA**

Comments:

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

Yes **No** / NA (**Please explain.**) *Equipment blanks are not included as part of this ongoing 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 in the Laboratory Qualifiers section on page 3 of the laboratory report.*